Chronic pain: Assessing and enhancing readiness to adopt a self-management approach.

Thesis submitted by

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Abstract

The aim of the research was to develop, implement and evaluate an intervention designed specifically to increase rates of engagement and adherence to self-management activities for chronic pain in a non pain-clinic population. The research comprised a series of four studies. Study 1, a questionnaire survey, explored the utility of the Transtheoretical model as a theoretical framework for assessing readiness to adopt a self-management approach to chronic pain and for developing appropriate treatment interventions. The findings indicated that the current application of the Transtheoretical model to chronic pain, the Pain Stages of Change model (Kerns et al. 1997) may not be useful in its current form. As such, the model required further adaptation in order to inform the development of interventions designed to increase engagement in treatment and adherence to self-management activities.

Study 2 comprised a series of qualitative interviews which expanded our conceptualisation of what constitutes a self-management approach and how best to assess and enhance readiness to adopt this type of approach. The qualitative data highlighted the discrepancy between the theoretical understandings of practitioners and the lived experience of those with chronic pain. Due to the lack of a clear definition of what constitutes a self-management approach to pain, the apparent instability of the construct, the lack of explanatory value of stages of change and the range of activities inherent in a self-management approach, it was determined that traditional psychometric assessment may not be useful in treatment planning.

The findings of Study 2a were used to formulate and develop an expanded model incorporating both stages of change and processes of change in relation to beliefs about specific self-management activities and current self-management behaviour. The expanded model led to the development of the Readiness to Adopt a Self-Management Questionnaire (RASMAP-Q) in Study

2b. The questionnaire was designed to be administered in conjunction with standard assessment procedures using Motivational Interviewing techniques, with the aim of enhancing readiness to change prior to treatment.

Study 3 comprised a randomised controlled trial to evaluate the efficacy of the RASMAP-Q intervention. The findings clearly demonstrate that the intervention increased rates of engagement in pain management workshops and adherence to treatment recommendations for up to six months for four of five self-management activities. The findings of the research as a whole indicates that the Transtheoretical model can be adapted to facilitate assessment and enhancement of readiness to adopt a self-management approach to pain in a community-based population.

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A further source of outstanding support and encouragement was my friend, colleague and fellow post-graduate student Donna Goodman, who not only provided the clinical expertise to assist in the intervention stage of my research but whose unfailing friendship and understanding has undoubtedly greatly contributed to the submission of this thesis. Thanks also to Mike Steele from the School of Mathematics, whose assistance and support with the analyses in my research has most certainly saved me from panic on more than one occasion and who has been a steady and reliable source of support and information for which I am extremely grateful. Special thanks also to Lyn Courtney who assisted in the organisation and running of the intervention and whose professionalism, organisational skills, and care and concern for the participants was exceptional.

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Finally, and most importantly, thank-you to my husband Sam, for believing that I could actually complete and submit this thesis and without whose unfailing support, it would simply not have been possible. And thank you to my children, Kai, who for the last three years has preceded every sentence with "when you finish your work can we....." and Romany who, at the age of three is the same age as my thesis and has never known her Mum any other way....

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STATEMENT ON SOURCES

DECLARATION

I declare that this thesis is my own work and has not been submitted in any other form for another degree or diploma at any university or other institution of tertiary education. Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references is given.

23/9/02

Suzanne Habib Date

CHAPTER 1

Introduction and Overview

PART 1

1.0 Chapter Introduction – Pain in society

1.1 IASP Definition of pain

1.2 Stages of pain

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1.3 Research focus

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1.0 Chapter Introduction – Pain in Society

The scientific study of pain has evolved rapidly over the past three decades with exciting advances being made in our understanding of the mechanisms underlying nociception and the development of a range of surgical, pharmaceutical and psychological interventions. Interest in pain research has led to significant increases in knowledge regarding the neurologic, biochemical and physiologic aspects of acute pain and a number of the mechanisms affecting chronic pain. This new knowledge has altered the way in which pain and pain therapies are conceptualised, and has cultivated an appreciation of the sensory, emotional and interpersonal factors of which the complex and multidimensional experience of pain is comprised.

Despite these advances, successful elimination of pain has remained elusive and chronic pain remains a significant individual and societal problem. Chronic pain has wide-spread implications in terms of personal suffering, time lost in employment, litigation and disability compensation and health care costs. Between eleven and thirty-four percent of all adults in the Western world suffer from some form of debilitating and ongoing pain at any given time (Hardcastle, 1999), indicating that chronic pain affects more individuals than other chronic conditions including diabetes, hypertension and asthma.

In America, pain accounts for 80% of medical visits, affects over 50 million people and costs over $70 billion annually in health care costs (Turk, 1996). Research indicates that an estimate of total United States costs associated

with low back pain (LBP) range as high as $60 billion per year, making it more expensive than AIDS, cancer, or heart disease (Epping-Jordan et al., 1998). This huge cost involves compensation payouts, workplace absenteeism and direct health costs. Croft, Macfarlane, Papageorgiou, Thomas and Silman (1998) comment that the prevalence of disabling LBP in Britain, for which benefits are paid, has risen exponentially over the past 20 years.

In Australia, pain-related medical and compensation costs are escalating. A preliminary report on a study of pain commissioned by the Australian Pain Society estimated the cost of chronic pain to Australian society to be $7.8 billion annually (Gross, 1986). In 1995, the Australian National Health Survey found that nine percent of medical consultations were related to painful musculoskeletal conditions.

1.1 International Association for the Study of Pain (IASP) Definition of Pain

Pain has been defined by the first sub-committee on Taxonomy of the International Association for the Study of Pain, as,

> "an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage". (Mersky, 1986, p.215)

This definition includes two necessary elements which are sufficient for pain; (a) a sensory perception associated with *actual* or *potential* tissue damage and (b) an accompanying unpleasant emotional feeling (Price, 1988). In addition to

the definition proposed above, the taxonomy committee of the International Association for the Study of Pain provided the following notes:

> Pain is always subjective. Each individual learns the application of the word through experiences related to injury in early life. It is unquestionably a sensation in a part of body but it is also always unpleasant and therefore an emotional experience. Many people report pain in the absence of tissue damage or any likely pathophysiological cause, usually this happens for psychological reasons. There is no way to distinguish their experience from that due to tissue damage, if we take the subjective report. If they regard their experience as pain and if they report it in the same way as pain caused by tissue damage, it should be accepted as pain. This definition avoids tying pain to the stimulus. Activity induced in the nociceptor and nociceptive pathways by a noxious stimulus is not pain, which is always a psychological state, even though we may well appreciate that pain most often has a proximate physical cause.

In line with this definition, it is widely acknowledged that the subjective experience of pain is not necessarily associated with tissue damage, and that a wide range of factors have the potential to influence pain intensity, including: cultural background, anxiety, depression and social and environmental factors.

1.2 Stages of Pain

In the study of pain, the most frequently used differentiation between types of pain is that involving the lables *acute* and *chronic*. Within much of the pain literature, the only distinction between acute and chronic pain is duration of persistence, where chronic pain is generally described as that which persists for a period of three months or longer. This type of simple temporal diagnostic criteria is limited however, as was noted by Crue (1985),

> Most of us have been taught that the only difference between acute and chronic pain is the length of time it has persisted. We have thus often thought of chronic pain as a continuation of pain in the acute nociceptive input pain model. We have often unthinkingly confused etiology and mechanism.... Physicians have long been aware that, as the pain continues over time, more and more central aspects, historically referred to as 'functional overlay', inevitably become operative...(p.xvii).

Similarly, Karoly and Jensen (1987) contend that a one dimensional approach to diagnosis is inadequate, and propose a four factor classification of pain based on (1) duration, (2) the presumed role of pathological bodily states, (3) the patient's beliefs and reactions to pain, and (4) the treatment style and expectations of significant others (including health care providers). This characterisation of acute versus chronic pain (presented in Table 1) provides an alternative to the oversimplified time-centered approach described in much of the clinical literature.

Table 1.0 Pain Classification Based on Duration of Complaint, Causal Agent, Patient Coping Style and Significant other (Physician, Family) Reaction Pattern (Karoly & Jensen, 1987).

Acute
Up to a few days duration
Mild or severe
Cause(s) unknown or known
Presumed nociceptive stimulus
Sufferer expects relief based on medical interventions; extended coping efforts not seen as necessary
Physician expects pain complaints to decrease with healing of affected tissue (eg. sunburn, toothache, post-surgical pain).

Recurrent Acute (Intermittent)
Patient experiences variable pain-free intervals
Presumed nociceptive (tissue derived) input from a pathological process (e.g., migranes, sickle cell crisis, arthritis, primary trigeminal neuralgia, and myofacial pain)
Physician expects continued therapeutic efforts to pay off.

Ongoing Acute (Progressive)
Continued nociceptive input (e.g., from cancer)
Physicians willing to use potent opioids
Patients often concerned about the effects of analgesics on chemotherapy
Treated like acute pain by patients and physicians

Pre-chronic
A few days to a few months duration
Similar to acute, except not viewed as an emergency
Known pathology
Physician concerned with use of medication (e.g. addiction)
Protracted healing process stressful (or, at least, autonomically arousing) to the sufferer
Patterns of coping originally elicited by internal events are coming under the control of situational variables
Some patients (with poor pre-morbid histories) are "at risk" to develop chronic intractable pain patterns

Chronic Benign
Non-cancerous
About six months in duration
No known pathology or nociceptive input
Patient is apparently coping adequately, has not made pain the centre of his/her life
Physicians feel they can establish a working relationship with these patients

Chronic Intractable Benign Syndrome
Duration of 1 year or more
Physicians view patients as difficult to treat. Psychiatric referrals are common
Patients show signs of physical decline (usually brought on by inactivity), Psychological passivity (depression, helplessness, hopelessness), and excessive preoccupation with pain.
Familial reward for "invalid" status (secondary gain)

Hanson and Gerber (1990) propose that acute and chronic pain represent different conceptual models and that these models apply to illness in general. The four features generally associated with acute illness models are (1) The illness is symptomatic and can be labeled (and different illnesses have different symptoms) (2) The illness is caused by external disease agents (3) The illness is a short-term one, and (4) Treatment can eliminate symptoms and cure the underlying disease process. Clearly these same assumptions cannot be made about chronic pain, thus it is simplistic to regard chronic pain purely as acute pain that has persisted beyond an arbitrary period of time.

1.2.1. Acute Pain

Acute pain acts as a temporary warning signal that indicates tissue damage or physiological dysfunction and is generally of relatively short duration (e.g., labour, post-surgical or dental pain). Often the pain itself is not the underlying problem, rather it is a *symptom* of the problem and serves to motivate the individual to initiate adaptive behavioural responses. These include seeking appropriate treatment, limiting activity, ingesting analgesics and restricting social interaction. Cognitive responses are also important as patients generally interpret acute pain as a warning signal, which in turn, leads to appropriate self-care actions (Hanson & Gerber, 1990).

Bonica (1990a) proposed three distinct phases of response following an acute injury: immediate, secondary and tertiary. In the immediate period following injury, there may be an absence of pain, which is thought to be due to an

adaptive biological function that enables a flight or fight response, thus enabling survival. The secondary phase is characterised by tissue damage, pain and anxiety. During this phase, individuals are thought to mentally retrace events leading to injury and to initiate coping responses in order to aid recovery. The tertiary phase of acute pain is usually characterised by inactivity, excessive sleep, reduced appetite and limited or impaired concentration and attention abilities. These short-term aspects are thought to act as a mechanism to reduce mobility in order to foster recovery.

Responses to acute pain are both physiological and psychological. Physiological responses include vasoconstriction of the skin, the splanchnic region and non-priority organs, increases in cardiac output, blood pressure and viscosity, increased metabolic rate and oxygen consumption and decreases in urinary tract tone and evacuation (Bonica, 1990a).

Psychological responses to acute pain generally include anxiety, depression, anger and fear. Of these four emotional reactions, anxiety has received the most attention in pain research (e.g., Chapman & Turner, 1990; Gil, 1992) and has been associated with increased pain perceptions and complicating factors which prolong the pain experience (Williams, 1996). According to Bonica (1990) anxiety can complicate acute pain by causing (1) cortically mediated increases in blood viscosity and clotting time, fibrinolysis, and platelet aggregation which increase risk of thromboembolism; (2) significant increase in the neuroendocrine secretion of catecholamines and cortisol resulting in

increases in cardiac output, shock, excessive vasoconstriction, intestinal ischemia, and hypoxic tissue damage, and (3) increases in ventilation with potential increased risk of respiratory alkalosis. Further, anxiety has been associated with decreases in pain threshold to the point that all sensation is interpreted by the patient as pain (Walton & Torabinejad, 1992).

As acute pain is expected to be of short duration, treatment suggestions by the medical profession often include suggestions to adopt less active behaviour patterns and to 'let pain be your guide'. These types of responses are generally viewed by the patient and medical staff as adaptive and are expected to result in the relief of pain. Whilst this type of deactivation is strongly reinforced, it is done so on the expectation that it will be a temporary behaviour pattern that will cease once the pain reduces and normal activity should be resuming.

Transient pain is a form of acute pain experienced when nociception is activated without actual tissue damage, such as in the case pain induced in laboratory settings. This category is important to note as a significant body of pain research and much of our understandings of the mechanisms of pain transmission have been based on transient pain.

1.2.2 Sub-acute/persistent acute pain

Gatchel (1996) proposes a broad conceptual model of the stages of pain and accompanying psychosocial distress during the transition from acute to chronic pain. These stages correspond with the generally accepted conceptualisation of acute, sub acute, pre-chronic and chronic pain. According to Gatchel, stage one (the sub-acute stage) is associated with psychological distress characterised by emotional responses such as fear and anxiety based on perception of the pain during the acute stage. Patients in the sub-acute stage often associate hurt with harm and this type of reaction serves to maintain and exacerbate the experience of pain and hinder the reactivation that usually occurs in the recovery from acute pain. Gatchel (1996) proposes that if pain persists beyond two to four months, there is often a progression to stage two (the pre-chronic stage).

1.2.3 Pre-Chronic Pain

In the pre-chronic stage, pain has persisted past the acute stage and efforts to increase activity have generally led to correspondingly increased levels of pain and discomfort. The intensity is perceived as intolerable and leads to decreased activity and/or increased use of analgesic medication; the decreased pain on deactivation and the use of analgesics then become positive reinforcers. During the pre-chronic stage, social and medical tolerance and supports may be decreasing and there may be pressure for the individual to return to pre-injury social and vocational activities before they are cognitively, behaviorally and affectively ready to do so. This often leads to a

high failure rate when attempts to return to normal activity are made, and confirmation of their belief that they are helpless in managing their disability.

Fisher, Goldstein and Buongiorno (1990) developed a pain curve, which describes both the progression and recovery of the illness process (see Figure1.0). The model is used primarily as an educational tool for educating and assisting patients but may also be used as a screening tool in assessing stage of chronicity. As with the models described earlier, the pain curve identifies early, middle and crucial phases (this generally corresponds with acute, pre-chronic and chronic stages). Fisher et al. (1990) contend that when clients progress to the middle (pre-chronic) stage (three to six months) a chronic pain cycle begins to emerge with decreased mobility and social support, increases in frustration, depression and hopelessness.

According to Fisher et al. (1990) the dominant symptom in the second stage of the curve is denial of chronicity. This denial impedes self-management attempts, as the client believes that a cure will be imminent. This type of belief often leads to multiple surgeries and trials of medications, and a downward spiral into the third (chronic) stage, as these methods prove unsuccessful. Involvement in litigation and compensation systems often occurs at this stage with payments contingent on continued pain and disability. This can act as a further disincentive to improvement and may lead to the development of long-term maladaptive responses that are associated with chronic pain.

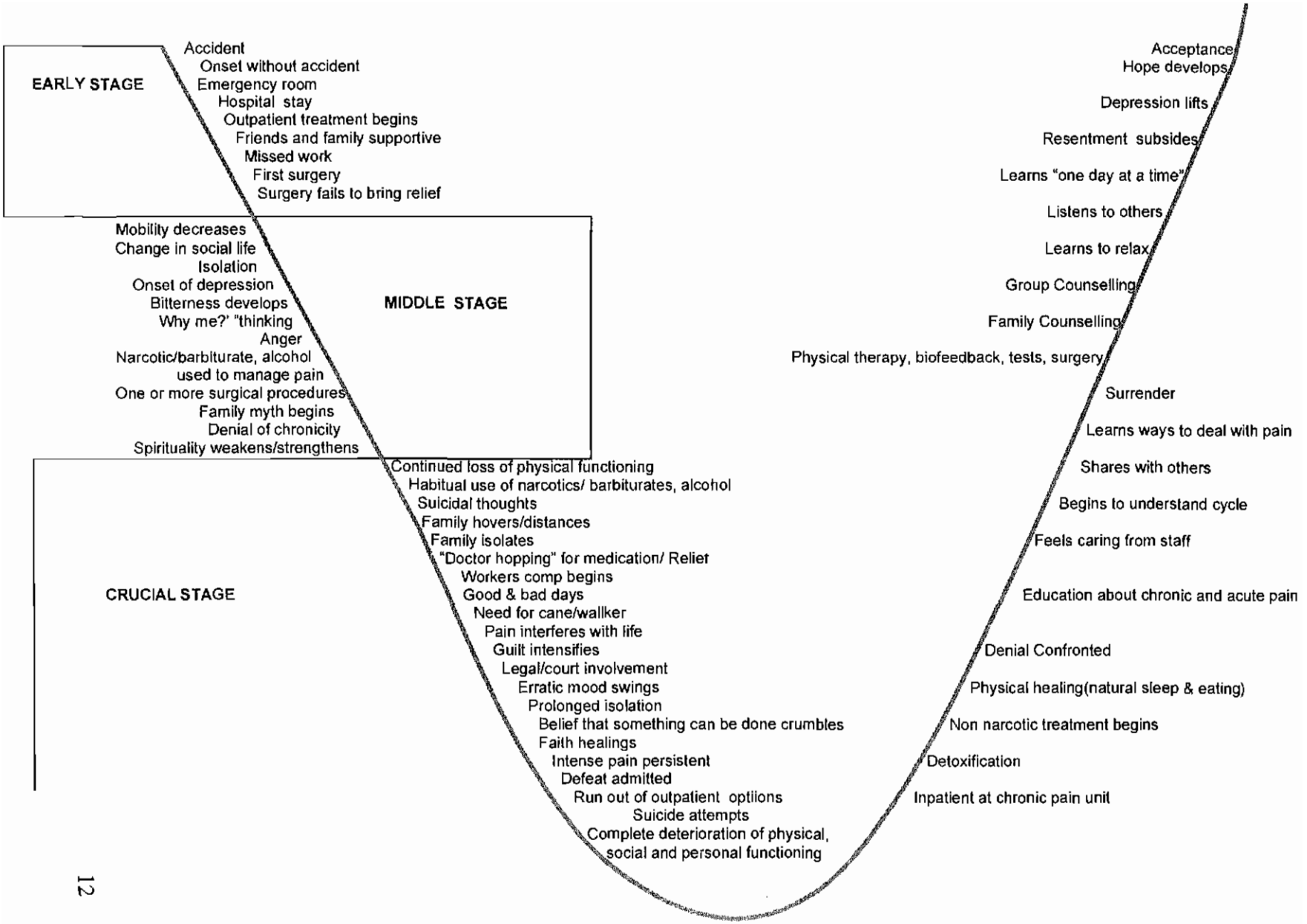

Figure 1.1 Progression and recovery of chronic pain (Fisher, Goldstein & Buongiorno, 1990)

1.2.4 Chronic Pain

Chronic pain has been defined by the IASP as pain that persists for more than three months (Merskey, 1986). However Dworkin and Banks (1999) note that within the pain literature, chronic pain is defined differently across different studies, with three months and six months being the minimum durations most commonly used. Some authors (e.g., Dworkin, et al., 1997; Lydick, Epstein, Himmelberger & White, 1995) also recommend that pain *intensity* be combined with pain *duration* (comprising the total 'burden' experienced by the individual) in order to define chronic pain. Unlike acute pain, chronic pain may have no known pathology or nociceptive input, and it is often accompanied by disturbed psychosocial functioning and associated epiphenomena including substance dependency, increased physical inactivity, and interpersonal conflict with family and health-care providers. Chronic pain is also reported to have negative impact on other aspects of cognition including concentration and memory (Dufton, 1989).

Chronic pain is described by Fisher et al. (1990) as 'a process of de-compensation not unlike any other chronic disease or illness'. In the chronic stage, the client may be experiencing dependence on opiods, suicidal thinking, family dysfunction and increased physical disability. Fisher et al. contend that near the end of the chronic (crucial) stage, many patients experience a change in their belief that something can be done for their pain, and this relinquishing of the 'quick fix' myth can have devastating effects (including complete social, physical and emotional deterioration and high risk for suicide) if appropriate

supports are not available. It is at this stage that clients are usually referred for multidisciplinary treatment incorporating psychological approaches

Whilst the social, psychological and behavioural factors that contribute to the development and maintenance of chronic pain may in fact be considered adaptive in the acute stage of pain, they become increasingly maladaptive as pain persists. Fordyce and his colleagues (1968) argued that it is the extension of *time* that allows for strong associations and reinforcers (e.g., attention and medication) to develop maladaptive coping strategies in the chronic pain syndrome patient.

Part 2

1.3 Research Focus

Multidisciplinary programs that emphasise a self-management approach to chronic pain have become widely available and provide an alternative to traditional purely medical approaches. In contrast to the medical approach, psychologically based treatments for pain require the patient to make substantial changes in both their beliefs about pain and the way in which they cope with pain. Implicit in this approach is the assumption that the patient is motivated to engage in and maintain the treatment recommendations.

Although there is a growing body of literature providing support for the efficacy of multi-disciplinary programs that emphasise a self-management approach to chronic pain (e.g., Keefe et al., 1992; Compas et al., 1998; Morley et al.,

1999), other efficacy reviews maintain that a significant proportion of individuals fail to engage in these types of pain treatments, drop-outs during treatment are common, and 30-70% of patients who do engage in and complete treatment relapse over a one to five year period (Keefe, Gil & Rose, 1986; Turk & Rudy, 1991).

There have been a number of prior research attempts to identify variables which predict successful outcome in self-management pain programs in order to modify treatment and increase rates of engagement, adherence and maintenance of treatment gains (e.g., King & Snow, 1989; Carosella, Lackner & Feurstein, 1994) and although a range of variables have been identified (e.g., unrealistic expectations of treatment, lack of family support, involvement in litigation, disability payments, co-morbid depression, substance abuse), these findings have been inconsistent and unreliable, therefore contributing little to modifying and improving interventions.

Jensen (1996) contends that a treatment can only be effective if the client is ready (motivated) to change and that motivation should be assessed and enhanced prior to treatment. Motivation to adopt a self-management approach to pain has recently been examined as a critical factor in determining engagement in and maintenance of treatment recommendations and has culminated in the preliminary development of the Pain Stages of Change model (Kerns, et al., 1997; Kerns & Rosenberg, 2000).

The Pain Stages of Change model proposed by Kerns and his colleagues incorporates both the principles of the Transtheoretical Model of Stages of Behaviour Change (Prochaska & DiClemente, 1982) and a cognitive-behavioural conceptualisation of chronic pain. The aim of the model is to correctly classify individuals into stages of readiness to adopt a self-management approach to pain in order to assign them to stage-specific interventions. The broad objective of Study 1 (a questionnaire survey) was to determine whether the Pain Stages of Change model is useful as a theoretical framework for investigating readiness to adopt a self-management approach to pain in a non pain-clinic sample.

1.4 Research Overview and Aims

This research comprises a series of three studies. Study 1 demonstrated a number of significant limitations of the Pain Stages of Change model and raised questions about the clinical usefulness of the Pain Stages of Change Questionnaire and the current form of the Pain Stages of Change model. Study 2a comprised a series of qualitative interviews with a sub-sample of the participants in Study 1. The study aimed to inform an alternative or expanded conceptualisation of readiness to adopt a self-management approach to pain and assist in the development of a structured clinical interview questionnaire that could form the basis of a brief motivational intervention.

Study 2b described the development of the Readiness to Adopt a Self-Management Approach to Pain Questionnaire (RASMAP-Q), a clinical tool that

utilises the principles of motivational interviewing (Miller & Rollnick, 1991). The RASMAP-Q comprehensively assesses readiness to adopt a self-management to pain and provides a framework to facilitate feedback of those assessment results in a manner that enhances motivation to change. The primary aim of using the RASMAP-Q is to increase both rates of engagement in treatment and adherence to treatment recommendations.

Study 3 comprised a randomised, controlled trial designed to test the efficacy of the RASMAP-Q. The study compared rates of engagement in treatment, and adherence to treatment recommendations, between a group that had been administered the RASMAP-Q intervention, and a control group that received a standard pain assessment (treatment as usual). The 78 participants were administered an intervention or control assessment interview in week one, and an intervention or control feedback interview in week two. Participants in both groups were invited to attend up to five pain management group workshops two weeks subsequent to the initial interview. In order to explore changes in readiness to adopt a self-management approach, the participants were assessed prior to the assessment interview (pre-intervention), immediately after the feedback interview (post-intervention), immediately after the pain management workshops (post-workshop), at a four-week follow-up, and again at a six-month follow-up.

Given the trend for self-management approaches to treat pain, issues of motivation and treatment adherence are becoming increasingly important in

order to refine existing interventions, however, there is a paucity of published literature investigating and examining these issues in relation to stages of change. It is anticipated that the current research will significantly expand the current conceptualisation of stages of change in relation to the complex nature of chronic pain and will demonstrate a brief and effective intervention that will increase engagement in self-management approaches and maintenance of treatment gains.

1.5 Organisation of the Thesis

Chapter Two outlines the history of pain from the ancient civilizations through the Middle Ages to the 21st Century. The final section in this chapter examines the role of self-management in chronic pain and places this strategy in the context of current medical technology, health care systems and the patient as a consumer in a global economy.

Chapter 3 introduces the role of motivation in engagement in treatment and adherence to treatment recommendations. The Transtheoretical model of stages of behaviour change is described and discussed in relation to measuring stage of change and stage-based interventions.

Chapter 4 describes and discusses Study 1, a questionnaire survey, and includes a review of the literature relating to stages of change and chronic pain. In Chapter 5, the results of Study 2a, a series of qualitative interviews is presented. The aims of Study 2a were to gain further insight into the way in

which individuals conceptualise and operationalise a self-management approach to pain and to expand and improve the pain stages of change model. Discrepancies between practitioner and patient understandings of what constitutes a self-management approach are highlighted and discussed.

Chapters 3, 4 and 5 explore our understanding of how individuals change in relation to their readiness to adopt a self-management approach to pain, and the deficiencies in our current theoretical explanations and means of assessing change in this context. The aim of Chapter 6 was to describe the rationale for, and construction of, a clinical tool that attempts to address some of the issues identified. The Readiness to Adopt a Self-Management Approach to Pain Questionnaire (RASMAP-Q) was developed in order to provide a more comprehensive evaluation of an individual's readiness to change and forms the framework of a brief motivational intervention. Part one of Chapter 6 provides an overview of Motivational Interviewing and brief motivational intervention. Part two describes the development and structure of the RASMAP-Q.

Chapter 7 describes Study 3, a randomised controlled trial to evaluate the efficacy of the RASMAP-Q intervention. This chapter describes the study design and methodology. The results of Study 3 are presented in Chapter 8. Chapter 9 presents a summary and discussion of the results of Study 3 and final conclusions relating to the research as a whole.

CHAPTER 2

Historical Background and Current Conceptualisation and Treatment of Pain

2.0 Overview of Chapter 2

2.1 Ancient Civilizations

2.2 The Middle Ages

2.3 The Seventeenth, Eighteenth and Nineteenth Centuries

2.4 The 20th Century

2.4.1 Gate Control Theory

2.4.2 Operant Theory

2.4.3 Cognitive-Behavioural Model

2.5 Current Conceptualisation of Pain

2.5.1 Biopsychosocial Models

2.5.2 Psychological Processes in Chronic Pain

2.6 Interventions for Pain Management

2.6.1 Cognitive–behavioural Approaches

2.6.2 Engagement, Adherence and Attrition

2.6.3 A Self-Management Approach to Chronic Pain

2.0 Overview of Chapter 2

Historically, attempts to manage pain have been aligned with the way in which pain is conceptualised, assessed and evaluated. Within the medical model, the main focus has been on identifying the cause of the reported pain, after which the source was treated with pharmaceutical or surgical intervention. In the absence of actual tissue damage, it was assumed that the pain was psychological in nature (psychogenic) (Gatchel, 1999).

This dichotomous explanation of pain has proved to be unsatisfactory, and it has become apparent that both physical and psychological factors contribute to the experience of pain and reporting of symptomatology in some patients (Gatchel, 1999). Pain is now more commonly considered from a biopsychosocial perspective that describes and takes into account the interaction of nociceptive sensory stimulation, psychological factors (including affective, cognitive and behavioural) and socio-environmental factors (including, ethno-cultural beliefs and reinforcement from family and health care professionals).

Generally, our understanding of pain has reflected the dominant philosophical paradigms and historical changes of each era. In order to fully understand the current methods and rationale for managing chronic pain, it is important to at least briefly review the history of our conceptualisation and treatment of pain. What was originally thought to be a relatively simple process, pain=injury, is

now known to be a complex and often bewildering condition, particularly as it relates to chronic pain.

2.1 Ancient civilizations

Notions of pain, its characteristics, development and treatment have been described since earliest recorded history across every civilization and culture and "has been one of the basic themes of human experience which all of the world's religions have sought to encompass and explain" (Harris, 1999, p.10). Descriptions of pain have been mentioned in Egyptian papyri from as early as 4000BC. Krusen (1941, in Bonica, 1990b) reported that the Ancient Egyptians believed pain was created either by infliction of a wound, by the influences of their gods (particularly Seth and Sekhamet) or by the spirits of the dead which entered the body by way of the nostril or the ear and departed via vomit, urine, sweat or sneezing. Bonica (1990b) notes that the concept that the heart was the center for sensation (*sensorium commune*) originated in Ancient Egypt and continued for a further 2000 years.

In Ancient China, the *Huang Ti Nei Ching Su Wen,* the Chinese canon of medicine, originates back to around 2600BC and continues to influence traditional Chinese medicine practiced today. The concepts of balance (Yin and Yang) and energy (chi) are central to the understanding from this perspective, with obstructions in the chi being thought to cause imbalance, resulting in disease and/ or pain. Acupuncture therapy originates from ancient China, almost 2000 ago, and is believed to correct the imbalance and

therefore eliminate pain. In ancient India, Hindu and Buhddist thought recognised pain as a sensation, and as with the Ancient Egyptians, placed great significance on the heart as the centre for the emotional experience of pain.

Buddha in 500BC, attributed pain experienced in life, to the frustration of desires;

> Birth is attended with pain, decay is painful, disease is painful, death is painful. Union with the unpleasant is painful; painful is the separation from the pleasant and any craving that is unsatisfied, that too is painful (Lin Yutang, cited in Keele, 1957, p. 7).

In Ancient Greece, preliminary interest in the study of the senses gave rise to the theory of four humors: blood, phlegm, yellow bile and black bile proposed by Hippocrates (where pain is felt when one of the humors is in deficit or excess) and the notion that the brain (and not the heart) was the center for sensation including pain. Generally however, this idea was rejected, and thought concerning the relationship between mind and body was mirrored by Aristotle, who believed that pain sensation is an emotional rather than physical phenomenon. The suggestion behind the ideas of philosophers such as Aristotle was that, because pain was an emotion, it was beyond treatment by physicians and surgeons and rather, should be overcome, through logic and refutation as opposed to medical intervention. Religious leaders also believed that pain was beyond the scope of the

medical profession; they proposed that pain was sent from the Gods as punishment for sin and, as such, that it was inappropriate to treat as having an organic cause. It was not until the death of Aristotle that the view that the brain was the center for sensation gained acceptance based on anatomical evidence that the brain and the nervous system were connected and that the brain was responsible for movement and sensation (Bonica, 1990b).

In Ancient Rome, the findings of the Ancient Egyptians and Ancient Greeks were largely ignored until the studies of Galen (A.D. 131-200), a physician educated in Greece and Egypt, re-established and confirmed the role of the central and peripheral nervous system. Galen (1968) proposed a theory of sensation that derived from three types of nerves connected with function. According to Galen, 'soft' nerves were related to sensory function, 'hard' nerves were concerned with motor function, and a third type related to pain sensation. However despite the theory proposed by Galen, Aristotelian concepts dominated the conceptualisation of pain for over twenty centuries.

2.2 The Middle Ages

The advent of physical medicine during the Renaissance in the seventeenth century stimulated enormous developments in the scientific study of anatomy, physiology and physics and created a revolution in the way pain was conceptualised and treated. The view that pain was pure affect came to be considered unscientific as research continued to explore and explain the mechanisms of physical function based on objective quantification rather than

mythology or commonsense. During this era, the mind and soul were thought to function separately from the body and were relegated to consideration from a religious and philosophical viewpoint. The main center for the study of medicine during the Renaissance was in Arabia, where Avicenna (AD 980-1038) a physician with a particular interest in pain and its relief (including heat, massage, exercise and opioids) compiled a text in which he described the eitiology and treatment for 15 types of pain (Bonica, 1990b). Other influential works, including the anatomy text *De Humani Corporis* by Dutch physician Andreas Vesalius and the study of English physician William Harvey describing the function of the heart in relation to circulation, marked the advent of a biomedical reductionism approach and a dualistic understanding of mind and body functions (Harris, 1999).

2.3 The Seventeenth, Eighteenth and Nineteenth Centuries

The biomedical reductionist philosophy of medicine was developed further in relation to pain by the French philosopher Rene Descartes (1664), whose dualist description of pain responses explained the individuals' experience of pain in a simple and mechanistic manner. Descartes asserted that pain was purely a functional mechanism that signaled bodily damage and that the mind was incapable of affecting the body in any direct way. In his conceptualisation of pain mechanisms, Descartes believed that the pain system was a direct pathway from the pain site to the brain and provided the analogy of a bell-ringing mechanism in a church where if one pulls the rope at the bottom, the bell will ring at the top. The philosophy exemplified by Descartes significantly

influenced scientific research into pain phenomena prior to the advent of modern physiology and sensory psychophysics in the second half of the 19th century (Horn & Munafo, 1997).

The scientific study of pain was further influenced by the work of Johannes Muller who proposed 'The Doctrine of Specific Nerve Energies' (1842, in Bonica, 1990b) in which he developed the concept of sensation being the result of activity of peripheral nerves leading to the brain, and the five classical senses,- sight, sound, smell, taste and touch. Muller proposed that pain comprised a subcategory of the sensation of touch, an assertion that stimulated a surge of debate and research into all aspects of sensation.

The sensory systems approach was later refined and extended by Von Frey in 1894 (Bonica, 1990b), with the proposal that there exist four major cutaneous modalities - pain, warmth, cold and touch - that utilise separate sensory receptors and that separate peripheral and central channels relate to each corresponding type of somatic sensation. Gatchel (1999) notes, however, that the development of Von Frey's *specificity theory of pain* was paralleled by research in 1894 by Goldschneider who proposed a *summation theory of pain.* Goldschneider expanded the ideas of Erb in 1874, who claimed that pain could result from every sensory stimulus if it was applied with sufficient intensity. According to Goldschneider, different patterns and qualities of these transmissions produced by the summation of skin sensory input at the dorsal horn cause differences in sensation and are a function of central nervous

system involvement rather than being the result of a specific and direct connection between the pain site and pain receptors.

Whilst these two main approaches led to the search for distinct pain receptors and centers in the brain, and many of these findings have contributed greatly to our current understanding of the neurophysiology of pain, there remain many factors which can not be explained by either theory. In particular the role of psychological factors in the experience of pain could not be explained by the dualist, mechanistic theories of pain. These shortcomings were addressed in part by the influential works of Sigmund Freud (1856-1939) who sought to demonstrate the influence of the mind on the body. The psychoanalytic model developed by Freud emphasised the role of unconscious processes and explained pain as a somatic expression of unresolved emotional conflict. Subsequently, the 20th Century heralded a resurgence in an holistic approach to disease and pain and the development of the field of psychosomatic medicine (Harris, 1999).

2.4 The 20th Century

2.4.1 Gate Control Theory

One of the most influential theories to be developed in the 20th Century was the Gate-Control model proposed by Ronald Melzack and Patrick Wall (1965), who sought to take into account the evidence for, and address the deficiencies of the specificity and summation theories. In contrast to earlier models, the Gate-Control theory proposed that rather than nociceptive input projecting directly

from the dorsal horn to the thalamus, the brain receives nociceptive information at the same time, and on the same system, as other sensory input. Melzack and Wall argue that the brain is able to recognise and decode certain patterns of incoming signals (perhaps created by firing rates) that lead to pain perception. According to the Gate-Control theory, the transmission of nerve impulses is modulated by a gating mechanism in the dorsal horn. The relative amount of activity in large-diameter (L) and small-diameter (S) descending fibres is thought to influence the spinal gating mechanism, with activity in large fibres tending to inhibit transmission (close the gate) and small-fibre activity tending to facilitate transmission (open the gate).

In 1968, Melzack and Casey expanded the theory to include more recently acquired evidence from physiological research pertaining to cognitive, affective and motivational processes occurring beyond the gating mechanism. Mezack and Casey proposed that the pain experience consists of the following three distinct dimensions which are activated simultaneously.

(1) The *sensory-discriminative* dimension comprises the experience of location, intensity and quality of the painful sensation. This dimension also includes other spatial and temporal characteristics of the pain experience. Price (1988) comments that many of the words used by clients to describe their pain imply *intrusion* (e.g., boring, stabbing, cutting, burning and shooting). He adds that it is these types of sensory features that distinguishes pain from other somatic sensations that are perceived as confined both spatially and temporally.

(2) The *cognitive –evaluative* dimension comprises the ongoing perception and appraisal of the meaning of what is taking place in relation to the pain sensation. According to Price (1988) this dimension of pain is affected by the client's attributions about the source and outcome of the pain and the perceived context in which the pain occurs. These cognitions lead to associated emotional and behavioural responses that may be either adaptive coping strategies or maladaptive and dysfunctional pain behaviours.

(3) The *affective-motivational* dimension is closely linked to the cognitive-evaluative dimension and comprises the felt sense of experienced meanings in relationship to one's desire and expectations of avoiding harm. Melzack and Casey (1968) assert that the nature and intensity of pain-related emotions is determined by these two factors.

This tri-dimensional explanation of pain postulates that pain sensation, arousal, meanings and emotional responses occur and interact with each other simultaneously.

The development of the Gate-Control model addressed many of the deficiencies of the summation and specificity theories and stimulated considerable research. However, the theory was described as limited, on the basis that the tenets of the theory were too general and that it lacked quantitative specifications regarding the magnitude of the proposed interactions (Schmidt, 1972; Nathan, 1976). In their defense, Melzack and

Wall (1982) argued that the original model on which Gate-Control theory was developed was based on incomplete data because limitations in technological understandings restricted their ability to test certain aspects of the theory.

In further revised and modified versions of Gate-Control theory (Melzack & Wall, 1982), it was acknowledged that in addition to the large and small diameter fibres that are capable of excitatory or inhibitory functions, there also exists an inhibitory brainstem system which projects down the dorsal horn of the spinal chord (Strong, 1996). Chemical substances (including opioids, serotonin, noradrenaline, and Gamma Amino Butyric Acid –GABA) and nerve impulses are relayed back down the spinal cord to inhibit nociceptive transmission in the dorsal horn.

During the 1970s, stimulation of brain sites received substantial research attention with the discovery that stimulation of areas in the brainstem produced significant lasting analgesia with little adverse effect on other functions (Bandler et al., 1999). Since these discoveries, there has been an accumulating body of pharmacological and anatomical research to substantiate the idea of descending modulation. These studies encompass a number of scientific methods including tracking anatomical connections, lesioning, electrical stimulation, chemical stimulation, administration of antagonists (e.g., naloxone) and detection of receptors. The findings of these research studies indicate descending modulation occurs at a number of sites in the brain and the spinal cord. Stimulation of the somatosensory cortex in

the forebrain decreases nociceptive responses in the Periaqueductal Gray (PAG), an area of the mid-brain shown to be important in controlling pain behaviours, and the Periventricular Gray (PVG) that transmits descending inhibitory messages. Lower in the brainstem, the Pons and the Locus Ceruleus also produce analgesia on stimulation. Below this site, the Medulla receives inhibitory messages from the PAG. Also located in this area are the Nucleus Raphe Magnus and the Nucleus Reticularis Para Gigantocellularis that transmit inhibitory messages to the dorsal horn. Within the dorsal horn, inhibitory interneurons receive inputs from both segmental and descending pathways and at this site, inhibition has been shown to occur both pre-synapticaly and post-synapticaly (Bandler et al., 1999).

The Gate-Control model continues to be a commonly utilised theoretical framework for psychological management of pain. The strength of Gate-Control theory appears to be its conceptual framework, which allows for an understanding of the multi-dimensional nature of pain. At the same time, however, the Gate-Control theory has never been fully supported and there are aspects of the theory that remain unanswered. In particular, it has been shown that large fibres can inhibit a number of pathways and their ability to specifically *select* nociceptive pathways has yet to be demonstrated (Bandler et al., 1999). At the clinical level, however, an understanding of the neurobiological processes underpinning nociceptive transmission and Gate-Control theory (particularly descending modulation) suggests a role for

cognitive and behavioural techniques in the management of pain and converges well with the biopsychosocial approach (Gatchel, 1999).

2.4.2 Operant Theory

Subsequent to the introduction of the Gate-Control theory, increasing dissatisfaction with the underlying psychoanalytic explanations of disease and their lack of scientific basis led to the emergence of cognitive and behavioural approaches that could more easily be supported by scientific and objective research. In 1968, Wilbert E. Fordyce published influential reports describing the use of operant techniques for management of chronic pain (Fordyce, et al., 1968; Fordyce, Fowler, Lehmann & Delateur, 1968). These publications described behavioural techniques which focused directly on the behaviour and actions of the patients and their families in order to improve function, rather than presuming a physiological cause for the pain (Roberts, 1986). Operant conditioning is a behavioural model of learning based on theory that asserts that "all overt behavioural responses are significantly influenced by their consequences and the surrounding context in which they are emitted" (Sanders, 1996, p. 112). The application of operant techniques to the study and treatment of chronic pain revolutionised the way in which pain was conceptualised and provided the basis for extensive research and clinical application.

Whilst the operant approach took into account psychological factors, it did not presume they are derived from psychopathology, rather, Fordyce

hypothesised that those factors or pain behaviours are learned as a direct consequence of reinforcement in the individual's environment. This approach is less concerned with underlying etiology and focuses on behaviours that decrease functional ability. The two main criticisms of operant techniques are firstly that the methodology of research assessing the techniques are inadequate to draw any meaningful conclusions from, and secondly that operant methods do not alleviate the pain, rather they teach the client to live with the pain (Roberts, 1986).

In response to the first criticism, it is generally agreed that pain behaviours are affected by social reinforcement and operant techniques are derived from this hypothesis. Whilst historically it has been difficult to determine what the 'active' component is in complex operant intervention programs, the consistency of positive outcomes supports the effectiveness of this type of technique (e.g., Sternbach, 1974; Fordyce, 1976; Roberts & Reinhardt, 1980). More recently however, empirical substantiation of the value of operant conditioning for chronic pain has begun to accumulate (Flor, Turk & Rudy, 1989; Romano et al., 1992) and operant methods are currently being used in many multidisciplinary clinical programs (Sanders, 1996). With respect to the second criticism that operant methods encourage stoicism and do not reduce pain, proponents of operant techniques argue that it is not the aim of this type of treatment to reduce or 'unlearn' *pain* per se, rather the goal is to reduce excess disability (i.e., 'unlearn' pain *behaviour*). Based on learning theory, attention is used to increase, decrease or maintain selected

behaviours in order to increase improvements in function (Robinson & Riley, 1999).

2.4.3 Cognitive-Behavioural Models

Interest in cognitive factors in the development and maintenance of pain grew from behavioural models and the recognition that cognitions (thoughts, beliefs and attributions about pain) affect pain behaviour. Cognitive–behavioral approaches to chronic pain evolved with the application of cognitive–behavioural theory to more traditional psychological problems, as it became apparent that there were difficulties in generalising the effects of operant techniques beyond the immediate treatment setting. It was anticipated by early cognitive-behavioural therapists that this type of treatment would both enhance generalisation, and help to discern and manage certain aspects of chronic pain that were not affected by purely behavioural techniques (Holzman, Turk & Kerns, 1986).

The earliest reported study to demonstrate the role and importance of cognitive factors in the experience of pain, was the classic study of Beecher in 1956. Beecher studied requests made for painkilling medications by hospitalised soldiers who had wounds inflicted in combat in the battle of Anzio, and compared them with requests for medication by civilians with comparable surgical wounds. Beecher reported that only 25% of the soldiers requested pain medication and described their pain as minimal whereas more that 80% of the civilians requested pain medication.

The findings were interpreted by Beecher as demonstrating that a person's emotional state and their 'secondary gain' (i.e. in this instance, leaving the life-threatening combat zone and returning to the comfort and safety of home) significantly affected their experience of pain. Since the pioneering work of Beecher, a number of studies and theories have sought to further demonstrate and explain the importance of cognitive and behavioural processes in relation to pain perception (Horn & Munafo, 1997). In particular, Turk and his colleagues have described cognitive-behavioural models for explaining pain phenomena, and proposed the following five main assumptions underlying a cognitive-behavioural approach to pain:

1. Individual's responses to pain are a function of appraisals and expectations based on their learning history rather than being contingent on direct consequences of their behaviour.

2. The experience of pain is the result of a complex interaction between thoughts, feelings, physiology and behaviour.

3. Behaviour is reciprocally determined by the individual and the environment.

4. Interventions need to address the individual's learned maladaptive ways of thinking, feeling and behaving.

5. As individuals play an active role in the development and maintenance of chronic pain, they should also be active agents in the process of change.

Cognitive–behavioural approaches were seen to be highly compatible with Melzack and Wall's (1965) Gate-Control theory of pain which provided evidence for and described, the interaction between cognitions and the

sensory, affective, motivational and evaluative components of the pain experience (Robinson & Riley, 1999).

2.5 Current Conceptualisation of Pain

2.5.1 Biopsychosocial Models

More recently, a number of biopsychosocial models have been considered. These perspectives describe and take into account the interaction of nociceptive sensory stimulation, psychological factors (including affective, cognitive and behavioural) and socio-environmental factors (including ethno-cultural beliefs and reinforcement from family and health care professionals). From these perspectives, a patient's responses to illness are shaped by the dynamic interrelationships between biological change, psychological status and social and cultural contexts. According to the biopsychosocial models, biological factors affect the transmission of pain messages, psychological factors determine how pain is interpreted and perceived and social/environmental factors provide incentives or disincentives for maintenance of, or recovery from, pain, thus shaping the behavioural response of the patient (Turk, 1996).

In 1992, Dworkin, Von Korff, and Le Resche proposed a biopsychosocial model of pain that incorporated three components of epidemiology (the population perspective, the developmental perspective and the ecological perspective) and described a dynamic interaction between physiological factors affecting nociception, psychological factors affecting pain perception

and social and environmental factors that affect pain behaviours (Dworkin & Banks, 1999). This model differs from the traditional biopsychosocial perspective in that it emphasises the dynamic nature of the interaction at different points in time. Dworkin and his colleagues introduced a time construct to the model that operationalised across two dimensions, both the lifespan development dimension and the natural history of pain dimension.

Flor and her colleagues (Flor & Birbaumer, 1994; Flor, Birbaumer & Turk, 1990; Turk & Flor, 1984) presented a diathesis–stress model from within a biopsychosocial perspective that emphasised the interaction between psychological and biological variables. The model proposed that pre-morbid vulnerabilities interact with stressors, and that maintenance of chronic pain is affected by operant, respondent and observational learning processes. A similar model was developed by Kerns and his colleagues (Kerns & Jacob, 1995; Kerns & Payne, 1996) who proposed that an individual may have a number of pre-existing cognitive, biological, affective, social or behavioural vulnerabilities (diathesis) that predisposes them to risk of developing chronic pain subsequent to experiencing acute pain (the stressor).

The primary limitations of both the biopsychosocial models and the diathesis–stress models are twofold. Firstly, the models are primarily conceptual in nature and lack specific testable predictions because of an inadequate basis on which to test specific hypotheses. Secondly, while the models propose that there is an interaction between various factors in the

development of chronic pain, the factors that are necessary and those that are sufficient has not been specified, nor has the manner in which these factors may interact (e.g., additive or multiplicative) (Dworkin & Banks, 1999).

Turk and Flor (1999) later proposed a bio-behavioural model to explain chronic pain. The first component of the model is a physiological predisposition or diathesis consisting of a reduced threshold for nociceptive activation due to either genetic variables, previous trauma or social learning experience resulting in a "physiological response that is stereotypical of the specific body system" (p. 30). Turk and Flor (1999) propose that although the predisposition to develop chronic pain is necessary, it is not sufficient. Persistent excessive (in terms of intensity or duration) aversive stimuli with negative connotations are proposed to activate the sympathetic nervous system and initiate avoidance responses in individuals with inadequate or maladaptive cognitive and or behavioural coping skills, and operant learning is thought to maintain the pain experience. Recent research using electroencephalography (EEG) in chronic pain patients (Flor et al., 1997; Lutzenberger, Flor & Birbaumer, 1997) has demonstrated that these types of operant learning processes lead to the formation of pain memories retained in the primary somatosensory cortex, and that learned pain memories affect physiological processing of pain.

2.5.2 Psychological Processes in Chronic Pain

The role of psychological processes on the etiology, exacerbation and maintenance of chronic pain has stimulated considerable interest and has provided a multi-disciplinary perspective on pain in what was previously a predominantly physiologically dominated domain. Psychological interventions have been incorporated into multidisciplinary programs for chronic pain, as research has shown that the manner in which pain is perceived influences psychological and physical adjustment. Cognitive changes have been shown to be related to improvements in pain, disability and distress and contribute substantially to long-term outcome (Turk, Michenbaum, & Genest, 1983).

Early research in pain management intervention was designed to test aspects of psychological theory. For example, attribution theory states that individuals seek explanations for the events that take place around them. Davison and Valins (1969) demonstrated how pain tolerance may be increased when individuals are taught to attribute pain tolerance changes to their own strategies as opposed to the effects of a medication. Attribution of control has since been used as an important treatment component of low-back pain interventions. Locus of control in clients with chronic pain has recently been receiving much research attention with studies showing that clients who score higher on measures of internal locus of control report lower levels of pain (e.g., Sternbach, 1986; Toomey, Mann, Abashian, & Thompson-Pope, 1991).

Coping as a cognitive variable has also stimulated a significant amount of research interest. Weisenberg (1987) contends that effective coping depends on individual's assessment of their competence to manage a situation; the individual must *believe* that they possess the relevant skills and that they are capable of using them if necessary. In a comprehensive review of the literature on coping and chronic pain Turner (1991) reported two main conclusions, firstly, chronic pain clients who tend to use passive coping strategies such as praying, hoping and catastrophising typically have higher levels of disability (both physiological and psychological). Secondly, clients who rate their perceived coping as being high function much more effectively.

Research has shown that thoughts can affect sympathetic arousal and muscle tension (e.g., Flor, Turk & Birbaumer, 1985; Flor et al., 1992), central opioid activity (e.g., Maier, Dugan, Grau & Hyson, 1984; Bandura et al., 1987), pain behaviour, coping strategies and management ability (Turk, 1996) and as such, are critical to optimal treatment development and implementation. Turk (1996) contends that cognitive activity in chronic pain clients may

> "contribute to the exacerbation, attenuation, or maintenance of pain, pain behaviour, affective distress, and dysfunctional adjustment to chronic pain" (p.93).

A study reported by Reesor and Craig (1988) demonstrated that maladaptive cognitive processes may exaggerate or distort the client's experience of pain, thus contributing to and maintaining pain and pain behaviour, and

dysfunctional adjustment to chronic pain. Cognitive and cognitive-behavioural interventions focusing on 'cognitive errors' that may distort or amplify the client's experience of pain have been used both as the main treatment approach and as a combined treatment for many types of pain (e.g., headache, labour, low back pain, cancer pain and surgery preparation). However, whilst a review of the relevant research supports the effectiveness of cognitive strategies in the clinical setting, the active ingredient of these types of program is often difficult to identify (Keefe, Dunsmore, & Burnett, 1992).

2.6 Interventions for Pain Management

Medical treatment for chronic pain encompasses analgesic (opioid), anti-convulsant and anti-depressant medication, spinal cord stimulators and various types of surgery. Despite this range of treatment options, many individuals have persistent chronic pain. Currently, multi-disciplinary pain management programs are generally based on cognitive-behavioural techniques and focus on engaging individuals in a self-management approach.

2.6.1 Cognitive-Behavioural Therapy for Chronic Pain

Cognitive–behavioural approaches are seen to be highly compatible with Melzack and Wall's (1965) Gate Control theory of pain, which provides evidence for the cognitive and affective aspects of the experience of pain and in turn, implies the importance of a multi-dimensional approach to treatment. Cognitive–behavioural treatment of chronic pain includes all the fundamental

tenets of operant theory but also devotes attention to the cognitive and affective factors that influence behaviour (Bradley, 1996).

Numerous interventions based on cognitive-behavioural techniques have been developed for chronic pain (e.g., Linton, Bradley, Jensen, Spangfort, & Sundell, 1989; Keefe, et al., 1990a). Although they differ according to the condition they are designed to treat, they all share the same four essential components (1. education, 2. skills acquisition, 3. cognitive and behavioural rehearsal and 4. generalisation and maintenance). Within these components, the two fundamental objectives of cognitive-behavioural therapy for pain are; (a) to teach patients about the relation of pain to cognitive, affective and physiological variables in order to help them re-conceptualise their ability to control pain and (b) to teach patients skills that enable them to change the way they cope with pain (Keefe, Dunsmore, & Burnett, 1992).

In an attempt to determine the efficacy of cognitive-behavioural therapy, Compas et al. (1998) sampled empirically supported psychological treatments for chronic pain conditions including rheumatic diseases, chronic pain syndromes (e.g., back pain), migraine headache and irritable bowel syndrome. All of the five randomised, controlled studies of rheumatic diseases found improvements in psychological functioning and three demonstrated significant reductions in pain (Parker et al., 1995; Bradley et al., 1987; Keefe et al., 1990a). The only study that failed to demonstrate any improvement in outcome subsequent to CBT intervention used a sample of

patients who showed significant increases in clinical and laboratory measures of disease over the course of the study (Kraaimaat, Brons, Greenen & Bijlsma, 1995).

Four studies of chronic pain syndrome supported the efficacy of CBT (Nicholas et al., 1992; Phillips, 1987; Puder, 1988; Turner, 1982). All fou studies demonstrated that CBT increased function and three out of the four studies (the exception being Puder, 1988) reported decreases in pain. Cognitive-behavioural treatments were shown to be efficacious in treating migraine headaches, however, this type of treatment was not demonstrated to be superior to bio-feedback and simple relaxation training for this sub-group of chronic pain sufferers (Compas et al., 1998). When applied to sufferers of irritable bowel syndrome, cognitive-behavioural therapy was shown to reduce painful gastro-intestinal symptoms, or enhance psychological and behavioural functioning in studies comparing treatment with a symptom monitoring control group (Neff & Blanchard, 1987), a wait-list control group (Lynch & Zamble, 1989) or standardised medical care (Shaw et al., 1991).

Morley, Eccleston and Williams (1999) conducted a systematic review and meta-analysis of all randomised controlled trials of cognitive-behaviour therapy for adults with chronic pain (excluding headache) and concluded that the published studies provided clear evidence for the effectiveness of CBT in this population. However, as noted by Turk (1990) the generalisability of

these types of studies of pain-clinic patients to the wider population of chronic pain sufferers is questionable and rates of drop-out and relapse tend to be high with CBT interventions.

2.6.2 Engagement, Attrition and Adherence in CBT Programs for Chronic Pain

In an early review of the CBT literature, Turk and Rudy (1991) reported that 30-70% of chronic pain patients who were successfully treated subsequently relapsed. Dunbar-Jacob, Burke and Pucynksi (1995) add that up to 80% of chronic pain patients may be non-adherent at some point in their treatment, particularly in relation to medication adherence and exercise recommendations. With these figures in mind, it is reasonable to have reservations regarding the efficacy of treatment programs where attrition, relapse and non-adherence are not reported (Turk & Rudy, 1991; Kerns, Bayer & Findley, 1999).

One of the most consistent findings in the literature about treatment drop-out is discrepant expectations (Turk & Rudy, 1990). In particular, these expectations related to receiving medication, having symptomatic relief and participating in non-psychological treatment. In an attempt to further determine the reasons for treatment drop-out, Basler and Rehfisch (1990) interviewed individuals who had dropped-out of a 12-week pain treatment program. Compared to treatment completers, treatment drop-outs reported feelings of less acceptance in the group, less family support to complete

treatment and more unrealistic expectations regarding treatment outcome. In particular, drop-outs were more disillusioned with the idea of having to commit to active participation with regards to exercise and homework activities than completers. In a study by Coughlan, Ridout, Williams and Richardson (1995), pain-treatment drop-outs were found to have lower scores on self-efficacy and walked a lesser distance at pre-intervention than completers. Attrition from follow-up sessions was primarily predicted by higher levels of catastrophic thinking.

Richmond and Carmody (1999) examined drop-out from a twelve-week pain treatment program at pre-treatment, during treatment and at a nine-month follow-up session. Of the 100 participants that agreed to participate 38% dropped out prior to commencing the program, fourteen percent dropped-out during the program, one participant died subsequent to completing the post-treatment measures and seven percent failed to complete the nine-month follow-up. In total, 60% of the participants failed to complete the entire treatment program.

Richmond and Carmody (1999) reported that pre-treatment drop-out was best predicted by higher pain levels and lack of social support. These findings provide support for the earlier studies of Basler and Rehfisch (1990) and King and Snow (1989). Drop-out during treatment was reportedly related to unrealistic expectations regarding medication and treatment outcome, supporting the findings of Basler and Rehfisch (1990) and Turk and Rudy

(1990). Attrition from the nine-month follow-up session was found to be related to high levels of catastrophic thinking, which supports the findings of Coughlan et al. (1995).

In commenting on the findings of their study, Richmond and Carmody (1999) note that the rigorous physical activity required in such structured treatment programs requires active participation, attendance at multiple sessions over extended periods of time and daily home activities and practice, and that these factors may well have contributed to high rates of treatment drop-out.

A number of components have been added to treatment programs in an attempt to increase engagement in treatment and decrease relapse rates. Some treatment programs have increased in length, others have added a booster session or focused on the type of 'high risk' situations in which relapse often occurs (Marlatt & Gordon, 1985). However, no particular strategy has been shown to be reliably and consistently effective, and engagement, non-adherence, attrition and relapse rates continue to pose significant problems for chronic pain practitioners. These issues are increasingly coming into focus in the CBT research literature (Eccleston, 2001) as they limit the suitability (and cost-effectiveness) of these types of interventions for a significant sub-set of chronic pain sufferers.

2.6 A Self-management Approach to Chronic Pain

Current medical treatment for chronic pain encompasses analgesic (opioid), anti-convulsant and anti-depressant medication, spinal cord stimulators and various types of surgery, however, no treatment has been shown to be consistently effective and treatment failures are common. With the realisation of the limitations of conventional medical treatments for this condition, self-management approaches to chronic pain have gained increasing popularity with both health practitioners and patients. In the current climate of economic rationalism, self-management programs are highly regarded, as their delivery is considered a low-cost alternative to traditional medical approaches, further, they espouse management techniques that typically reduce routine health care visits, and decrease ongoing diagnostic testing and surgical procedures.

There is no clear, widely accepted definition of self-management, and understandings of self-management amongst both health professionals and chronic pain sufferers, appear to vary, however, despite this, a self-management approach is generally understood to refer to patients accepting responsibility for changing their own health behaviours and taking an active role as partner with their health care provider in terms of treatment (Edworthy, 2000). The fundamental goal of self-management is to maximise the individual's ability to participate as fully as possible in daily life, at a social, vocational and community level and to generally enhance quality of life to the satisfaction of the individual.

Generally, practitioners describe a self-management approach to pain as individuals being actively responsible for the management of their own pain by engaging in helpful activities on a day-to-day basis rather than passively relying on medical and allied health professionals. These activities may include exercise, stretches, appropriate lifting, postural awareness, pacing and alternating chores and work demands, relaxation and meditation exercises and using cognitive techniques such as ignoring, blocking or restructuring the pain. Pain-contingent use of medication is generally viewed by medical practitioners as being inconsistent with a self-management approach, with many pain specialists actively encouraging decreased use, or cessation of all pain medication.

Individuals with chronic pain conditions are commonly distressed and dismayed at the inability of modern medical technology to 'cure' or at least relieve their pain and as a result, often seek relief in alternative (i.e. not scientifically proven or evidence-based) treatments and therapies such as magnet therapy, use of natural supplements and herbal remedies, massage and spiritual healing. As noted by Edworthy (2000), in today's global economy, chronic pain sufferers are viewed as consumers, and medical professionals are often bypassed as patients utilise the internet to seek the wide array of "cures" and pain relief. According to Edworthy, the public now spends almost as much on complementary medicines and therapies as they do on traditional medical treatments, and services and whilst the use of

'alternative' treatments are generally viewed unfavourably by the medical profession, their use by patients does constitute a form of self-management.

Goeppinger and Lorig (1997) describe a self-management approach as a co-operative relationship with care providers and a careful scrutiny of alternative therapies, and their self-management program extends the biomedical model of care to incorporate changes in health behaviour and the utilisation of community resources that provide education and support to patients. Self-management approaches were initially shown to be efficacious in relation to Arthritis, with the Arthritis Self-management Program (ASMP; Lorig, 1995) being used in Australia, New Zealand, Northern Europe, the United Kingdom, North America and parts of Africa. The ASMP is a community-based program that teaches a variety of skills with the aim of enhancing participant's self-efficacy in relation to effectively managing their condition.

The development of programs such as the Arthritis self-management program is based primarily on two theoretical frameworks, the theory of 'learned helplessness' which relates to an individual having either an external or internal locus of control (Maier & Seligman, 1976) and 'self-efficacy' which relates to social-learning theory (Bandura, 1986). The first of these theories, 'learned helplessness', pertains to how individuals 'learn' to be helpless in relation to managing a condition that is uncontrollable and which seems to undermine their well-being. Edworthy, (2000) contends that this theory also relates to the perceived sense of control of an individual over their pain

(internal locus of control) or, of the pain over the individual (external locus of control). The relevant element of the second theory is 'self-efficacy'- the confidence to undertake a particular goal-driven behaviour. In the context of self-management, techniques aim to provide knowledge about and confidence in, a health-related behaviour in order to increase self-efficacy related to engaging in the behaviour.

There are a number of other theoretical approaches linked to self-management approaches including Leventhal's Self-Regulation Model (Leventhal, Nerenz & Steele, 1984) which suggests that individuals hold certain views regarding their condition (illness representations) and that these representations determine how they cope and their consequent quality of life. Self-management has also been viewed from a learning-model perspective (e.g., Mechanic, 1977; Dimond, 1983). Braden (1990) demonstrated by means of causal modeling that Learned Resourcefulness theory (Rosenbaum, 1990) provided a credible explanation of the self-management approach to chronic illness. The main focus of this theory is the resilience of an individual in terms of how they adjust to the physical and emotional challenges of a chronic condition.

A growing body of literature supports the efficacy of self-management programs for individuals with a range of chronic pain related conditions. Reported outcomes of self-management programs for pain vary, but include reduced intensity of pain, increased activity, decreased disability, decreased

use of health services, decreased use of medication, increased return to work and decreased rates of depression (Edworthy, 2000) and these benefits have been shown to be sustained for at least a year in patients with arthritis (Lorig & Holman, 1989).

Newman, Mulligan and Steed (2001) have criticised many of the studies that have assessed the efficacy of self-management programs on the basis that most have used pre-post designs rather than randomised controlled trials, and small sample numbers. Criticism of the literature is also extended to the issue of self-selection. Newman et al. (2001) argue that while selection is an important factor to consider in any study, it is particularly pertinent with regards to studies of self–management where participants are required to make substantial commitments in terms of time and energy. According to Newman et al., the findings of studies using a sample that is obviously interested and motivated may not necessarily be representative of the general population of individuals with chronic illness or pain.

Whilst it is clear that a self-management approach may be of benefit to some sufferers of chronic pain, further research is required. Firstly, to determine the proportion of individuals who would be prepared to engage in, and maintain this type of approach, and secondly, to develop and assess strategies to increase motivation and readiness to adopt a self-management approach in those who are not yet committed to this type of treatment.

CHAPTER 3

Consideration of the Transtheoretical Model and its Application to Management of Chronic Pain.

3.0 Chapter Introduction

3.1 The Transtheoretical Model of Stages of Behaviour Change

- **3.1.1** Stages of Change
- **3.1.2** Processes of Change
- **3.1.3** Decisional Balance
- **3.1.4** Self-Efficacy
- **3.1.5** Temptation

3.2 Measuring Stage of Change

3.3 Stage-Based Intervention

3.0 Chapter Introduction

As discussed in Chapter 2, an individual's level of motivation to engage in and maintain treatment recommendations has recently been identified as a variable that may significantly contribute to rates of engagement, adherence and attrition in chronic pain patients (Kerns et al., 1997; Kerns & Rosenberg, 2000; Kerns, Bayer & Findley, 1999; Jensen, 1996; Jensen et al., 2000; Biller at al., 2000). Clearly, this is a factor that warrants further investigation.

It is generally agreed that "clients must have an adequate degree of motivation in order to continue and eventually profit from, psychotherapy" (Garfield, 1986, p.137). Since the 1960s, numerous studies have attempted to measure patient motivation for psychotherapy and the relationship of motivation to treatment outcome. Difficulty in defining the concept of motivation has created a number of validity problems in this field of research (Keijsers, Schaap, Hoogduin, Hoogsteyns & Kemp, 1999). Orford (1985) stated that:

> Motivation for change derives from an accumulation of 'losses', 'costs' or harm resulting from behaviour- these exceed 'gains', 'benefits' or pleasurable outcomes to such a degree that the conflict between desire to continue and other needs requires a decision to be made with regards to the behaviour (p.272).

Similarly, Saunders and Wilkinson (1990) assert that "motivation is essentially the accumulation of opposing forces, or the sum of the competing factors which influence an individual to decide to act in a particular way" (p135). A

number of other researchers (e.g., Dean, 1958; Nelson & Borkovec, 1989; Miller & Rollnick, 1991) have defined client motivation as 'a state of readiness for change prior to the introduction of treatment interventions' (Keijsers et al., 1999, p. 166). This conceptualisation included the acknowledgement of problems, commitment for change and acceptance of psychological treatment. Krause (1967) argues that client motivation is indicated by clients' actual participation, co-operation and compliance during treatment. In a review of the motivation literature, Keijsers et al. (1999) report that high initial motivation for treatment is associated with better treatment outcome and lower rates of drop-out, however, whether better outcome is related to homework compliance due to initial high motivation for treatment, remains unclear.

When applying this type of model to the efficacy of chronic pain treatment, secondary gain (e.g., financial compensation, attention, avoidance of unpleasant tasks) may be reducing the discrepancy between the perceived situation (e.g., not able to work because of pain levels) and the preferred situation (e.g., able to work and manage pain levels) and this in turn may reduce motivation to learn and maintain adaptive behaviours. Festinger's (1957) theory of cognitive dissonance describes a state similar to discrepancy. Cognitive dissonance is said to exist when a thought or action is dissonant with a belief (e.g., continuing to rely on pain medications is dissonant with the knowledge that some of these medications can be addictive and may produce harmful side effects when taken over long periods). Dissonance is said to be aversive, and its reduction reinforcing. When an individual experiences

discrepancy between the current situation and the preferred state, they become motivated in trying to reduce or remove the discrepancy. Therefore, discrepancy initiates action and its reduction is reinforcing.

Jensen (1996) proposed that the cognitions involved in creating dissonance can be utilised to increase client motivation to adopt a self-management approach to pain. The type of approach recommended by Jensen (1996) incorporates Motivational Interviewing techniques (Miller & Rollnick, 1991), which are based on the Transtheoretical model of stages of behaviour change, described below.

3.1 Transtheoretical Model of Stages of Behaviour Change

The hypothesis that patients vary in the degree to which they are ready (motivated) to engage in and benefit from, psychological intervention, has formed the framework for the Transtheoretical model of stages of behaviour change (Prochaska & DiClemente, 1982). The Transtheoretical model (TTM) was initially developed within the study of psychotherapy for addictions in the late 1970s. The model developed as a result of a comparative analysis of influential theories of behaviour change that culminated in a "systematic integration" of theories (Prochaska & Velicer, 1997a). This comparative research identified 10 distinct processes of change that individuals used at different times (stages) in their behaviour change (e.g., consciousness raising from Freudian theory, contingency management from Skinnerian theory and helping relationships from Rogerian theory).

The Transtheoretical model was based on cognitive concepts such as emotions, feelings, beliefs and attitudes and provided an alternative to a number of established theoretical frameworks including the Health Belief model (Janz & Becker, 1984), Social-Learning theory (Bandura, 1977) and the theory of Reasoned Action (Ajzen & Fishbein, 1980).

3.1.1 Stages of change

The core constructs of the Transtheoretical model (TTM) are stages of change, processes of change, decisional balance, self-efficacy and temptation. Each construct represents an important dimension in terms of explaining how and why individuals make health-related behavioural changes. The TTM proposes six stages of change that have been identified in other health related areas (e.g., cigarette smoking, exercise, eating disorders, alcohol and substance abuse, AIDS prevention, mammography screening, medication compliance and sun exposure).

Prochaska (2000) describes stages as being at a middle level of abstraction between personality traits and psychological states in that they are relatively stable over time but they are also dynamic and therefore, open to change. The stage construct introduces a *temporal* dimension to the theory. In the *pre-contemplation* stage individuals do not think behaviour change is important and are not seriously contemplating it in the next six months. In the *contemplation* stage, individuals realise that there is a problem and are seriously considering making a change within the next six months. In the

preparation stage, individuals are seriously considering taking corrective action within the next month.

The *action* stage is a period ranging from 0–6 months, where individuals are actively working on changing their behaviour. In the *maintenance* stage, individuals try to maintain the changes they have made. This period is defined as the period beginning 6 months after the action has started and continuing until the behaviour is terminated as a problem, with *termination* being described as the sixth stage. Within this model, *relapse* is recognised a form of regression to an earlier stage (usually the Contemplation stage), and is viewed as an occurrence more likely to occur than not to occur. Generally, individuals appear not to move through these stages in a linear manner but may move back and forward a number of times before maintaining long-term change (Termination) (Prochaska, et al., 1994).

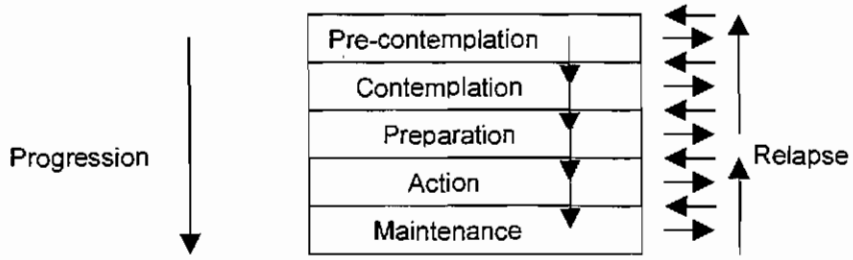

Figure 3.1 The stages of change model (Prochaska & DiClemente, 1982) adapted from Rollnick et al. (2000).

3.1.2 Processes of Change

Processes of change are described by Prochaska and Velicer (1997a) as "the covert or overt activities that people use to progress through the stages"

(p.39). Table 3.1 provides an example of which processes are used at each particular stage of change.

Table 3.1 Processes of Change Used at Each Stage of Change (Prochaska et al., 1992).

	Stage of change			
	Pre-contemplation	**Contemplation**	**Preparation**	**Action/Maintence**
Processes	Consciousness raising Dramatic Relief			
		Environmental re-evaluation Self re-evaluation		
			Self-liberation Contingency management	
				Helping relationship Counter-conditioning Stimulus control Social liberation

Processes of change are closely linked to intervention planning as the types of process required for behaviour change vary according to the individual's stage of change.

Consciousness raising occurs when there is increased awareness regarding the causes, consequences and cures related to particular health related behaviours. Consciousness raising interventions can include media campaigns, feedback regarding assessment results from perceived 'experts' (e.g., doctors), reading, education and confrontation.

Environmental re-evaluation relates to one's appraisal of how their particular health related behaviour affects ones social environment (and in particular those individuals around them). Whilst this process does not involve any directives, it can often move individuals from Pre-contemplation to a higher

stage of change if the information is presented in an appropriate manner as this process also often contains elements of '*dramatic relief*' (e.g., graphic media campaigns that illustrate the effects of passive smoking on loved ones).

Dramatic relief initially elicits emotional arousal (including feelings of fear, guilt and shame) followed by reduced affect if appropriate action is taken. Techniques that produce dramatic relief include role-playing, psychodrama, personal grief and loss testimonials, and media campaigns.

Self-liberation is commonly described as willpower and describes the belief that one can change and the commitment to maintain that change. Examples of techniques that increase self-liberation are public testimonies, New Year's resolutions and being given a range of choices or options from which to develop an action plan.

Self re-evaluation describes the cognitive and affective components of one's self-image with and without the problem behaviour. Techniques that can alter individual's self-evaluation include healthy role models, value clarification and imagery.

Counter-conditioning is a process whereby a healthier choice is substituted for a problem behaviour (e.g., relaxation can be used to counter stress,

nicotine replacement to counter cigarettes and assertiveness to counter peer or other undesirable pressure).

Social liberation is created by advocacy, lobbying and policy development and refers to an increase in opportunities for all individuals to commence and maintain healthy behaviours. Examples include smoke-free work and leisure environments, easily accessible condom vending machines, salad bars in work and school canteens.

Contingency management refers to the consequences (punishments and rewards) for making behavioural change in a particular direction. Procedures that provide reinforcement and increase the probability of positive behaviours being increased include contingency contracts, positive self-statements and group recognition.

Stimulus control refers to environmental management of both the cues that prompt relapse into unhealthy behaviours and the stimuli that encourage healthy alternatives.

Helping relationships are a source of support and encouragement for healthy behaviors. Helping relationships are characterised by trust, openness, and acceptance and can be developed by means of a therapeutic alliance, counsellor calls, and buddy systems.

3.1.3 Decisional Balance

Prochaska and his colleagues also studied the cognitive and motivational changes that accompany movement from one stage to another and as a result have integrated the core constructs of Janis and Mann's Decision–Making model (1977) into the Transtheoretical model. Decision-making was described as conflict by Janis and Mann (1977). This approach assumes that making sound decisions requires careful consideration of all the relevant factors which are then entered into a mental decisional 'balance sheet'. This balance sheet includes potential gains and losses where both the individual and their reference groups are taken into account (Mann, 1972).

The decisional balance measures have since become critical constructs in the Transtheoretical model, though rather than the eight factors which need to be considered when making a decision as postulated by Janis and Mann (1977), Prochaska and DiClemente (1982) argued that there were only two, namely the *pros* and *cons* of a behaviour. It was asserted that when an individual is in the Pre-contemplation stage, the perceived disadvantages of changing their behaviour outweigh the advantages. As the individual moves positively through the stages, the perceived advantages of changing their behaviour gradually outweigh the disadvantages (decisional balance) so that the 'pros' outweigh the 'cons' and a 'crossover' occurs when the individual is at the Action stage. This phenomena has been found to characterise a range of different health-related behaviours including smoking, sunscreen use, condom

use, exercise, weight control and mammography screening (Prochaska, 1994).

In a data analysis of twelve behaviours (smoking cessation, quitting cocaine, weight control, reducing high-fat diet, stopping delinquent behaviour, safer sex, condom use, using sunscreen, testing for radon, acquisition of exercise, mammography screening and physicians preventive practice with smokers), Prochaska and DiClemente (1992) discovered statistical consistency across the behaviours in the amount of change in the decisional balance of the advantages and disadvantages that was required for an individual to move from the Pre-contemplation stage to the Action stage. Prochaska and DiClemente (1992) developed the following empirically derived equations that summarise this consistency:

PC > A = 1 SD PROS (h)

PC > A = 1 SD CONS (unh)

The first equation indicates that individual moving from Pre-contemplation (PC) to Action (A) require approximately one standard deviation (SD) in increase in the amount of value placed on the 'pros' of a healthy (h) behaviour. The second equation indicates that conversely, it takes an individual an increase of one standard deviation in the perceived 'cons' of an unhealthy behaviour to move from Pre-contemplation to Action stage. According to Prochaska and DiClemente (1992), a one standard deviation change in perceptions of the advantages and disadvantages of a particular behaviour requires an intervention that is powerful enough to account for 20% of the variance in

treatment outcome. The research of Prochaska et al. (1994) also suggests that an intervention should target increasing the pros of changing, which should facilitate progress from Pre-contemplation to Contemplation. At this stage, intervention should then aim to decrease the cons of changing, which should lead to progression from Contemplation to Action.

Janis and Mann (1977) also described five styles of decision-making that have important implications for clinicians in terms of treatment planning and enhancing motivation for behaviour change. The five decision-making styles are unconflicted adherence, unconflicted change, defensive avoidance, hypervigilance and vigilance.

Unconflicted adherence is a decision not to change that is characterised by little conflict (similar to the Pre-contemplation stage). *Unconflicted change* is the opposite, where there is a clear decision to change behaviour with little conflict about that decision. *Defensive avoidance* occurs when the individual chooses what they perceive to be the 'least worst' option from a range of poor options. A *hypervigilant* decision is characterised by high levels of anxiety and limited appraisal of the advantages and disadvantages of the different options available. These types of decisions are often precipitated by recent crises. In contrast, a *vigilant* decision is made under low to moderate levels of anxiety where all the advantages and disadvantages of a range of options are considered carefully. Research has shown that vigilant decisions are likely to

be more robust and are maintained for longer periods of time than hypervigilant decisions (Janis & Mann, 1977; Saunders & Wilkinson, 1990).

Ryder (1999) notes that it is important for practitioners to be aware of the distinction between hypervigilant and vigilant decision-making styles as an individual experiencing high levels of anxiety and recent crisis may present as being ready to change behaviour and be treated with an action-approach intervention when really they would be better thought of as 'psuedo-actioners' and are better treated as Contemplators.

3.1.4 Self-Efficacy

The Self-Efficacy construct has been integrated from Bandura's Self-Efficacy theory (1977) and refers to an individual's perceptions of personal capabilities to perform and maintain a particular behaviour without relapsing. Self-efficacy has been shown to be an important predictor of behaviour including exercise (e.g., Bandura, 1986; Garcia & King, 1991; McAuley, Lox & Duncan, 1993) and other health outcomes (e.g., McAuley, 1992; O'Leary, 1985). Self-efficacy has demonstrated a relationship to stage of change for exercise, with Pre-contemplators having the lowest levels of self-efficacy and individuals in the Maintenance stage having the highest self-efficacy (Marcus, Selby, Niaura, & Rossi, 1992).

3.1.5 Temptation

The final construct in the Transtheoretical model is Temptation. Temptation describes the urge to engage in high-risk or problem behaviours in certain situations. Research indicates that the three most common factors inducing temptation are negative emotion, social situations and biology (cravings) (Prochaska & Velicer, 1997a).

3.2 Measuring stages of change

Whilst stages of change have been well described in research literature, measuring stage of change has proved to be more difficult. The two main methods that have been used to measure stage of change are staging algorithms and multi-dimensional questionnaires. Staging algorithms use a small number of items, and individuals are allocated to one of the stages of change based on their response. Individuals can only be in one stage for a particular behaviour at any given time. Staging algorithms have been criticised primarily on the basis of the time periods that define the stages being arbitrary. Opponents of the TTM (e.g., Bandura, 1997; Sutton, 2001) argue that stages measured by algorithms are not qualitatively distinct and are simply "pseudo stages" on a continuum of change. According to Sutton (2001), this argument has important implications for providing stage-based interventions, as, if there are no differences between stages other than the arbitrary time period, then there is no logic for the expectation that different factors will influence different stage transitions.

Multi-dimensional questionnaires measure each stage of change by scores on a set of questionnaire items. Individuals have a score that represents their position for each stage and are classified as being in the stage in which they had the highest score. The three main multi-dimensional questionnaires that have been used in drug and alcohol studies are the University of Rhode Island Change Assessment (URICA; McConnaughy, Prochaska & Velicer, 1983), the Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES; Miller & Tonigan, 1996), and the Readiness to Change Questionnaire (RCQ; Rollnick et al., 1992).

The University of Rhode Island Change Assessment (URICA; McConnaughy, et al., 1983) was the first multi-dimensional measure developed to assess stage of change. The URICA items do not pertain to specific problem behaviour, as the measure is designed for general use for drug and alcohol assessment in a clinical context. The URICA identifies four stages of change (Pre-contemplation, Contemplation, Action and Maintenance). The four-factor structure of the URICA has been supported in some studies (DiClemente & Hughs, 1990; Carney & Kivlahan, 1995) but not in others (Belding et al., 1996; El-Bassel et al., 1998). In a review of six studies using the URICA, Sutton (2001) reports that while the pattern of correlations between adjacent subscales supports the TTM, there are also patterns of correlations among non-adjacent sub-scales (Contemplation and Maintenance) suggesting that the stages as measured by the URICA may not be qualitatively different and discrete.

Ideally, respondents would have a high score on one of the sub-scales and low scores on the others. In the study by DiClemente and Hughs (1990), however, a majority of subjects were well below average in the Pre-contemplation stage but above average on the Contemplation, Action and Maintenance subscales, thus indicating more agreement than disagreement with a number of stages. Further, several studies performing cluster analysis on URICA sub-scale scores have resulted in different numbers of clusters than the original stages (e.g., El-Bassel et al., 1998; Edens & Willoughby, 1999).

The Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES; Miller & Tonigan, 1996), is a 20-item scale designed to measure readiness to change in relation to problematic alcohol use. The measure identifies five stages of change (Pre-contemplation, Contemplation, Determination, Action and Maintenance) and includes four questionnaire items to measure each stage. In a large clinical study (Project MATCH, Project Match Research Group, 1997), the SOCRATES failed to demonstrate clear distinctions between stages, with respondents having high scores on more than one stage dimension. Miller and Tonigan (1996) concluded that the SOCRATES does not appear to be measuring the discrete stage constructs as they were conceptualised by Prochaska and DiClemente in the Transtheoretical model, rather, the scales of the SOCRATES may be better understood as "continuously distributed motivational processes that may underlie stages of change"(p.84).

The Readiness to Change Questionnaire (RCQ; Rollnick et al., 1992) is a twelve-item scale that was designed to assess readiness to change problem drinking behaviour. The questionnaire identified three stages, namely Pre-contemplation, Contemplation and Action, however, as with the URICA and the SOCRATES, high correlations between stages (Contemplation and Action) indicated that the RCQ fails to define the distinct and unique features of each stage.

Bunton et al., (2000) comment that despite widespread use of measures of stage of change, surprisingly little attention has been paid in the research literature to assessing their validity. Bunton et al. (2000) argue that these measures provide no *explanatory* value with regards to why an individual is at a certain stage of change, therefore, the assessment results are of little value in treatment-planning. According to Bunton et al. if, as asserted by Prochaska and Velicer (1997b), *processes* (rather than stages) provide the explanation of stage of change then it is unclear why stage analysis is necessary at all.

Sutton (2001) adds that it is doubtful whether multi-dimensional questionnaires such as the SOCRATES, the URICA and the RCQ can ever provide a useful means of measuring stage of change. Indeed, psychometric measures are generally designed to measure enduring traits that remain stable over time. It is questionable, therefore, that there is any value in developing these types of assessments for a state that will (by its very definition) change.

Despite these criticisms, a small number of studies have sought to determine the applicability of the TTM to readiness to adopt a self-management approach to pain and have developed specific measurement instruments (The Pain Stages of Change Questionnaire, PSOCQ; Kerns et al., 1997 and The Stages of Readiness to Change Questionnaire, SRC; Dijkstra et al., 2001), or adapted measures that have been developed for general use (e.g. modified version of the URICA, Keefe et al., 2000). These scales are described more fully in Chapter Four.

3.3 Stage-Based Intervention

A central assumption of the Transtheoretical model is that the extent to which individuals will benefit from an intervention will bear a direct relationship to the individual's stage of change. Based on this assumption, it is argued by proponents of the Transtheoretical model, that individuals who to fail to engage in or to benefit from Action-oriented treatment programs (those in the Pre-contemplation or Contemplation stage) require stage-specific intervention. Prochaska and DiClemente (1992) tested this hypothesis in a study of 570 former smokers who stopped smoking after a home-based self-help program. The findings showed that amount of success in quitting smoking was directly related to the stage the individual was in prior to treatment. Individuals who were in the Preparation stage were more likely to do better than those in the Contemplation stage and those in the Contemplation stage were more likely to change than those in the Pre-contemplation stage.

The other important assumption of the TTM is that individuals will benefit more from interventions that are specifically designed for particular stages of readiness to change. This assumption was tested in smoking cessation research by Prochaska, DiClemente, Velicer and Rossi (1993) who compared the standard self-help stop smoking intervention to 'stage specific' interventions in a study of 756 smokers. In this study, the participants were randomly allocated to groups receiving either: (a) standardised self-help manuals; (b) staged self-help manuals; (c) staged self-help manuals plus individualised computer feedback immediately and at one and six months, or (d) staged manuals plus computer feedback and brief staged counselling by telephone at one, three and six months.

At a 12-month follow-up, the group receiving the staged self-help manuals combined with computer feedback reported similar cessation rates to the group receiving staged manuals, computer feedback and staged telephone counseling. However, at the 18-month follow-up, the highest cessation rate was reported among the group receiving the staged manual and computer feedback (25%) which was significantly higher than the groups receiving staged manuals alone (18.5%) or staged manuals with feedback and telephone counselling (18%). All three staged interventions produced significantly higher cessation rates than the non-staged manual intervention (11%), suggesting that staged interventions are more effective than non-

staged interventions in smoking cessation programs and that a significant effect may be evident over a longer time period.

According to Ashworth (1997), there is limited evidence to support the efficacy of staged over non-staged interventions and her review of the literature revealed only six trials comparing staged and non-staged interventions, including the study of Prochaska et al. (1993) described previously. Of these six studies, the only one that describes a face-to- face intervention is reported by Gomel, Oldenburg, Simpson and Owen (1993). In this work-site study, 431 ambulance station staff were randomly allocated to receive one of the following four interventions: 1. Health risk assessment: assessment of risk factors plus feedback; 2. Risk factor education: assessment and feedback, plus standardised advice and information about how to modify risk factors; 3.Staged counselling: participants received risk-factor education (as above) plus an offer of counselling and self-instructional manual, both based on stage of change; 4. Action stage counselling: participants received risk-factor education (as above) plus an offer of counselling, including goal setting, follow-up and incentives.

The outcome measures were changes in smoking behaviour, body mass index, percentage body fat, cholesterol, blood pressure, and aerobic capacity. Both the counselling intervention groups reported generally better outcomes than the other groups (though this would be expected due to the intensive nature of the intervention, and extra time and attention was not

controlled for in the non-counselling groups). Few significant differences were reported at post-intervention between the staged and action-stage groups, however, whilst these two groups reported similar blood pressure changes over the first few months, the action-stage group did not maintain change and at 18 months, the staged group reported greater decreases in blood pressure. Similar results were found for smoking cessation, with the staged and action-stage groups reporting similar cessation rates (13%) at six months. However, the staged group maintained significantly higher rates (20%) of smoking cessation at 18 months than the action stage group (3%). As with the study of Prochaska et al. (1993), these results suggest that staged interventions produce a superior delayed effect.

Although the few published studies suggest that staged interventions do produce more favourable outcomes than non-staged interventions, methodological flaws in the research make it difficult to draw firm conclusions. Prochaska et al. (1994) argue however, that their research provides strong empirical support for stage-based interventions and the generalisability of three of the basic constructs of the Transtheoretical model (the stages of change, the pros and cons and the integration between the stages and decisional balances). Prochaska et al. (1994) further assert that these constructs and the relationships between them, apply for both acquisition of behaviours and cessation of behaviours across a wide range of behaviours including addictive and non-addictive, legal and illegal, socially acceptable and socially less acceptable. They also appear to hold constant across gender,

age and socioeconomic status. Clearly further research is needed to demonstrate the superiority of staged interventions over a wide array of behaviour change programs.

Although 'stage specific' programs have shown to be efficacious in the alcohol and smoking cessation literature, scant attention has been paid to the development, application and evaluation of staged interventions for chronic pain. If the Transtheoretical model is found to generalise to the acquisition of adaptive pain coping strategies and the cessation of maladaptive pain coping strategies, this type of intervention may assist in engaging individuals in treatment and enhancing successful outcome by increasing compliance with acquisition and maintenance of self-management techniques.

The aim of Chapter Four was to explore the current application of the TTM to chronic pain, the Pain Stages of Change model (Kerns et al., 1997) and to determine its generalisability to individuals with chronic pain who are treated in the community.

CHAPTER 4

Study 1: Preliminary Exploration of the Utility of the Stages of Change Model in Relation to Chronic Pain.

4.0 Introduction

4.0.1 Pain and the Stages of Change model

4.1 Pilot Study

4.1.1 Participants

4.1.2 Procedure

4.1.3 Changes to Questionnaire

4.1.4 Changes to the Administration of the Questionnaire

4.2 Study 1

4.2.1 Sampling methodology

4.2.2 Non-respondents

4.2.3 Participants

4.2.4 Research Questionnaire

4.3 Method

4.3.1 Procedure

4.4 Results

4.4.1 Internal consistency scores

4.4.2 Associations among the PSOCQ scale scores

4.4.3 Differences between individuals in each stage of change

4.4.4 Associations between stage of change and psychological variables

4.4.5 Associations between stage of change and demographic variables

4.4.6 Associations between stage of change and current coping strategies

4.5 Discussion

4.0 Introduction

Multidisciplinary programs that emphasise a self-management approach to pain have become widely available and provide an alternative to traditional purely medical approaches. In contrast to the medical approach, psychologically based treatments for pain require the patient to make substantial changes in both their beliefs about pain and the way in which they cope with pain. Implicit in this approach is the assumption that the patient is motivated to engage in and maintain the treatment recommendations. Whilst these programs have been repeatedly shown to be effective (e.g., Keefe et al., 1992; Compas et al., 1998; Morley et al., 1999), there remains a significant proportion of individuals who either fail to engage in, or fail to benefit from, this type of treatment and rates of drop-out and relapse are high amongst this group (Turk & Rudy, 1990, 1991; Richmond & Carmody, 1999).

There have been a number of prior research attempts to identify variables which predict successful outcome in self-management pain programs in order to modify treatment and increase rates of engagement, adherence and maintenance of treatment gains (e.g., King & Snow, 1989; Carosella, et al., 1994). Although a range of variables have been identified (e.g., involvement in litigation, disability payments, co-morbid depression, substance abuse) these findings have been inconsistent and unreliable, therefore contributing little to our understanding or to improving successful outcome of interventions.

4.0.1 Pain and the Stages of Change model

In a recent attempt to address these limitations and to explain why there exists a subset of individuals who do not benefit from a self-management approach to pain, Kerns and his colleagues (Kerns et al., 1997, 1999, 2000) and Jensen et al. (1996, 2000) have considered the relevance and application of the Transtheoretical model of behaviour change (Prochaska & DiClemete, 1982; Prochaska et. al., 1994), in conjunction with a cognitive–behavioural perspective on chronic pain (Turk et al., 1983) culminating in the development of the Pain Stages of Change model and the Pain Stages of Change Questionnaire (PSOCQ; Kerns et al., 1997)(Appendix A).

The model proposes that individuals vary in their readiness to adopt a self-management approach to pain and that individuals may be categorised on the basis of their beliefs about their pain into one of four stages of readiness to change. These stages are: Pre-contemplation (not considering any change in behaviour), Contemplation (serious consideration of change sometime in the future), Action (concrete activities that will lead to the desired change), and Maintenance (active efforts to sustain the changes made). The model also proposes that an individual's current stage may determine the most effective therapeutic approach. For example, individuals in the Pre-contemplation or Contemplation stages may benefit from strategies such as cognitive restructuring and re-conceptualisation of the pain as being manageable, whereas individuals in the 'higher' stages of change would be

more likely to benefit from behavioural techniques such as pacing activities, relaxation and exercise, which assume readiness for active involvement and responsibility of the individual in the rehabilitation process.

The Pain Stages of Change Questionnaire (Kerns et al., 1997) was developed and initially validated on a convenience sample of 241 individuals who were referred for evaluation and treatment at one of four tertiary–care pain treatment centers in the United States. Two subsets (n=161) of the total sample also completed additional measures to assess the criterion-related validity and the stability of the questionnaire. A third subset of participants (n=39) completed the questionnaire a second time, one to two weeks later to assess the test-retest reliability of the measure. Factor analysis provided support for a four-factor solution (resulting in four scales, Pre-contemplation, Contemplation, Action and Maintenance) with good to excellent internal consistency (Cronbach's alpha ranged from 0.77-0.86). Inter-scale correlations indicated reasonable distinction between the scales ranging from -0.42 to 0.23, other than Action and Maintenance, which were strongly positively correlated (0.80). Good to excellent test-retest reliability was demonstrated (correlations ranged from 0.74 to 0.88).

Evidence for the criterion-related validity of a stage model was demonstrated by strong correlations for Pre-contemplation and Maintenance and moderate correlations for Action and Contemplation, in the predicted directions, with specific measures chosen for their hypothesised relationships with either of

the extremes of the readiness to change scale. Measures of constructs consistent with a self-management approach and use of active coping strategies were hypothesised to be strongly positively correlated to measures of Maintenance, and negatively correlated with measures of Pre-contemplation, whereas measures of constructs consistent with the use of passive coping strategies and continued interest in seeking medical assistance were hypothesised to be strongly positively associated with measures of Pre-contemplation and negatively associated with measures of Maintenance. The measures included two sub-scales of the Survey of Pain Attitudes Questionnaire (Jensen et al., 1994), The Chronic Pain Accommodation Scale (Jacob et al., 1993), The Vanderbilt Pain Management Inventory (Brown & Nicassio, 1987) and a five-stage, staging checklist.

Kerns and his colleagues assert that successful demonstration of a confirmatory four-factor analysis consistent with the stages of change model, and the reliability, criterion-related validity, internal consistency and stability of each of the four scales, provides support for the relevance of a stages of change model to pain management. However, several limitations of this study warrant mention. Firstly, the PSOCQ has been developed on a small convenience sample of pain-clinic patients at four different sites with differing intake and referral procedures that may have affected responses. Significant differences for Action and Maintenance scores across the recruitment sites were noted, which remained even after controlling for education level and gender, therefore the validity of the measure may be questioned in terms of

its broad applicability even within a pain-clinic sample. Secondly, Kerns et al. (1997) do not report the number of individuals found to be in the Pre-contemplation stage of change (or indeed any of the stages). It is therefore likely that the number of Pre-contemplators in this study would be low given that they have been recruited from pain clinics whose exclusion and inclusion criteria are likely to have excluded many Pre-contemplators (and possibly others). Thirdly, test-retest reliability was demonstrated in a particularly small convenience sample from only one recruitment site.

Jensen, Nielson, Romano, Hill and Turner (2000) sought to further explore the psychometric properties of the PSOCQ by examining the generalisability of the findings presented by Kerns et al. (1997) in the initial scale development sample. Jensen et al. (2000) studied two new sub-samples of patients with chronic pain, a pain-clinic sample and a fibromyalgia sample. The pain clinic sample consisted of 110 patients who were recruited as part of a longitudinal study of multidisciplinary treatment at the University of Washington in the United States. The fibromyalgia sample consisted of 119 individuals who were part of an ongoing study evaluating the effectiveness of a multidisciplinary treatment program at London Health Sciences Center in Canada. Internal consistency co-efficient scores were greater than 0.70 on all PSOCQ sub-scales for both samples and are consistent with those reported by Kerns et al. (1997). PSOCQ scale score interrelations were also similar to the associations found by Kerns et al. (1997) in the original scale

development sample. All of the criterion measures were associated with the PSOCQ scales in the directions hypothesised.

Participants were classified as being in a particular stage according to their highest score on any of the PSOCQ scales. Only five participants in the pain clinic sample and one participant in the fibromyalgia sample were identified as Pre-contemplators. Therefore only Contemplation, Action and Maintenance groups were compared. An attempt to examine the differences among the stage of change groups for each of the PSOCQ scales was only partially successful as none of the group means differed significantly on the Pre-contemplation scale. Participants classified as being in either the Action or Maintenance stage also did not differ significantly on any of the mean PSOCQ scale scores. In both samples, participants classified as being in the Contemplation, Action or Maintenance stages scored higher than three on average, indicating more agreement than disagreement with all three stages.

Generally, the results of the study by Jensen et al. (2000) are consistent with the findings of Kerns et al. (1997) and provide additional support for the internal consistency and criterion-related validity in two new samples of individuals with chronic pain. However, Jensen et al. (2000) argue that as the PSOCQ does not discriminate sufficiently between the stages of change, it may not be useful in its current form as a tool used to classify pain clinic patients into distinct stages of readiness to adopt a self-management approach. One of the explanations Jensen et al. propose for this finding, is

that, although the model is suitable for explaining cessation or adoption of specific behaviours (e.g., smoking, alcohol use, condom use, sunscreen use, mammography screening), individuals with chronic pain require cognitive, affective and behavioural change in a number of areas and may therefore present as being simultaneously in a number of different stages for separate self-management behaviours. For example, an individual may be in the Pre-contemplation stage for one behaviour (e.g., thinking that they will never be able to manage their pain without analgesic or opioid medication), the Contemplation stage concerning other behaviours (e.g., considering commencing an exercise program), the Action stage for other behaviours (e.g., in the process of learning relaxation strategies for pain) and the Maintenance stage for yet other behaviours (e.g., regular use of coping self-statements).

Whilst this finding is interesting, intuitive and certainly warrants further examination with other pain samples, the small number of Pre-contemplators in the study by Jensen et al. (2000) may also account for the failure of the PSOCQ (Kerns et al., 1997) to distinguish clearly between the mean scale sores of the stage groups. Only five percent of the pain clinic sample and one percent of the fibromyalgia sample were in the Pre-contemplation stage, 59% of the pain-clinic and 79% of the fibromyalgia sample were in the Contemplation stage, 23% of the pain clinic and 8% of the fibromyalgia sample were in the Action stage and only 14% of the pain-clinic and 16% of the fibromyalgia sample were in the Maintenance stage. As the majority of

participants were in the Contemplation, Action or Maintenance stages, they may have been more similar to each other than different from each other and the low number of Pre-contemplators does not allow for a complete examination of the ability of the PSOCQ to discriminate between all four stages.

In an attempt to further examine the psychometric properties of Pain Stages of Change Questionnaire (Kerns et al., 1997), Kerns and Rosenberg (2000) conducted a study to assess its predictive validity in relation to participation and outcome in treatment programs. Kerns and Rosenberg hypothesised that high Pre-contemplation scores would be predictive of higher rates of drop-out and poorer outcomes relative to low Pre-contemplation scores. Participants were 109 patients with chronic pain who were being assessed for eligibility for a 10-session, self-management treatment program based on cognitive-behavioural techniques. Prior to treatment, participants were administered the PSOCQ (Kerns et al., 1997) and a number of other measures. The Pain Rating Index from the McGill Pain Questionnaire (Melzack, 1975) and the Pain Severity Scale of the West-haven Yale Multi-dimensional Pain Inventory (WHYMPI; Kerns et al., 1985) were used to measure pain severity. The Survey of Pain Attitudes (Jensen et al., 1994) and the interference sub-scale of the WHYMPI (Kerns et al., 1985) were included in order to measure participant's perception of the extent of their disability, and the Pain Behaviour Checklist (PBCL; Kerns et al., 1991) was included to evaluate participant's perceptions of the frequency of their pain behaviours. Affect was

measured using the Beck Depression Inventory (Beck et al., 1961) and behavioural goal achievement was assessed in a specification of goals during the pre-treatment evaluation.

Of the 109 participants, 41(38%) either refused or did not attend treatment and nine patients attended three or more sessions prior to dropping out. The remaining 59 participants (54%) engaged in and completed treatment, and pre and post-test data were available from 50 participants. The results demonstrated significant differences between completers and non-completers, with non-completers having higher scores on the Pre-contemplation scale and completers generally having low scores on Pre-contemplation and higher scores on the other scales.

Kerns and Rosenberg (2000) note that the treatment program, specifically designed to promote the belief that a self-management approach can be helpful for pain, apparently failed to engage those who had high Pre-contemplation scores and attrition from treatment was high amongst that group of individuals. Participants in the Contemplation stage of change were thought to have been successfully engaged in treatment because the treatment program was endorsing recommendations that were consistent with their already held beliefs. Participants in the Action or Maintenance stages of change were not found to be predictably more or less likely to engage and remain in treatment. Kerns and Rosenberg argue that this result may have been due to participants in the Action or Maintenance stages believing that

they were already using self-management strategies and therefore, treatment would do little to enhance their knowledge or skills related to this type of approach.

Whilst the study supported the hypothesis that the PSOCQ (Kerns et al., 1997) could predict *engagement* in treatment, Kerns and Rosenberg (2000) found no support for the hypothesis that PSOCQ scores could predict *outcome* subsequent to treatment as participants at all stages of change were shown to be equally likely to achieve improvements in pain management, emotional well-being and functioning. Further, it was found that the treatment program affected scale scores, with increases in Action and Maintenance scores and decreases in Pre-contemplation scores. Kerns and Rosenberg concluded that replication of the study and further refinements of the pain stages of change model are necessary before the PSOCQ can be confidently utilised for clinical decision -making.

In a subsequent study of the predictive validity of the PSOCQ, Biller, et al. (2000) sought to replicate the findings of Kerns and Rosenberg (2000). In this study, 151 patients were recruited from a multi-disciplinary pain clinic in a tertiary care facility and 149 patients were recruited from a community-based primary care specialty clinic. Of the 300 participants, 147 (49%) patients completed a 10-session pain management program, 68 (23%) attended fewer than five sessions before dropping out and 85 (28%) failed to attend a single session.

The earlier study by Kerns and Rosenberg (2000) failed to identify any significant correlations between pre-treatment PSOCQ scores and changes in measures of pain, disability and distress. However, in an expanded analysis in the replication study, Biller et al. (2000) noted some demographic, pain-related and psychological differences between patients who completed and patients who did not complete the pain management treatment program. Patients who completed the program were found to be slightly older, have higher reported levels of pain and higher levels of depression and disability than patients who did not complete the program.

The study by Biller at al. (2000) supports the findings of Kerns and Rosenberg (2000) in that high Pre-contemplation scores and low Contemplation scores were the strongest predictors of completion of a pain management program. Hierarchical regression analysis correctly identified 69% patients who completed the program and 72% of patients who did not complete the program. Although the findings of Biller et al. generally support the predictive validity of the PSOCQ, the authors caution against its use as a screening instrument in its current form. As with Jensen et al. (2000), Biller et al. note that the scoring method requires revision and suggests the use of profiles rather than mean scores to increase the discriminatory validity.

According to Biller et al. (2000), whilst the moderate predictive validity of the mean scale score may be helpful for practitioners to identify appropriate intervention targeted to stage of change, it is not sufficient for use as an

inclusion or exclusion criterion for treatment. In commenting on recommendations for further research investigating the pain stages of change model, Biller et al. (2000) conclude that there is a need for further development of the structure and scoring of the PSOCQ, and add that there is a need for studies examining the link between self-efficacy and stage of change, and research regarding how PSOCQ scores change over time with specific interventions.

Barnes, Nagy, Bliokas and Grenyer (2001) also sought to examine the predictive validity of the PSOCQ. The questionnaire was administered to 211 participants prior to commencing cognitive-behavioural group pain management programs. In contrast to the findings of Kerns and Rosenberg (2000) the study findings indicated that high Action and Maintenance scores were associated with treatment gains, however, the PSOCQ scores were not shown to be reliably predictive of engagement in treatment.

Since the introduction of the pain stages of change model (Kerns et al., 1997), three published studies to date have sought to develop or modify, other stage-based psychometric measures for specific sub-groups of pain patients. In the first study, Keefe et al. (2000) sought to determine whether cluster analysis could be used to identify homogeneous sub-groups of patients with arthritis pain, based on their responses on a modified version of the University of Rhode Island Change Questionnaire (URICA; McConnaughy et al., 1983). The study examined readiness to adopt a self-management

approach to pain in two separate samples of patients with either osteoarthritis (OA; n = 74) or rheumatoid arthritis (RA; n= 103). The participants were recruited by means of newspaper advertisements, public posters and via rheumatology clinics. Keefe et al. (2000) identified five homogeneous sub-groups within both the rheumatoid arthritis and osteoarthritis samples that are consistent with the transtheoretical model (Pre-contemplation, Contemplation, Preparation, Unprepared Action and Prepared Maintenance). The Pre-contemplation sub-group made up 44% of the total sample (OA and RA combined) and reported lower levels of pain, physical and psychological disability than many of the other sub-groups. The Contemplation sub-group comprised 11% of the total sample and as with the Pre-contemplation sub-group, reported low levels of pain and disability. The Preparation sub-group made up 22% of the sample and reported higher levels of pain and physical and psychological disability than patients in the Pre-contemplation and Contemplation sub-groups. Keefe et al. contend that patient's severity of pain and disability may serve as a motivator for increasing self-management efforts in the near future.

Unprepared Action is characterised by elevations on both the Pre-contemplation and Action scales and is described by Keefe et al. (2000) as action taken without planning or preparation. The Unprepared Action sub-group comprised 6% of the sample and these patients reported manageable levels of pain, physical disability and psychological distress. The patients in this group also reported the highest level of self-efficacy of all the sub-groups.

Keefe et al. (2000) comment that although patients in this sub-group appear to be content with their current management activities, their lack of considered preparedness may make it difficult for these patients to maintain their self-management efforts.

The final sub-group identified in the study was the Prepared Maintenance group that is characterised by elevations on the Contemplation, Action and Maintenance scales and reflects a preparation to increase the intensity of action already taken. The patients in this sub-group made up 17% of the sample and scored significantly higher on coping attempts than each of the other sub-groups except Preparation. The patients in Prepared Maintenance reported more severe pain, disability and distress than participants in the Pre-contemplation, Contemplation and Action sub-groups.

Keefe et al. (2000) concluded that the Transtheoretical model of stage of change may be applicable to arthritis patients and that further studies are required to replicate and further validate the findings of their research. The authors argue in support of the assertion of Kerns and Rosenberg (2000) that if a stages model is clearly and repeatedly demonstrated to be applicable to particular types of pain patients, this may have important clinical implications in terms of treatment planning and development.

The second study subsequent to the development of the Pain Stages of Change model was conducted by Dijkstra, Vlaeyen, Rijnen and Nielson

(2001). The study sought to explore the psychometric properties of a Dutch version of a questionnaire assessing readiness to change in a sample of 321 Dutch fibromyalgia patients. The stages of readiness to change measure (SRC) was adapted from an unpublished English readiness to change questionnaire (Nielson & Vlaeyen, 1996, in Dijkstra, et al., 2001), which was in turn, based on McConnaughy et al.'s (1983) measure of readiness to change. The items were adapted to reflect a readiness to adopt a self-management approach to pain. The Maintenance scale was excluded from the questionnaire as the majority of Maintenance items were incorrectly classified by expert raters. A factor analysis provided support for the Pre-contemplation, Contemplation and Action scales. Inter-item correlations were low to moderate for Pre-contemplation (α =.63) and Action (α =.61) and high for Contemplation (α = .86).

In order to determine the concurrent validity of the questionnaire, patients also completed a validated Dutch version of the Multidimensional Pain Inventory (MPI; Lousberg et al., 1999 in Dijkstra et al., 2001), the Beliefs on the Credibility of the Self-management Approach to Pain and the Medical Management of Pain (CPT; Dijkstra et al., 2001) and the Illness Perceptions Questionnaire (IPQ; Weinman et al., 1996). High scores on the Pre-contemplation scale were related to patient's belief that their pain could be cured by a medical treatment and a low regard for the efficacy of a self-management approach. In contrast to the findings of Keefe et al. (2000)

patients in the Pre-contemplation sub-group reported higher levels of pain and interference than patients in the other sub-groups.

Contemplation scores were related to perceived credibility of a self-management approach and to high levels of pain related distress and interference (again, contrary to the findings of Keefe et al., 2000). Dijkstra et al. (2001) contend that these findings correspond with the assertion of Prochaska et al. (1992) that when a factor (e.g., pain) is considerably interfering in an individuals' life, they start to consider the pros and cons of their behaviour and this process motivates behaviour change. As with the Contemplation sub-group, Action scores were predicted by credibility of a self-management approach to help others and high levels of interference by pain.

Using a scoring method where average scale scores range from -2 to +2, Dijkstra et al. (2001) sought to determine whether it was possible (for clinical purposes) to classify patients into one discrete stage. Using the three-stage model, the researchers were only able to classify 29.3% of patients into one particular stage. When Dijkstra et al. added a Preparation stage (based on low Pre-contemplation scores and high scores on the Contemplation and Action scales) and a Danger of Relapse stage (based on high scores on Pre-contemplation and Action and low scores on Contemplation) they were able to classify 83.5% of patients into one particular stage of change. This finding supports that of Heather, Rollnick and Bell (1993), who increased their

percentage of classifiable patients from 40% to 75% by adding a Preparation stage.

Dijkstra et al. (2001) comment on a number of limitations in their study. Firstly, the low number of Pre-contemplators (1.2%) make it difficult to draw firm conclusions about this sub-group, secondly, the cross-sectional nature of the study does not provide us with details regarding whether patients move in a fixed sequence through the stages and what factors are involved in this process, thirdly, the high percentage of females in the sample (90%) make it difficult to generalise the findings to male patients.

The authors conclude that whilst the Contemplation scale was shown to have adequate internal consistency and concurrent validity, the Pre-contemplation and Action scales require improvement. Concerns voiced by Dijkstra et al. (2001) in relation to the application of a stages model to chronic pain are similar to those of Jensen et al. (2000) that there is lack of clarity regarding which specific behaviour to which the change refers and that the theoretical basis of the construct of readiness to adopt a self-management approach to pain needs to be developed further.

The third published study to date that has attempted to modify the Pain Stages of Change model is the preliminary validation of a German version of the Pain Stages of Change Questionnaire (Maurischat, Harter, Auclair, Kerns & Bengel, 2002). In this study, the Freiburg Questionnaire- Stages of Chronic

Pain Management (FF-STABS) was modified from the PSOCQ (Kerns et al., 1997) and administered to a heterogeneous sample of 116 chronic pain patients recruited from inpatient rehabilitation facilities (n = 59), outpatient facilities (n=33) and non-therapeutic areas such as self-help groups (n=24). Maurischat et al. sought to extend the work of Kerns et al. (1997) by developing a measure that described all five stages of the TTM (as opposed to the four stages identified in the PSOCQ (Kerns et al., 1997), to explore the possibility of identifying a termination stage, and to more clearly discriminate between the Action and Maintenance stages than in the original scale development study.

The final German version consisted of 26 items. In order to improve discrimination between stages, a temporal dimension was added to the items (e.g., for several months I have been doing...). Factor analysis identified four scales that were considered to be consistent with the TTM, these were Pre-contemplation, Preparation, Action and Maintenance. No separate Contemplation or Termination stage was identified. All four scales demonstrated good internal consistencies with Cronbach's alpha ranging from 0.72 to 0.86. Inter-correlations were significantly positive between adjacent stages and significantly negative or non-significantly related to distant stages. Whilst these results provide support for the findings of Kerns et al. (1997) and also improved the distinction between the Action and Maintenance stages in the original scale development study, Maurischat et al. (2002) have not assessed the concurrent validity of the measure and have

failed to address the concerns voiced by Dijkstra et al. (2001) and Jensen et al. (2000) regarding the lack of clarity in terms of which specific behaviour to which the item refers.

It can be tentatively concluded from the previous research that a stages of change model has the potential to assist in assessment and treatment planning for a number of sub-groups of pain patients. Inconsistent research findings clearly indicate, however, that continued investigation and revision of the model is warranted in order to be able to confidently work within this theoretical framework for assessment and treatment of pain. In particular, if we are to consider the possibility of developing stage specific interventions as suggested by Kerns et al. (1997) and Kerns and Rosenberg (2000), it is important to determine whether it is indeed possible to accurately classify individuals into discrete stages in relation to readiness to adopt a self-management approach to chronic pain and to determine whether the findings of studies with pain clinic samples apply to individuals with chronic pain who are treated in the community.

Other than the studies by Keefe et al. (2000) and Maurischat et al. (2002), all of the published research into stages of change and chronic pain have been conducted with pain clinic samples, therefore, it is not clear to what extent the findings would generalise to the general population of people with chronic pain. A number of earlier studies have demonstrated that specialised pain clinic patients differ significantly from pain patients treated in the community

(Turk, 1990). In studies comparing these two populations, pain clinic patients were found to complain of more constant pain, suffer higher levels of functional impairment and report greater emotional and psychosocial distress than pain patients being treated in the community (e.g., Chapman, Sola & Bonica, 1979; Crook, Rideout & Brown, 1984; Crook, Weir & Tunks, 1989). It is important therefore, to establish whether measures and interventions developed on pain clinic samples are appropriate for use with chronic pain patients in the general community.

The aims of Study 1 in the present research were, firstly, to assess the validity of the Pain Stages of Change Questionnaire (Kerns et al., 1997) with a non pain-clinic sample in order to determine the generalisability of the measure, and, secondly, to examine the utility of a stages of change mode as applied to this population in terms of its ability to assist in treatment planning. The study employed a survey questionnaire design with participants recruited from medical and allied health clinics and practices. Prior to commencement of the main study, a pilot study was conducted to ascertain the viability of this approach.

4.1 Pilot Study

A pilot study was conducted for Study 1 to test the research questionnaire for structure, content and ease of use and to test the procedures regarding distribution and administration of the questionnaire. Ethics approval for the

study was granted by both the James Cook University ethics committee and the Cairns Base Hospital ethics committee.

4.1.1 Participants

A convenience sample of 17 participants drawn from two physiotherapy clinics, one medical center and one rehabilitation unit was used to test the content and administration of the research questionnaire. As it was not the intent of the researcher to analyse the data, this sample was deemed to be adequately representative of the sample to be used in the main questionnaire survey. A breakdown of the distribution of the sample of the pilot study is presented in Table 4.1.

Table 4.1
Distribution of Sample in Pilot Study

Practice type	Fee/Non Fee	No of practices	No of participants	% of sample
Physiotherapy Clinic	Fee Paying	2	6	35.2
Medical Practice	Fee paying	2	5	29.4
Rehabilitation Unit	Non Fee	1	6	35.2
Total		4	17	100

Seventeen participants were sampled from the practices and clinics described above. Every second patient that entered the clinic and met inclusion criteria was requested to participate. Eight of the participants (47%) were male. Of the total sample, eight (47%) were non-fee-paying and nine (52.9%) were fee-paying. The mean age was 44 years (SD=13.96) with a range of 21-76.

4.1.2 Procedure

Every second person attending the practice was asked by either the researcher or the receptionist (using standardised instructions) to complete a questionnaire. Participants were asked to complete the questionnaire prior to their consultation while they were in the waiting room, however, a number of participants who had not had sufficient time to complete the questionnaire before their consultation continued to complete the questionnaire during or after their treatment. Questionnaires were collected either by the researcher or the receptionist.

4.1.3 Changes to the structure of the questionnaire.

Subsequent to the pilot study, a small number of minor adjustments were made to the questionnaire. Whilst the structure of the questionnaire remained unchanged, the following three additions were made to the questionnaire.

Question two in Section A, *What is your relationship status?* was added as spouses have been shown to have a significant impact on pain behaviour (both positive and negative) and relationship status has been linked to depression in the literature. Whilst it was not the aim of Study 1 to investigate the impact of spousal interaction on stage of pain and stage of change, it was seen as a factor that should be at least examined. If significant relationships were evident then further investigation would be warranted in Study 2a where more detailed information would be obtained in clinical interviews.

Question eight in Section A, *What is your ethnic background (where do you come from?)* was added to ascertain ethnicity as it was noted by the

researcher that participants of different ethnic backgrounds appeared to communicate their pain in different ways, verbally, behaviourally and in written description.

Question five in section B, *When did this particular pain start?* was added to provide greater clarity regarding the length of time the participant had experienced this particular pain. When participants were only asked how long they had had this particular pain (question four), typical responses included "a couple of months", " a few years". It was found that the addition of question five prompted more specific responses as participants recalled particular antecedents to their pain (e.g. an injury or accident). This question was particularly important in determining stage of pain.

The questionnaire took a minimum of 15 minutes to complete. A number of participants took up to 45 minutes, depending on their literacy level. Participants were generally able to understand and complete all sections. Of those asked to complete a questionnaire, only one individual refused and cited extreme pain and fatigue as the reason for non-participation. The length of time taken to complete the questionnaire posed some difficulties in terms of holding up practitioner appointments and there was a tendency for patients to be requested to complete the questionnaire during or after treatment.

4.1.4 Changes in the administration procedure of the questionnaire

There were two main changes in the administration of the questionnaire. Firstly, all questionnaires were required be completed *prior* to treatment to ensure uniformity of administration and to control for changes in responses as a result of factors occurring during treatment (e.g., pain medication, counselling, test results, interaction with practitioner). Secondly, questionnaires were required to be completed in a different room to the treating clinician to avoid expectancy effects and ensure confidentiality.

4.2 Study 1: Questionnaire Survey

4.2.1 Sampling methodology

In order to obtain a sample of treatment-seeking patients with pain, participants for the survey were recruited by means of a multi-stage cluster sampling methodology. The clusters or self-formed groups were comprised of physiotherapists, chiropractors, medical practices, bulk-billing medical practices, CRS Australia rehabilitation units and public hospital outpatient departments. Within each group, every second practice was selected from the yellow pages. Where there was only one practice within a cluster, that practice was approached for participation (i.e. orthopedic, hand clinic and fracture clinic). Within each selected practice that agreed to participate, every second patient that arrived at the clinic and who met inclusion and exclusion criteria was asked to complete the survey questionnaire.

When patients declined to complete the questionnaire, they were asked to provide brief demographic information (age, gender, occupation, length of pain and reason for declining) in order to compare non-respondents with participants. In order to be able to generalise the research findings to a wide range of treatment seeking patients with pain, fee-paying and non-fee paying (bulk billing) practices were sampled, participants were recruited both during and after working hours and both rural and city practices were sampled. It would have been ideal to have known exact proportions of fee-paying and non-fee paying patients and proportions of patients with pain that visit the various sub-groups for treatment in the population to which the research is to generalise, in order to replicate those proportions in the sample. However a search of the Australian Bureau of Statistics revealed that such figures would be almost impossible to obtain for the following reasons; (a) Conditions are listed by diagnosis rather than symptoms so it is difficult to ascertain if the patient would have certainly had pain; (b) The range of painful conditions is extensive; (c) Where people live does not necessarily determine where they seek medical care. This is particularly the case for country and small city residents who often obtain specialist medical care in larger centers. The data available on the 'inter-regional flow' of non-admitted patients in public hospitals is unreliable, as it has not been collected in a systematic and consistent manner either within or among the states and territories (Cooper-Stanbury, Solon, & Cook, 1994).

4.2.2 Non-Respondents

Thirty-five practices were initially selected from the telephone directory (every second practice listed within each cluster of practice types) and approached to participate in the survey; fifteen practices declined to participate (see Table 4.2). The reasons for non-participation were: waiting room too small to accommodate research activity (n=4), closing down business (n=3), unable to contact appropriate person for approval (n =4), and not interested with unspecified reason (n =4).

Table 4.2 Breakdown of Refusals by Practices

Practice Type	Participating	Declined
Physiotherapist	6	5
Chiropractor	2	6
Medical Centre	3	3
Bulk-Billing Centre	2	1
Orthopedic Clinic	1	0
Hand Clinic	1	0
Fracture Clinic	1	0
Public Physiotherapist	1	0
Rehabilitation Units	2	0
Total	19	15

The final sample of 90 eligible participants was drawn from a total of 19 practices. Within the practices sampled, nine individuals declined to participate in the questionnaire survey. The majority of individual refusals came from fee-paying practices and were male. The mean age was 54 years (SD= 12.5, range =28-76). Non-respondents had an average of two years of secondary education. Three of the refusing individuals were retired, two were unemployed, one was self-employed, two were blue-collar workers and one was engaged in home duties. Five of the non-respondents reported pain lasting more than five years (n=5). The remaining four non-respondents

reported pain lasting for more than two years but less than five years. The reasons for non-participation were pain too great, not enough time and not interested. Non-respondents tended to be older and have lower levels of education than respondents, however, the differences between respondents and non-respondents was not statistically significant.

4.2.3 Participants

Inclusion criteria for the study were that the patient was over the age of 18 and reporting pain for three months or more; exclusion criteria were inadequate literacy to read and comprehend the research questionnaire and visibly affected by drugs or alcohol or actively psychotic. The sample that agreed to participate in the survey and met eligibility criteria comprised 90 participants drawn from 19 practices (see table 4.3)

Table 4.3 Proportions of Participants From Each Practice Type

Practice Type	Fee	Non-Fee	Participants	Percentage of sample
Physiotherapist	*		10	11.1
Chiropractor	*		12	13.3
Medical Centre	*		7	7.8
Bulk-Billing Centre		*	8	8.9
Orthopedic Clinic		*	17	18.9
Hand Clinic		*	1	1.1
Fracture Clinic		*	9	10
Public Physiotherapist		*	6	6.7
Rehabilitation Units		*	20	22.2
Total	3	6	90	100

The mean age of participants was 43 years (SD =13.83, range =19 -77). Fifty-two participants (57.8%) were male. The majority of participants (60%) were married, 22 % were single, eight percent were divorced and eight percent

were in de-facto relationships. Fort-two percent of participants had three years of secondary education. Seventeen percent had completed a college course, and eight percent had completed a university degree. Forty-one percent of participants were unemployed, twenty-eight percent were blue-collar workers, nine percent were self-employed, four percent of participants were engaged in managerial positions, eleven percent held professional positions, six percent had retired and six percent of participants were students.

Eight-five percent of the sample was of Australian or New Zealander descent, the remaining 15% identified as British or European; there were no participants of Asian descent. Pain site varied; though 28% of the sample presented with low-back pain (see Figure 4.1). Cause of pain included disc pathology (28%), neuropathic pain (18%) osteoarthritis (17%) rheumatoid arthritis (11%), fibromyalgia (6%) ligament damage (9%) and carpal tunnel syndrome (2%). The remaining eight percent of participants had no clear diagnosis.

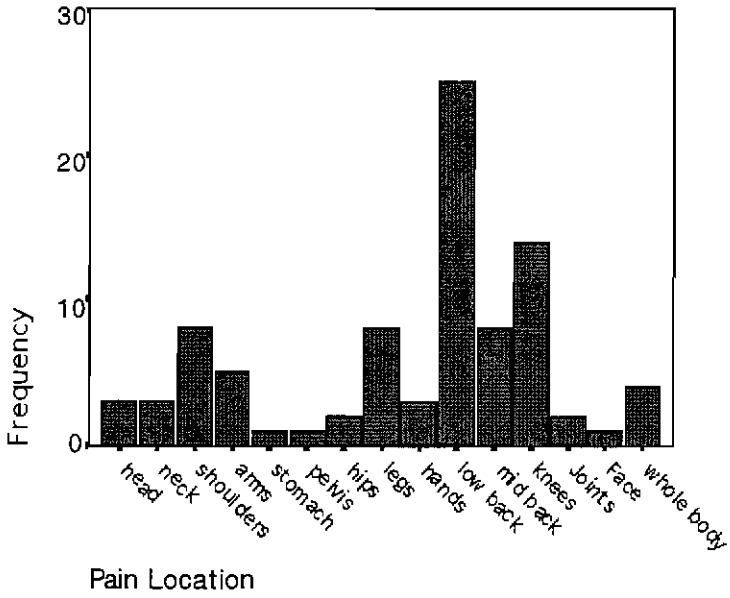

Figure 4.1 Beakdown of pain location for research participants

Pain duration ranged from four months to 30 years (M = 6.6 yrs, SD =13.85). Average pain severity was measured on a numerical rating scale where 0= no pain and 100 = the worst pain ever experienced. The mean average pain severity rating was 53 (SD=21.81, range = 10-100). Seven percent of participants reported that they were currently receiving compensation, nine percent were in the process of applying for compensation or disability payment, and 12% were currently litigating in relation to their pain. The participants did not receive any reward or incentive for completing the questionnaire.

4.2.4 Questionnaire

The questionnaire (Appendix B) was designed to elicit demographic information and pain details, assess current stage of readiness to adopt a self-management approach to chronic pain, determine compensation and litigation status, and ascertain levels of depression and state and trait negative and positive emotionality. The 12-page questionnaire comprised six sections and took on average, approximately 15-20 minutes to complete.

Section A consisted of eight questions to assess demographic information, including gender, age, date of birth, usual and current occupation, marital status, education level and ethnicity. Section B consisted of 24 questions designed to elicit detailed information about the pain, including length of time suffering with pain, location, intensity, cause and diagnosis of pain, past and current treatment and coping strategies, medication use and any history of psychiatric illness.

Section C, The Pain Stages of Change Questionnaire (Kerns, et al., 1997), was included to assess the participant's stage of readiness to adopt a self-management approach to chronic pain. The four-factor, self–report questionnaire consists of thirty items. Pre-contemplation items are characterised by statements reflecting the belief that their pain could only be managed by the medical profession and that self-management approaches would therefore not be helpful. Items on the Contemplation scale indicate a consideration of adopting a self-management approach but uncertainty

regarding how to proceed, and a continued hope that a medical solution would be forthcoming. Action items indicate acceptance of a self-management approach to chronic pain and engagement in attempts to improve self-management skills. Items on the Maintenance scale reflect established self-management of chronic pain and a commitment to continue to acquire and apply these types of strategies. Each item is coded on a five-point Likert scale from strongly disagree (1) to strongly agree (5). The questionnaire was found by Kerns et al. (1997) to be internally consistent and stable over time, with substantial support for each factor's discriminant and criterion-related validity.

In Section D, the Positive And Negative Affect, scale (PANAS; Watson, Clark & Tellegen, 1988) was used to determine state and trait levels of affect. The PANAS measures 20 mood adjectives (10 positive and 10 negative). Respondents indicate the extent to which they generally feel this way (trait affect) and the extent to which they have felt this way during the previous few days (state affect) on a five point Likert scale from (1) very slightly or not at all to (5) extremely. The PANAS is reported to be internally consistent with excellent convergent and discriminant correlations, and is a reliable and valid measure of mood (Watson, et al., 1988).

Section E was included to measure depression as it has been shown to be related to poorer treatment outcome and increased rates of drop-out (Kerns & Haythornthwaite, 1988) and is therefore an important factor to consider when

exploring motivation for change. Depression has been reported to be difficult to assess accurately in chronic pain patients, as many of the symptoms of depression and chronic pain are similar (Romano & Turner, 1985; Williams & Richardson, 1993). The Centre for Epidemiological Studies-Depression Scale (CES-D; Radloff, 1977) was selected for use in the research questionnaire as it has been shown to be a valid instrument for assessing depression in patients who have chronic pain (Turk & Okifuji, 1994; Geisser, Roth & Robinson, 1997) and has high internal consistency and adequate test-retest reliability (Radloff, 1977).

The CES-D is a self-report questionnaire designed to measure depressive symptoms in the general population. The measure comprises twenty items, including four items that are reverse-scored. Patients rate the frequency of their depressive symptoms on a scale of zero to three in relation to how they have felt in the past week. Whilst the standard cut-off score for depression in the general population is 16 or greater, Turk and Okifuji (1994) recommend a cut-off score of 19 or greater and Geisser, et al. (1997) recommend an optimal cutoff score of 27 or greater in chronic pain patients.

Section F comprised three questions to determine compensation and litigation status as these factors have been shown in some previous research to be related to outcome (Rohling, Binder & Langhinrichsen-Rohling, 1995). Participants were asked if they were currently receiving compensation (disability insurance), if they were in the process of applying for

compensation, and if they were currently involved in litigation in relation to their pain.

The final page on the questionnaire provided brief information regarding pain management workshops based on a self-management approach that might be offered as a later part of the research. Participants were informed that if they wished to provide their name and contact phone number they would be contacted in due course with further information. This section was included to determine whether stage of change as (as classified by the PSOCQ) would be related to willingness to engage in a treatment program with a self-management focus.

4.3 Method

4.3.1 Procedure

Every second patient that attended each clinic and met eligibility criteria was requested to complete a research questionnaire. The questionnaires were administered to individuals prior to consultations with medical practitioners, physiotherapists and chiropractors. Using standardised instructions, participants had the aim of the research explained to them and were asked if they were willing to participate in the survey, they were assured that all information would remain confidential and be used only for the purposes of the current research project. The participants were moved to a private area away from other participants and the researcher to control for expectancy effects. Participants were requested to place their completed questionnaire in

a sealed unmarked envelope (provided) to ensure confidentiality. Participants were informed that if they wished to provide their name and contact details, written feedback regarding the results of the study would be forwarded by mail at their request.

4.4 Results

4.4.1 Internal consistency scores

The first aim of Study 1 was to examine the psychometric properties of the PSOCQ in a non-pain clinic sample of individuals. Each study participant was classified into one of four stages based on their highest PSOCQ scale score as illustrated in Table 4.4

Table 4.4
Proportions of Participants in Each Stage of Change.

N=90	n	Percentage
Pre-contemplation	25	27.8
Contemplation	16	18.9
Action	18	20.0
Maintenance	29	33.3
Total	90	100

The scale score means, standard deviations and the internal consistency coefficients of the PSOCQ scale scores are presented in Table 4.5. Internal consistency coefficients were greater than .75 for each of the four scales and are consistent with those reported by Kerns et al. (1997) in the original scale development sample and Jensen et al. (2000) in pain-clinic and fibromyalgia samples.

Table 4.5
Means, Standard Deviations and Internal Consistency Scores for PSOCQ Scales.

PSOCQ scale	Mean	(SD)	Cronbach's Alpha
Total sample (N=90)			
Pre-contemplation	3.06	(.80)	.76
Contemplation	3.23	(.62)	.79
Action	3.25	(.87)	.82
Maintenance	3.44	(.81)	.86

4.4.2 Associations among the PSOCQ scales

Scale score inter-relations for the current sample (non pain-clinic), the scale development sample (Kerns et al., 1997) and the pain-clinic and fibromyalgia samples (Jensen et al.,2000) are presented in Table 4.6.

Table 4.6 PSOCQ Inter-Scale Correlation Co-efficients for four Samples

PSOCQ Scale	Contemplation	Action	Maintenance
Non pain- clinic Sample (N=90)			
Pre-contemplation	0.09	.-0.45***	-0.46***
Contemplation		0.32**	-0.07
Action			0.68***
Maintenance			
Scale development Sample (N=269)			
Pre-contemplation	-0.29***	-0.37***	-0.42***
Contemplation		0.23***	0.12
Action			0.80***
Maintenance			
Pain-Clinic Sample (N=110)			
Pre-contemplation	-0.23*	-0.38***	-0.28**
Contemplation		0.36***	0.14
Action			0.79***
Maintenance			
Fibromyalgia Sample (N=119)			
Pre-contemplation	-0.14	-0.31**	-0.27**
Contemplation		0.21	-0.04
Action			0.74***
Maintenance			

*P< 0.05, **P<0.01, ***P<0.001

As illustrated in Table 4.6, Pre-contemplation was weakly positively associated with Contemplation. In the pain-clinic sample and the scale development sample, Pre-contemplation was found to be significantly negatively associated with Contemplation. In the fibromyalgia sample the association was also negative but non-significant. Pre-contemplation was significantly negatively associated with Action, as it was with the pain-clinic, fibromyalgia and scale development samples Pre-contemplation was also significantly negatively associated with Maintenance and this is similar to the pain clinic sample, the fibromyalgia sample and the scale development sample.

Significant positive associations were demonstrated between Contemplation and Action; this association was similar to those reported in the pain-clinic sample and higher than in the scale development sample and the fibromyalgia sample. The positive associations found for Action and Maintenance in the current study are similar to those in the original scale development sample, the pain clinic sample and fibromyalgia sample. Associations between Contemplation and Maintenance were negative and non-significant and similar to the fibromyalgia sample. In the scale development sample and the pain-clinic sample, associations between Contemplation and Maintenance were found to be positive and non-significant.

4.4.3 Differences between individuals in each stage of change

One-way analyses of variance were performed to examine predicted differences among the classified stage of change groups in the four PSOCQ scales. To control for alpha inflation associated with multiple comparisons, a familywise Bonferroni alpha was set at 0.0125 (0.05/4). The data are presented in Table 4.7.

Table 4.7 Mean Scale Scores for Classified Stage of Change Groups

Classified Stage	Pre-contemplation n=25	Contemplation n=16	Action n=18	Maintenance n=29	F-value
PSOCQ scale score mean (SD)					
Pre-contemplation	4.00 (.40)	2.92 (.74)	2.61 (.47)	2.65 (.56)	36.06*
Contemplation	3.07 (.58)	3.78 (.77)	3.33 (.41)	3.00 (.50)	7.92*
Action	2.52 (.70)	3.10 (1.0)	3.85 (.51)	3.52 (.66)	14.22*
Maintenance	2.87 (.64)	3.00 (.76)	3.72 (.57)	4.02 (.47)	21.30*

* $p<0.001$

The results demonstrate significant differences among the stages of change for each of the PSOCQ scales, and identify four specific stages. However, participants classified as being in either the Contemplation, Action or Maintenance stage also have mean scale scores of three or over for Contemplation, Action and Maintenance, indicating more agreement than disagreement with each of the three stages of change.

4.4.4 Associations between stage of change and psychological variables

Spearman rank order correlations were performed in order to examine associations between the PSOCQ scale score means and affect scores. No

association was demonstrated between previous psychiatric illness and any of the stages of change. The mean depression score in this sample was 16 (SD =11.39, range=1-50), with sixteen being the standard cut-off point for depression suggested for the general population (Radloff, 1977). The correlations are presented in Table 4.8.

Table 4.8. Correlations Between the PSOCQ Scales and the Measures of Affect

	PSOCQ scale			
Measures	Pre-contemplation	Contemplation	Action	Maintenance
CES-D	.17	.03	.11	-.18
State Positive Affect	-.24*	-.01	.26*	.36***
Trait Positive Affect	-.21*	.03	.23*	.29**
State Negative Affect	.04	.08	.05	-.06
Trait Negative affect	.08	-.06	-.03	-.12

*p<.05, **p< .01, ***p<.001

4.4.5 Associations between stage of change and demographic variables. Pearson correlations were calculated in order to explore relationships between PSOCQ scale scores and demographic variables. In order to correct for the large number of planned comparisons, results were considered significant if they were at or below. the 0.01 significance level. The analyses revealed no significant relationships for age, ethnicity, marital status or average pain rating and any of the PSOCQ scale scores. Pain duration was negatively associated with Pre-contemplation (r = -.270, p<.01) and positively associated with Action (r =.258, p< .01) and Maintenance (r =.233, p<.01).

T-tests revealed no significant differences for fee-paying versus non-fee-paying, married versus non-married or receiving compensation versus not receiving compensation. The male participants had significantly higher mean Pre-contemplation scores than the female participants (male Pre-contemplation score, M=3.23, female Pre-contemplation score, M =2.82, p=.02) and this is consistent with the findings of Kerns et al. (1997) in the original scale development sample.

4.4.6 Associations between stage of change and current coping strategies

The second aim of Study 1 was to determine the utility of the Pain Stages of Change Model (Kerns et al., 1997) in relation to its usefulness for treatment planning in a non-pain clinic sample. Descriptive statistics were used to examine the characteristics of the participants in each stage of change, particularly in relation to coping strategies, including medication use and willingness to participate in a self-management pain program. A number of inconsistencies were discovered in relation to the theoretical underpinnings of the model and the validity of the measure.

Pre-contemplation

According to the pain stages of change model (Kerns et al., 1997) individuals in the Pre-contemplation stage would believe that their pain is purely a medical problem, would not be using self-management strategies and would not be interested in this type of approach. Contrary to the model, 44% of participants in the Pre-contemplation stage indicated that they would like to participate in a pain program based on self-management strategies with no

medical treatment involved. As it was not the intention of the researchers to examine the predictive ability of the PSOCQ, actual participation in treatment was not examined in this study, however, the large numbers of Pre-contemplators indicating an interest in this type of approach is thought to be inconsistent with the definition of Pre-contemplation provided by Kerns et al. (1997) in the scale development study.

Although it could be argued that subsequent studies (e.g., Kerns & Rosenberg, 2000) have demonstrated that Pre-contemplators *can* be successfully engaged in treatment with a self-management focus (though they are less likely to complete treatment than Contemplators) this demonstrates that either stages are less stable than originally thought, or the wording on the PSOCQ is not specific enough to accurately classify individuals into appropriate stages of readiness to adopt a self-management approach to pain. Further speculation about other possible reasons for Pre-contemplators expressing an interest in self-management programs raised three possibilities. Firstly, it could be that completing the PSOCQ may have had a motivational effect, thus moving participant closer to considering a self-management approach, secondly, individuals in these settings (i.e., where no pain clinic is available) may be willing to try *any* type of treatment, and thirdly, participants may have appreciated the attention from researchers and felt that participating in research validated their pain to others.

Contemplation

Contemplation stage is characterised by a consideration of the potential value of adopting a self-management approach but a reluctance to relinquish pursuit of a medical solution (Kerns et al., 1997). Fifty-nine percent of participants in the Contemplation stage indicated that they would like to participate in a pain program based on self-management strategies with no medical treatment involved.

Action

Action stage is characterised by acceptance of a self-management approach which usually does not rely on regular use of medication but rather, active engagement in attempts to improve self-management skills (Kerns et al., 1997). In this study, 33% of participants in the Action stage were using daily analgesics as the primary pain coping strategy, and 11.1% were using daily narcotics to manage their pain. These participants were taking their medication on a pain-contingent basis, reported few active coping strategies and did not express an interest in participating in a pain treatment program based on self-management strategies.

Maintenance

According to the pain stages of change model (Kerns, et al., 1997), the Maintenance stage is characterised by beliefs reflecting an established self-management perspective and a desire to continue to acquire and maintain adaptive self-management strategies. Contrary to expectations in this study, 36.7% of participants in the Maintenance stage reported using pain-contingent analgesic medication as a primary coping strategy on a daily

basis, and ten percent reported using daily pain-contingent narcotic medication to manage their pain. Also at odds with the model, twenty-seven percent of participants in the Maintenance stage indicated that they had further surgery planned. Sixteen percent of participants in the Maintenance stage used marijuana to manage their pain (compared to ten percent of individuals in the Pre-contemplation stage and 16.7 % of individuals in the Contemplation stage).

4.5 Discussion

The results of this study provide empirical support for the findings presented by Kerns et al. (1997) and Jensen et al. (2000) in terms of the internal consistency of the PSOCQ scales, with Cronbach's alpha scores being greater than .75 for each of the scales in a sample of people with chronic pain in the community. Associations between the PSOCQ scale scores other than Pre-contemplation were generally consistent with the findings of Kerns et al. (1997) and Jensen et al. (2000). In the present study, Pre-contemplation was weakly positively correlated with Contemplation, and significantly negatively correlated with Action and Maintenance, however, in the three earlier samples (the original development sample, the pain-clinic sample and the fibromyalgia sample), Pre-contemplation was negatively correlated with Contemplation, Action and Maintenance. The very small numbers of Pre-contemplators in the earlier studies, however, make it difficult to draw conclusions in relation to these differences.

The criterion-related validity was not extensively explored with this sample, however, the associations between PSOCQ scale scores and scores on the PANAS (Watson et al., 1988) and the Centre for Epidemiology- Depression Scale (Radloff, 1977) were generally in the expected direction, with Pre-contemplation being associated with higher levels of depression and state and trait negative affect, and Maintenance being associated with lower depression scores and higher levels of state and trait positive affect. Associations with Action scores were similar to Maintenance, with Action being associated with lower depression and higher state and trait positive affect. Contemplation associations were similar to the associations with Pre-contemplation, with higher scores on depression, however the associations with the state and trait affect scores were inconsistent and inconclusive. These findings are similar to those of Jensen et al. (2000) who reported that Contemplation was not significantly associated with any of the criterion measures in either the pain-clinic or fibromyalgia samples.

Interestingly, men in this sample were shown to have significantly higher Pre-contemplation scores than women and, although these findings support Kerns et al. (1997), this is contrary to a recent review of the literature documenting gender differences in chronic pain, which claims that women generally report greater pain, disability and distress than men (Unruh, 1996). It is possible that opportunistically accessing participants in a setting where they have come primarily to seek medical assistance is not providing us with a clear and unbiased pattern of responding from either gender.

Close inspection and exploration of the data suggests a number of problems with the current form of the Pain Stages of Change model and the PSOCQ. Firstly, the Transtheoretical model (on which the Pain Stages of Change model was based) was originally developed and is suitable for, explaining cessation or adoption of specific behaviours (e.g., smoking, alcohol use, condom use, sunscreen use, mammography screening). Individuals with chronic pain, however, require cognitive, affective and behavioural change in a number of areas. The results of this study support the assertion by Jensen et al. (2000) that individuals may present as being simultaneously in a number of different stages for separate self-management behaviours, so that, for example, someone may be in the Pre-contemplation stage for one behaviour (e.g., thinking that they will never be able to manage their pain without analgesic or opioid medication), the Contemplation stage concerning other behaviours (e.g., considering commencement of an exercise program), the Action stage for other behaviours (e.g., in the process of learning relaxation strategies for pain), and the Maintenance stage for yet other behaviours (e.g., regular use of coping self-statements).

As discussed in the study by Dijkstra et al. (2001) the items are not specific enough regarding the particular activity to which the statement refers and are therefore causing respondents to endorse items that do not relate to the type of self-management intended by the developers of the scale. For example, many of the respondents that were classified by their responses on the PSOCQ as being in the Maintenance stage were managing their pain by

inappropriate use of opioid and analgesic medications (e.g., taking medications on a pain-contingent basis rather than time-contingent as prescribed, 'doctor shopping' for topping up medications), high levels of inactivity and ongoing reliance on medical intervention, and many had further surgery planned, all of which are typically more indicative of behaviours that would theoretically be more consistent with the Pre-contemplation stage. Conversely, many respondents classified as being in the Pre-contemplation stage reported information that is more indicative of being in the Action or Maintenance stage, such as indicating that they are interested in participating in a self-management program for pain, using coping self-statements and engaging in a number of active self-management activities such as exercise, stretches and relaxation techniques.

The wording of many of the PSOCQ items is ambiguous and appears to be causing respondents to endorse contradictory statements. Wording such as 'recently', 'a lot', 'a new way' require subjective interpretation and may be confusing. For example, individuals in the Maintenance stage are indicating that they 'strongly disagree' with statements including the word *recently* (e.g., 'I have recently figured out that it is up to me to manage my pain'). Presumably this is because they learned *long ago* that it is up to them to manage their pain. Whilst the word 'recently' has most probably been included to discriminate Action from Maintenance, its use may be producing invalid responses.

In the original scale development sample (Kerns et al., 1997) the authors noted an unexpectedly high correlation between Action and Maintenance and argued that greater discrimination may be found in a community based sample such as the one described in the present study. It is evident, however, that Action and Maintenance are also highly correlated in this sample and this may be due to failure of the PSOCQ Maintenance stage items to include a temporal dimension, thus distinguishing Action from Maintenance. Use of a time-frame within the items may help to elicit more accurate responses and would increase the validity of the measure, as the temporal dimensions of the stages of change are theoretically important.

The PSOCQ determines stage of readiness to change based on an individual's beliefs about self-management. However, an individual's beliefs and their actions may not correspond. Therefore an individual may endorse a self-management approach (or parts thereof), yet not actually be engaging in those types of behaviours. For example, an individual may believe that exercise may be beneficial for managing their pain but not actually be exercising, or conversely, the individual may be exercising to help manage their pain because it has been recommended by an 'expert' but not really believe that it is helpful (and is therefore not likely to maintain that activity). The PSOCQ does not evaluate belief-behaviour discrepancies, and therefore provides no information regarding *why* an individual may not be engaging in, or maintaining, a particular self-management activity.

The relatively small sample size in this study, the small numbers from each recruitment site and the heterogeneous nature of participant diagnoses limit the generalisability of these findings. Further, the lack of criterion measures restricts the investigation of the psychometric properties of the PSOCQ in this non pain-clinic sample. Obviously, further studies are required to validate these preliminary findings with the PSOCQ in a non pain-clinic population. However, given that the quantitative findings were generally similar to those found for the two samples in the study described by Jensen et al. (2000) the following conclusions can be drawn.

Whilst the stages of change model may be a useful theoretical framework for understanding some types of behaviour change, the model requires adaptation to be appropriate for understanding readiness to adopt a self-management approach to chronic pain. In addition, it appears that the PSOCQ (Kerns, et al., 1997) may not be a useful instrument by which to classify non pain-clinic patients into distinct stages of readiness to adopt a self-management approach and to determine appropriate therapeutic intervention.

Further research should focus on adapting the stages of change model to better apply to pain management. This will require a more unified understanding and definition of what a self-management approach means to individuals who have chronic pain, as clearly, our current conceptualisation of this type of approach is somewhat different to that of our patients.

Future research efforts should also be directed towards the development of a valid means of assessing readiness to change in this population. A useful measure would discriminate clearly between self-management activities and would add a temporal dimension to the items. A useful assessment tool would also provide clinicians with information regarding discrepancies between belief and behaviour and possible reasons for the discrepancies. This type of measure would focus more on the *processes* of change that are associated with movement between stages, thereby enabling us to develop and plan appropriate treatment. Clearly, an understanding of *why* an individual is a particular stage of readiness to change for each self-management activity is vital to enhancing movement through the stages.

Chapter Five utilises qualitative methods to expand and explain the findings of Study 1 and provides a useful means of more fully exploring the lived experience of individuals with chronic pain in terms of motivational factors involved in self-management and how that fits with current theoretical models.

CHAPTER 5 - Study 2a

Further exploration of the Pain Stages of Change model: Qualitative Interviews

5.0 Overview and rationale for Study 2a

5.1 Participants

5.2 Methodology

- **5.2.1** Interview Phase 1
- **5.2.2** Interview Phase 2
- **5.2.4** Interview Phase 3

5.3 Results

- **5.3.1** Phase 1
- **5.3.2** Phase 2
- **5.3.3** Phase 3

5.4 Discussion

5.0 Overview and Rationale for Study 2a

The findings of Study 1 (Habib, Morrissey & Helmes, under review) support the assertion of Jensen et al. (2000) and Biller et al. (2000) that the Pain Stages of Change model (Kerns et al., 1997) may not be as useful as it was designed to be, at least, in its current form. In Study 1, the Pain Stages of Change Questionnaire (PSOCQ; Kerns et al., 1997) demonstrated a relative inability to discriminate between the distinct behavioural and cognitive domains over which change is required in a self-management approach to chronic pain. Further, participants were endorsing items on more than one PSOCQ scale, thus simultaneously being in several stages of readiness to change, and frequently engaging in activities that would be considered theoretically inconsistent with the stage in which they had been classified by the PSOCQ.

The Pain Stages of Change model (Kerns et al., 1997) lacks the ability to explain important aspects of stages of readiness to change and provides only a broad descriptive profile that contributes little to our understanding of the reasons for the individual's stage of change. As discussed in Chapter Four, measuring beliefs in isolation from actual behaviour is problematic, as clearly there is often a discrepancy between beliefs (or intent) and actual behaviour Therefore, assessing beliefs in isolation from behaviour does not provide an accurate picture of what the individual is actually *doing* to manage their pain. These findings have highlighted the need for an alternative or expanded

conceptualisation of readiness to adopt a self-management approach to pain in order to guide the development of appropriate intervention.

The aims of Study 2a were to gain further insight into the way in which individuals conceptualise and operationalise a self-management approach to pain and to expand and improve the pain stages of change model. Study 2a comprised a series of qualitative interviews. It was anticipated that using a phenomenological approach to collecting qualitative data from appropriate informants could add meaning to the quantitative data generated in Study 1 and help to revise and expand the original conceptual framework of the model. Qualitative data has been shown to be helpful in supplementing, validating, explaining and expanding quantitative data (Miles & Huberman, 1994). It was anticipated that the qualitative information would assist in exploring the 'fit' between the theoretical constructs of the pain stages of change model and the real-life experiences and understandings of people suffering with chronic pain.

5.1 Participants

The sample was recruited using a purposive, theory-driven, criterion sampling methodology (Patton, 1990). Twenty participants were randomly selected (using a computer generated random numbers table) from the 43 participants in Study 1, whose reported behaviour (e.g., medication use, self-management strategies) was inconsistent with the stage in which they had been classified by the PSOCQ.

The mean age of participants was 43 years (SD = 12.18, range = 20-61), 13 participants (65%) were male. The majority of participants (75%) were married, one was divorced, one was widowed and three were in de-facto relationships. The participants had an average of 4.25 years of secondary education (SD = 1.3, range = 2-6 years). Primary pain site varied but the majority of participants suffered with low-back pain related to disc pathology (72%). The participants varied in terms of the stage of change in which they had been classified by the PSOCQ. Four were classified as Pre-contemplators, two as being in the Contemplation stage, five were classified as being in the Action stage and nine were classified as being in the Maintenance stage.

5.2 Methodology

Ethics approval for this study was granted by both the James Cook University ethics committee and the Cairns Base Hospital ethics committee. Participants had the aims of the research explained to them and completed a consent form prior to interviews. The researcher individually interviewed the participants in their homes (local setting) in order to observe how participants managed in their own setting, how they had adjusted their home environment to manage their pain and their use of aids, medication and other coping strategies during the interview. The interviews took between one and a half and two and a half hours to complete and the researcher took notes and audio-taped the interview for transcription purposes.

The interview (Appendix C) was conducted using a pre-structured case method (Miles & Huberman, 1994) which comprised the following three phases

5.2.1 Phase One

In phase one, participants were asked, in a non-confrontational manner, what they had understood particular items on the PSOCQ to mean. Items varied between the participants as the particular items of interest were those that were inconsistent with reported medication use and currently utilised self-management activities. Also of interest were items which were strongly positively endorsed by the participant, but which were inconsistent with the stage in which they had been classified by the PSOCQ. Participants were also asked to explain what they thought item words such as 'recently' and 'new ways' meant.

5.2.2 Phase Two

The aim of Phase two of the interview was to elicit the participant's understanding of a self-management approach to pain. During this phase of the interview, participants were asked what they thought a self-management approach to pain means and what activities this type of approach would include. Participants were asked what they perceived as the potential drawbacks and benefits to a self-management approach to pain and why they thought this was so.

Participants were asked about their own self-management activities, which strategies they used, what prompted them to commence, what makes it easy or difficult for them to maintain those activities and how helpful they perceived the activities to be. Participants were asked to describe a time (or times) that they had ceased all self-management activities. This included their understanding of why they had ceased, how long they ceased for, what prompted them to resume the activity and how they do (or do not) plan to manage future relapses. If participants reported that they had not ever ceased all self-management activities to manage their pain, they were asked if they had ever felt like stopping, and, if so, what prevented them from stopping. Participants were also asked whether they thought that medication, alcohol and illicit drugs such as marijuana could be considered part of a self-management approach to pain.

Participants were asked who (if anyone) influences their decisions regarding the way they manage their pain, whether they knew where to access information about or assistance with a self-management approach to pain, and whether they thought it would have been helpful to have been provided (by a health professional) with self-management information shortly after they sustained the original injury.

5.2.3 Phase Three

The primary aim of Phase three was to determine whether participants considered themselves to be in the same stage of readiness to adopt a self-

management approach as the stage in which they had been classified by the PSOCQ. Participants were shown an illustration of the stages of change model and had the criteria for each stage explained to them. Participants were asked to say in which stage they perceived themselves to be, firstly in their overall self-management of their pain (for comparison with PSOCQ classification), then secondly, for each of the following activities; medication use, exercise and stretches, pacing and alternating activities, relaxation and meditation, and thought techniques (where required, participants had explained to them what each activity entails). Self-management was segregated into specific activities in order to determine whether participants reported different stages of readiness for particular activities.

For activities where the participant was in either the Action and Maintenance stages, participants were asked what could help them to stay in those stages, for activities where the participant was in the Pre-contemplation, Contemplation and Preparation stages, they were asked to describe what could help them to move forward from those stages.

5.3 Results

5.3.1 Phase 1: Perceived meaning of PSOCQ items

Items in each of the PSOCQ stages were found to have ambiguous meaning for the participants and a number of the items were strongly endorsed by participants in each of the stages of change.

Pre-contemplation items

Item 24: *The best thing I can do is find a doctor who can take away my pain once and for all.*

Item 25: *Why can't someone just do something to take away my pain*

Although items 24 and 25 are considered to be theoretically inconsistent with any stage other than Pre-contemplation, participants classified in all four stages of change endorsed these statements. Logically, anyone in pain would endorse such items as they imply a change to a pain-free state.

Contemplation Items

Item 1: *I have been thinking that the way I cope with my pain could improve.*

Item 9: *I realise now that it is time for me to come up with a better plan to cope with my pain problem*

Item 7: *I have recently realised there is no medical cure for my pain condition so I want to learn some ways to cope with it.*

Item 15: *I have recently figured out that it's up to me to deal better with my pain*

Item 19: *I have recently come to the conclusion that it is time for me to change how I cope with my pain.*

Participants who felt that they were already coping well with their pain were strongly disagreeing with these statements (i.e., participants in the Maintenance stage). Further, participant's ideas regarding the meaning of the word 'recently' ranged from one week to two years, thus affecting responses to this item.

Action Items

Item 2: *I am developing new ways to cope with my pain*

Item 6: *I have started to come up with strategies to help myself control my pain*

These items do not discriminate with regards to the *types* of new ways to cope, therefore, some participants who were using new *maladaptive* coping strategies (such as excessive rest, overuse of medication and use of marijuana) were strongly agreeing with these statements.

Item 20: *I am getting help learning some strategies for coping better with my pain*

Participants who had been coping well by themselves disagreed with this statement. Participants frequently commented that there is no information or assistance offered by the medical profession in relation to adopting a self-management approach to pain. The majority of participants reported that they had been told by medical specialists to "learn to live with the pain" but had been given no advice regarding how to actually do this and this lack of information was a source of anger and frustration for the participants.

Maintenance Items

Item 3: *I have learned some good ways to keep my pain problem from interfering with my life,*

Item 5: *I am using some strategies that help me deal with my pain on a day to day basis.*

Item 10: *I use what I have learned to keep my pain under control.*

Item 13: *I am currently using suggestions people have made about how to live with my pain problem.*

Item 17: *I have incorporated strategies for dealing with my pain into my everyday life.*

Item 18: *I have made a lot of progress in coping with my pain*

Participants were agreeing with these statements when they were heavily reliant on medication and/or illicit drugs such as marijuana, and were also often using periods of excessive rest and inactivity to cope on a day-to-day level. Few participants related item 18 to adaptive self-management activities such as exercise, activity pacing, cognitive techniques etc.

5.3.2 Phase 2: Participant's understanding of a self-management approach to pain.

Multi-disciplinary pain programs and self-help texts for people with chronic pain typically emphasise a self-management approach. However, as discussed in Chapter 2, there is no clear, widely accepted definition of this approach, and understandings of self-management amongst both health professionals and people with pain appear to vary greatly. Generally, health care practitioners describe a self-management approach to pain as being actively responsible for the management of one's own pain by engaging in helpful activities on a day-to-day basis rather than passively relying on medical and allied health professionals. Medication use is generally viewed as being inconsistent with a self-management approach with pain specialists actively encouraging decreased use or cessation of all pain medication.

There was general agreement among the participants that a self-management approach meant taking responsibility for managing their own pain rather than expecting doctors to 'cure' their pain. The main self-management strategies identified by participants were ignoring the pain or distracting oneself from the pain, resting when required, knowing your limits and avoiding the 'high risk' situations that trigger pain flare-ups (see Table 5.1).

Table 5.1 Endorsements of Self-management Strategies

Self-management strategy	Number of participants endorsing this approach
Ignoring pain	14
Distracting oneself from the pain	18
Knowing your limits	15
Exercises	4
Avoiding 'high risk' situations	17
Using medication	12
Use of marijuana	6
Use of alcohol	0

Generally, specific strategies such as exercise, relaxation and pacing were not mentioned by participants. However, a number of participants regarded the use of pain medication such as painkillers and anti-inflammatories as an acceptable component of a self-management approach. Use of alcohol as a pain-coping strategy was viewed by all participants as being incompatible with a self-management approach. Use of marijuana was reported by 30% of

participants to be an acceptable and helpful self-management strategy for pain.

The main perceived advantages of adopting a self-management approach were no longer being reliant on the medical profession, indeed, many of the participants reported that they felt angry, frustrated and disillusioned with doctors, and regaining a sense of control over their lives. The main perceived disadvantage of adopting a self-management approach was fear of further injury due to lack of information regarding appropriate strategies. This fear was particularly salient for participants who had not been given a clear diagnosis and prognosis.

Where participants had been using a self-management approach, factors that had caused them to cease these activities (for a limited time or permanently) were acute pain flare-ups (that were equated to further injury as a direct result of their self-management efforts), a perception that the strategies were not helpful for managing their pain, decreases in pain, and periods of low mood or depression related to their pain and disability.

Factors that encouraged participants to adopt a self-management approach were fear of the side-effects of medication, anger and frustration with the medical profession's lack of ability to 'cure' their pain, and the realisation that there were no other medical options available. The main reported factors that made it difficult for participants to use a self-management approach were lack

of knowledge regarding types of strategies to use, fear of further injury, depressed mood and perceived lack of support.

Although it was hypothesised that doctors and medical specialists would be a powerful source of influence, there were no clear patterns or themes regarding specific persons influencing participant's decisions about how they manage their pain. Generally, participants reported that no-one influenced their decisions regarding pain management, however, most participants agreed that it would have been helpful to have been given information and advice regarding self-management strategies (by a treating health practitioner) at the point at which it became clear that no further medical options were available.

Generally, health practitioner's understanding of self-management of pain tends to categorise an individual's approach as either adaptive (i.e., using one or a number of active management strategies and not reliant on medication), or maladaptive. This distinction appears somewhat simplistic however, when considering the information gathered from the questionnaires in Study 1 and the interviews in Study 2a. Rather than individuals using adaptive or maladaptive pain management techniques as expected, the data related to use of medication, beliefs about self-management and pain coping strategies revealed the following three distinct self-management styles (plus maladaptive management), outlined in Table 5.2.

Table 5.2 Identified Patterns of Self-Management

Management Style	Medication Use	Beliefs about medication
Management Style A	Doesn't use	Medication should be avoided
Management style B	Occasional use as prescribed	Occasional use of medication is OK
Management Style C	Daily as prescribed	Medication greatly assists me to participate in social and vocational activities
Maladaptive	Using frequently and indiscriminately on pain-contingent basis	Medication is the only way to manage my pain

Management Style A (MSA)

The management style A individual generally utilises an extensive range of coping strategies and is typical of the self-management style encouraged by most pain specialists. The style A individual never uses medication and rarely visits medical or allied health practitioners for pain related complaints. MSAs appear to be particularly motivated to maintain an active self-management approach and have restructured their lives in order to minimise the impact of their pain-related disability.

As with MSBs, MSAs tend to voice concerns related to the side-effects of medication. MSAs generally report using rest as a substitute for medication to manage acute pain periods and as a result, occasionally have brief pain related absences from work.

Typical MSA statements (taken from interviews in Study 2a) include,

" I never use medication, I would rather just rest for a while until I can get going again" (Participant No.229).

" I think the side-effects of the medication would be worse than the pain, I don't want to live my life on drugs" (Participant No. 242).

"There are a lot of other things you can do to cope, I have learned that different things work at different times, it's just trial and error really" (Participant No. 298).

Management Style B (MSB)

The management style B individual generally engages in a range of active self-management strategies including exercise, stretches, activity pacing, relaxation/meditation and thought techniques. MSBs typically report that they do not routinely use medication. During acute pain flare-ups or at predicted times when some active self-management strategies may be impractical (e.g., travelling long distances, standing for extended periods of time, short-term extended work commitments etc.), MSB's tend to favour the short-term use of medications such as Panadene, Panadene Forte and anti-inflamatories and use these medications as prescribed by their practitioner. MSBs often voice concerns regarding the side-effects of medication, in particular the issue of dependence. MSB individuals are generally active and productive despite their pain and have learned ways to lessen the impact of the pain on their lives.

MSBs rarely visit their health practitioner for pain related complaints and rarely have pain-related absences from work. Typical MSB statements (taken from interviews in Study 2a) include the following,

"I only take medication when I really, really need to" (Participant No.235).

"Usually I don't take any pills, but every now and then, when my pain is really bad, I take a couple of pain killers and anti-inflamatories and at least that way I can get to work. Usually it (the pain) settles down after a couple of days, I wouldn't want to keep taking pills all the time" (Participant No. 401).

" I do take a couple of pain killers or anti-inflamatories if I know I might end up sitting or standing for a long time, or when I am going to get out of my routine – like when I'm going away on holiday or something" (Participant No. 313).

Management Style C (MSC)

The MSC individual has been prescribed daily opioid medication such as M.S Contin. They use their medication exactly as prescribed and visit only one General Practitioner. The MSC individual also uses a range of active self-management strategies including exercise and generally reports that neither the medication or the active management strategies alone are sufficient to manage their pain. Further, MSCs maintain that the use of medication manages the pain sufficiently for them to participate in self-management activities such as exercise, and vocational and social commitments. MSC individuals typically report that without medication they would be unable to function as a productive individual and that the consequences would include inactivity, physical de-conditioning, social withdrawal, unemployment and depression.

Typical MSC statements (taken from interviews in Study 2a) include the following,

" I know I need to be careful with this type of medication (M.S. Contin) but to be honest, what would happen to me if I didn't take it (unemployment, inactivity, depression) would be much worse than the side-effects of the drug" (Participant No.224).

"I don't see why I should suffer, the medication helps me to be able to do things, this way I can go to work and be part of the family" (Participant No.322).

"The medication helps me to do a lot of other things to manage my pain (exercise, thought techniques, yoga), it's not the only thing I use to cope with this" (Participant No.224).

Maladaptive management style.

Individuals with a maladaptive management style appear to be reliant on medication, and use it on a pain-contingent rather than the prescribed time contingent basis. This management style is characterised by excessive inactivity and disability, high levels of dependence and a lifestyle that is entirely dictated by the pain. Individuals using maladaptive coping strategies are generally on sickness or disability benefits and do not express an interest in adopting a self-management approach to their pain.

Typical maladaptive management style statements taken from Study 2a are

"This (opioid medication) is the only thing that helps, I just take it when I need it, .. I have to take a lot more now than I did when I first started taking it" (Participant No.103).

"I just have to accept that I'm a cripple now, there's no hope for me." (Participant No.243).

"There's no way I could do exercise or anything, the pain is too bad for me to do anything" (Participant No.243).

Due to the small numbers of participants in Study 2a, the data from Study 1 were re-examined to explore whether these distinct management styles existed within the whole of the original sample (N=90). Although it was not possible to determine participants' beliefs about pain management from this data, it was found that based on their use of medication, and use of active and passive coping strategies, all of the participants could be classified into one of the management styles identified in Study 2a. (Table 5.3).

Table 5.3 Proportions of Participants From Study 1 in each Management Style.

Management Style A	Management Style B	Management Style C	Maladaptive Style
32 (35.6%)	22 (24.4%)	16 (17.8%)	20 (22.2%)

Relationships between participant's management style and PSOCQ stage were explored to investigate whether the patterns of association would correspond with the conceptualisation of the pain stages of change model

(Figure 5.1). The data demonstrate further, the theoretical inconsistencies in terms of the management strategies used by individuals in particular stages of readiness to change.

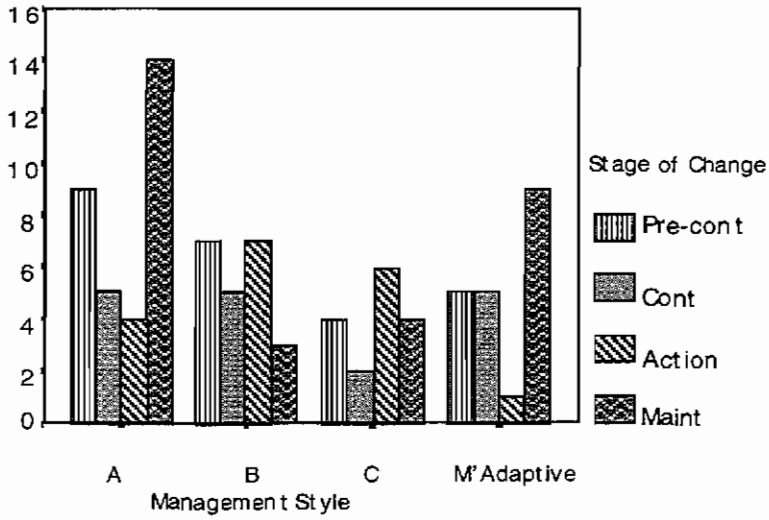

Figure 5.1 Relationship between stage of change and management style

5.3.3 Phase 3: Correlations between self-reported stage of change, and stage of change as determined by the PSOCQ

Spearman correlations were performed to examine associations between readiness to adopt a self-management approach to pain as classified by the PSOCQ and stage of readiness as determined by the participant (subsequent to having the model explained to them). Non-significant, correlations were demonstrated (r_s= .151, p= .524) indicating that items on the PSOCQ were not accurately identifying the features of a self-management approach as defined by participants.

Participants were asked to identify their stage of readiness to change for five self-management activities (exercise, activity pacing, relaxation, cognitive techniques and medication use). Without exception, participants reported being in different stages of change for different self-management activities (e.g., being in Action stage for thought techniques but Pre-contemplation stage for medication use).

5.4 Discussion

The Pain Stages of Change Questionnaire (Kerns, 1997) appears to demonstrate similar difficulties to the other multi-dimensional questionnaires that have been developed to assess readiness to change, such as the University of Rhode Island Change Assessment (URICA; McConnaughy, et al., 1983), the Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES; Miller & Tonigan, 1996), and the Readiness to Change Questionnaire (RCQ; Rollnick et al., 1992) discussed in Chapter Three. As with the developers of these multi-dimensional questionnaires, Kerns and his colleagues (1997) have been unable to construct scale items that clearly discriminate between stages.

The qualitative interviews in Study 2a have illustrated the ambiguity of the item wording and highlighted the need to separately assess the specific cognitive and behavioural domains over which change is being assessed. According to Bunton, et al. (2000), the Transtheoretical model relies implicitly

on a level of consensus between the client and the treating practitioner regarding the behaviours that require change. The findings of the present study demonstrate, however, that the participant's definition of a self-management approach was more broad and varied than that generally described by health practitioners.

Further, the findings provide preliminary support for three distinct styles of adaptive self-management. Interestingly, medication was often viewed as a helpful component of a self-management approach and was generally being utilised as a tool to enhance participation in daily life rather than a sole coping strategy. If these are findings that generalise to chronic pain sufferers in the population at large, they have important implications both for designing measures of readiness to adopt a self-management approach and for developing self-management interventions.

It appears that medication *can* play a valuable role in a self-management approach. Clearly, a proportion of chronic pain sufferers are using their medication appropriately and as a result, are engaging in relatively active, functional and independent lives. When we (as treating practitioners) discourage use of medication on the basis of dependence and side-effects, these issues need to be carefully examined in terms of the types of individuals for whom the medication is being prescribed, their beliefs about medication as a useful part of a self-management approach to managing their

pain and the type of lifestyle that the mediation will enable the individual to engage in.

Based on the theoretical underpinnings of the pain stages of change model, it could be hypothesised that the self-management styles identified would loosely correspond with stages on the PSOCQ. Within this conceptualisation, participants using management style A are likely to be classified in the Maintenance stage, management style B loosely corresponds with the Action stage, and management style C and maladaptive management would be seen to correspond with the Pre-contemplation stage. This hypothesis was not supported however, and Figure 5.1 illustrates that participants at all stage of change are using the four management styles with no clear patterns of management style within any of the stages. It would be expected that participants using management style A would primarily comprise individuals in the Maintenance stage and whilst there was a significant proportion of these individuals using this management style, Maintainers also made up the majority of individuals using a maladaptive management style. Also contrary to expectations, Pre-contemplators made up a significant proportion of the management style A group and there were relatively few Pre-contemplators in the maladaptive or management style C groups.

These findings add support to the findings in Study 1 that participants were being incorrectly classified by the PSOCQ, and extends the self-management model in terms of our conceptualisation of the very construct we are

measuring by identifying sub-types of self-management that have previously not been identified. Clearly, further exploration of the management styles identified in Study 2a is warranted and has important implications for developing appropriate treatment programs

Bandura (1997) and Sutton (2001) comment that whilst multi-dimensional instruments for measuring stage of change may be useful in terms of their predictive validity, they can be of limited value in terms of treatment planning as they provide no explanation regarding an individual's readiness to change. In the present study, two main themes emerged with regards to explaining inaction. These were lack of knowledge or information, and lack of perceived ability (confidence) to use a particular strategy to manage their pain. These findings support the assertion of Rollnick (1998) that importance (outcome expectancy) and confidence (efficacy expectancy) are important constructs for understanding the critical conditions in behaviour change. Generally participants felt that they had been given conflicting or scant information regarding how to manage their pain and most had been told that they had to 'learn to live with their pain' but had not been provided with information or demonstrations of how to do so. The majority of participants reported that fear of further injury was the most important factor related to unwillingness to self-manage by 'trial and error'. Surprisingly, without exception, the participants reported that if they were given the opportunity to learn new self-management strategies, and they felt confident that they could continue to use them without further injury then they would be ready to use these approaches.

A stage approach to readiness to change is intuitively appealing, however, given the complex and varied nature of self-management in relation to chronic pain, and the lack of 'fit' between current theoretical understandings and the actual 'lived experience' it appears that this may be an oversimplified approach. Although the Transtheoretical model includes stages of change, processes of change, decisional balance and self-efficacy, these last three constructs are largely ignored in the construction of assessment measures such as the PSOCQ (Kerns et al., 1997), therefore, the measure adds little in the way of explanatory value. The findings of Study 2a demonstrate that these constructs may indeed provide information that is vital to our understanding of the determinants and predictors of readiness to adopt a self-management approach to pain, thereby forming the framework for effective interventions that assist the initiation, generalisation and maintenance of behaviour change in this context.

CHAPTER 6 -Study 2b

Motivational Interviewing and the Development of The Readiness to Adopt a Self-Management Approach to Pain Questionnaire (RASMAP-Q).

6.0 Chapter Overview

PART ONE

6.1 Motivational Interviewing

- **6.1.1** Principles of Motivational Interviewing
- **6.1.2** Change Talk
- **6.1.3** Brief Motivational Intervention (FRAMES)
- **6.1.4** Strategies for Brief Motivational Intervention

6.2 Research in Motivational Interviewing -Literature review

6.3 Health Behaviour Change Strategies

6.4 Application of Motivational Interviewing to Chronic pain

PART TWO

6.5 Introduction

6.6 Structure of the RASMAP-Q

6.7 Self-management Activities

- **6.7.1** Exercise
- **6.7.2** Activity Pacing
- **6.7.3** Relaxation
- **6.7.4** Cognitive Strategies
- **6.7.5** Medication Use

6.8 Questionnaire Scales

6.8.1 Beliefs

6.8.2 Behaviour

6.8.3 Importance

6.8.4 Confidence

6.9 Assessment Interview

6.10 Feedback Interview

6.11 Chapter Summary

6.0 Chapter Overview

Chapters Three, Four and Five have explored our understanding of how individuals change in relation to their readiness to adopt a self-management approach to pain, and the deficiencies in our current theoretical explanations and means of assessing change in this context. The aim of this chapter is to describe the rationale for, and construction of, a clinical tool that attempts to address some of the issues identified.

The Readiness to Adopt a Self-Management Approach to Pain Questionnaire (RASMAP-Q) was developed in order to provide a more comprehensive evaluation of an individual's readiness to change. By focusing on the processes that correspond with stages of change, feedback from the RASMAP-Q forms the framework of a Brief Motivational intervention. Part one of this chapter provides an overview of Motivational Interviewing and Brief Motivational Intervention. Part two describes the development and structure of the RASMAP-Q.

6.1 Motivational Interviewing

The Transtheoretical model (Prochaska & DiClemente, 1982) described earlier attempts to provide an explanation as to how people change and presents a series of stages through which people pass whilst changing problem behaviours. Within this model, motivation can be conceptualised as a person's current stage of readiness to change (Miller & Rollnick, 1991).

Based on the assumption that motivation is an essential component for a client to progress positively from one stage of readiness to change to the next, William Miller and his colleagues (e.g., Miller, 1983a, 1983b; Miller & Rollnick, 1991) have been developing an approach that focuses on enhancing a client's motivation to change, known as Motivational Interviewing (MI). Motivational Interviewing is described by Miller (1996) as "a directive, client-centered approach for initiating behaviour change by helping clients to explore and resolve ambivalence" (p.835). Motivational Interviewing incorporates strategies from client-centered counselling, systems theory, cognitive therapy and the social psychology of persuasion. Its theoretical basis lies in the constructs of 'ambivalence' (regarding change) and 'self-regulation' (Miller & Rollnick, 1991). Within the underlying theoretical basis of Motivational Interviewing, motivation is emphasised as a context or state of readiness rather than a personality trait. When viewed in this way, motivation can be seen as a state which may fluctuate from time to time and which may be influenced (Swanson, Pantalon, & Cohen, 1999).

Whilst motivational techniques have repeatedly shown to contribute positively to behaviour change, the reasons why this approach is effective are unclear (Miller, 1996). The majority of published studies have discussed the techniques and effectiveness of Motivational Interviewing. The work of Draycott and Dabbs (1998) is one of the few attempts to deconstruct the technique itself in order to better understand how Motivational Interviewing has its effect. Draycott and Dabbs contend that the nature, principles and techniques of Motivational Interviewing are found to relate to principles of cognitive dissonance and that this concept can be useful in understanding the mechanisms which promote action in this type of intervention. According to Draycott and Dabbs, there are three levels at which the principles of cognitive dissonance may be mapped onto Motivational Interviewing. These are the nature and aims of the counselling style, the principles that arise from this general aim, and the techniques that are based on these principles.

6.1.1 Principles of Motivational Interviewing

In developing clinical methods for Motivational Interviewing, Miller and Rollnick (1991) described the following five basic principles to guide practice: express empathy, develop discrepancy, avoid argumentation, roll with resistance, and support self-efficacy. In this type of approach, confrontation is avoided. Rather than attempting to persuade, the therapist elicits reasons for change from the client and maintains a warm, supportive and empathic environment within which the client can explore ambivalent feelings related to change (Miller, 1996). The underlying aim in this process is to develop with

the client, a motivational discrepancy between current behaviour and desired goals with this strategy being based on evidence that behaviour change is triggered by this type of discrepancy (Miller & Rollnick, 1991).

6.1.2 Change Talk

Miller (2000) contends that self-motivational statements, recently being referred to in the literature as 'change-talk', have a central role in the theoretical framework of MI. Motivational Interviewing is based on the principle that "I learn what I believe as I hear myself talk" (Miller, 1995). According to Miller, vocalisation of change-talk initiates changes in beliefs and behaviours. This assertion has been tested most recently in relation to MI by Amrhein (2000) whose psycholinguistic study has documented a clear prediction of changes in illicit drug use from the patterning of commitment language (measured for both frequency and strength) during MI sessions.

In utilising MI techniques, arguments for change are elicited from the client by the therapist, so that it is the client that presents arguments for change. The four main categories of change-talk are problem recognition (e.g., I can see that my medication use is causing problems in many areas of my life), expression of concern about the perceived problem (e.g., I'm really worried about the way my pain is interfering with my life), intention to change (e.g., I know I have to do something to try and manage my pain better), and optimism about change (e.g., I feel more confident that I will be able to use exercise to manage my pain now).

Motivational Interviewing is organised in three phases where specific motivational strategies are used in different treatment stages (Jensen, 1996). The stage based therapist tasks are summarised below in Table 6.1.

Table 6.1 Stages of Change and Therapist Tasks (Miller & Rollnick, 1991)

Client stage	Therapists motivational tasks
Pre-contemplation	Raise doubt - increase the client's perception of risks and problems within current behaviour
Contemplation	Tip the balance - evoke reasons to change, risks of not changing; strengthen the client's self-efficacy for change of current behaviour.
Preparation	Help the client to determine the best course of action to take in seeking change.
Action	Help the client to take steps toward change
Maintenance	Help the client to identify and use strategies to prevent relapse.
Relapse	Help the client to renew the processes of Contemplation, Determination, and Action, without becoming stuck or demoralised because of relapse.

Phase one (for individuals at the Pre-contemplation or Contemplation stage) includes strategies that enhance motivation for behaviour change. Phase two (for individuals at the Preparation stage) includes strategies that strengthen commitment for behaviour change. During this phase motivation is shaped into a clear plan of action and commitment to change. Phase three (for individuals at the Action or Maintenance stage) includes strategies for follow-up including reviewing progress, renewing motivation if required and renewing commitment if required.

6.1.3 Brief Motivational Intervention (FRAMES)

In research conducted in several countries, brief interventions of one to three sessions with problem drinkers have repeatedly been found to be as effective as longer and more extensive treatments (e.g., Miller & Taylor, 1980; Chapman & Huygens, 1988) and significantly more effective than no treatment at all (e.g., Harris & Miller, 1990; Agostinelli, Brown & Miller, 1995; Heather, Rollnick, Bell & Richmond, 1996). According to Miller and Rollnick (1991), the primary effect from a brief intervention is motivational in that it prompts a decision to initiate and maintain change. Miller and Rollnick (1991) contend that once an individual is motivated to initiate change, they often already have the skills to take action unassisted. This premise is also reiterated by Jensen (1996) in relation to self-management of pain where it is assumed that for example, generally individuals know how to exercise or refuse pain contingent medication and that lack of skills or knowledge do not fully explain the decision to engage in maladaptive pain coping strategies.

In order to determine the critical motivational elements in brief interventions, Miller and Sanchez (1994) analysed the counselling strategies utilised in the alcohol treatment research literature. Their findings revealed six common elements that were thought to enhance change. These are Feedback, Responsibility, Advice, Menu of options, Empathy, and Self-efficacy (FRAMES). Brief Motivational Interventions are now commonly used in health care settings by nursing staff and general practitioners as they are well suited to 'opportunistic' application such as medical screening, where the results can be

presented in a manner incorporating the FRAMES strategies described below.

6.1.4 Strategies for Brief Motivational Intervention (FRAMES)

Feedback

In Brief Motivational Interventions, feedback on the clients' current health status is given after a comprehensive structured assessment. The aim of providing feedback is to increase the perceived discrepancy between where an individual wants to be regarding a particular behaviour and where they actually are in terms of the behaviour. Feedback information includes the results of objective medical tests and procedures and is usually presented in terms of the patient's health status relative to same aged peers. Test scores and results of investigations and examinations are presented with an explanation and information regarding the likely health outcome of engaging/or not engaging in a particular behaviour.

Feedback of assessment results is presented in a characteristic motivational interviewing style using accurate empathy, emphasising freedom of choice about what to do with the results, and eliciting change talk. Feedback is usually concluded with a review that includes an overview of the problem behaviour that has emerged from the assessment and a summary of the client's reactions and change-talk. Miller and Rollnick (1991) assert that this summary often leads the therapist from phase one to phase two strategies and from here it is possible to use techniques that strengthen commitment to change.

Responsibility

When providing feedback to a client during a brief motivational intervention, the explicit message given is that it is the responsibility of the client to decide what they will chose to do with the information. In this sense there is no pressure from the practitioner to persuade the client to change based on the results of the assessment.

Advice

During Brief Motivational Intervention, clear advice is given by the practitioner to make a specific change in behaviour (which may involve referral for specialist treatment). Advice is given in an empathic and non-confronting manner and free will is emphasised so that the client does not feel coerced into change.

Menu of Options

In order to minimise the likelihood that the client will reject the advice of the practitioner, a menu or range of options or strategies for changing their problem behaviour is offered. This strategy also enhances the client's perception of choice and control, making it more likely that they will successfully initiate change.

Empathy

According to Miller and Rollnick (1991), therapist empathy has repeatedly been shown to be a powerful determinant of client motivation and change. During assessment and whilst providing feedback and advice the practitioner communicates in a highly empathic manner using reflective listening skills and accurately reflecting an understanding of the client's meaning.

Self-Efficacy

Reinforcing the client's sense of self-efficacy (or hope that they can initiate and maintain change) has been integrated from Bandura's self-efficacy theory (1977) and is the final component of Brief Motivational Intervention. The strategies described occur in the context of an interpersonal interaction where the therapeutic relationship takes the form of a partnership, with the client taking personal responsibility for change and the therapist helping to facilitate the process.

6.2 Research in Motivational Interviewing

A substantial body of research has been devoted to Motivational Interviewing, primarily in relation to alcohol (e.g., Miller, Sovereign & Kredge, 1988; Baer et al., 1992; Brown & Miller, 1993; Bien, Miller, & Boroughs, 1993; Miller, Benefield & Tonigan, 1993; Agostinelli, Brown & Miller, 1995; Heather, Rollnick, Bell & Richmond, 1996; Project MATCH Research Group, 1997, 1998; Borsari & Carey, 2000; Baer et al., 2001; Sellman et al., 2001) and drug addiction (e.g., Saunders, Wilkinson & Allsop, 1991; Saunders, Wilkinson & Phillips, 1995; Foote et al., 1999; Schneider, Casey & Kohn, 2000). However, there is also a significant research interest in a number of other health related areas including smoking cessation (e.g., Colby et al., 1998; Butler et al., 1999), weight loss and glucose control (e.g., Smith, Heckemeyer, Kratt, & Mason, 1997), psychiatric outpatient treatment adherence (e.g., Swanson, Pantalon, & Cohen, 1999), HIV/AIDS (e.g., Carey & Lewis, 1999; Carey et al., 2000; Kalichman, Cherry & Browne-Sperling, 1999), dual diagnoses (e.g., Daley & Zuckoff, 1998; Swanson,

Pantaloon & Cohen, 1999; Martino, Carroll, O'Malley & Rounsaville, 2000; Barrowclough et al., 2001), eating disorders (e.g., Long & Hollin, 1995; Treasure et al. 1999), cardiac rehabilitation (e.g., Scales, 1998) and mammography screening (e.g., Ludman, Curry, Meyer & Taplin, 1999).

One of the largest trials to investigate the efficacy of Motivational Interviewing is The Drinkers Check Up (DCU). The DCU was devised by Miller, Sovereign and Krege (1988) in order to assess the efficacy of a brief intervention based on FRAMES techniques. The check-up was advertised to the public, offering a free check-up for drinkers in order for them to find out whether alcohol was harming them in any way. The check-up was not intended for alcoholics and was not associated with any treatment program, rather the aim of the check-up was to provide feedback related to the health effects of the individual's drinking and it was emphasised that it was the responsibility of the individual what (if any) action they decided to take based on that feedback. Feedback was offered in a second session with an empathic non-confrontational therapeutic approach.

At the feedback session, a range of treatment options was offered, whilst emphasising the individual's free choice and personal responsibility. The DCU study comparing change within the treatment group with a delayed-intervention group, demonstrated significant (27%) reduction in drinking behaviour that was maintained at 12 months. In a second randomised DCU study (Miller, Benefield & Tonigan, 1993) with a similar self-referred sample, a larger effect was observed (55-76%). In this study therapist feedback style was also

examined and confrontation was shown to be a highly significant predictor of client resistance that was associated with lack of behaviour change.

Further DCU studies focused on clinical samples with the aim of preparing patients for treatment for substance abuse. In this context, the motivational interview was not intended as a treatment, rather, it was hypothesised that the interview would 'jump start' the treatment (Miller, 1996). In the first study (Brown & Miller, 1993), twenty-eight consecutive inpatients at the substance abuse unit of a private psychiatric unit were randomly assigned to receive or not receive a DCU. Patients who received a DCU were found to be significantly more likely to be abstinent at a three-month follow-up and were rated by therapists (who were blind to group assignment) to have participated more fully in treatment. In a second clinical study of the DCU (Bien, Miller & Boroughs, 1993), similar outcomes were demonstrated in a substance abuse outpatient sample of 32 patients. Superior gains occurred in the DCU group at three months, however, maintenance of treatment gain was not significantly different between groups at a six-month follow-up.

The DCU was also extended and adapted to form one of three treatments offered in Project MATCH (Project MATCH Research Group, 1997). In this study, the expanded DCU (described as Motivational Enhancement Therapy) was designed to act as a complete treatment and consisted of four sessions. The first two treatment sessions were conducted one week apart (Motivational Interviewing was provided in the first week followed by feedback in the second

week) then follow-up sessions were offered at six and twelve weeks. The results of the study suggested that four sessions of Motivational Interviewing over a twelve-week period was as effective as twelve sessions of either cognitive-behaviour therapy or a twelve-step approach.

Whilst Motivational Interviewing has primarily been applied to drug and alcohol research and practice, there also exists a growing body of research literature examining the effects of Motivational Interviewing on outpatient treatment adherence among psychiatric and dually diagnosed inpatients (e.g., Swanson, et al., 1999; Daley & Zuckoff, 1998). In the study by Swanson et al. (1999) one hundred and twenty one patients were randomly assigned to either standard treatment including pharmacotherapy, individual and group psychotherapy, activities therapy, milieu treatment and discharge planning or standard treatment plus Motivational Interviewing which involved 15 minutes of feedback regarding the results of a motivational assessment during intake and a one hour motivational interview prior to discharge. The results indicated that the proportion of patients who attended the first outpatient appointment was significantly higher for the patients who had received standard treatment plus Motivational Interviewing.

Whilst there are a number of limitations to this study (including the fact that no formal attention control group was added to the study to determine whether extra therapist time and attention had contributed to the outcome and very short follow-up results), the results support the findings of Daley and Zuckoff

(1998) that Motivational Interviewing can improve outpatient treatment adherence.

The efficacy of motivational interventions has also been explored in relation to care of patients with diabetes mellitus. In a randomised controlled trial, Smith, et al. (1997) reported that the addition of a Motivational Interviewing component to standard behavioural treatment of obese women with diabetes significantly increased treatment compliance and glucose control.

Other non-drug or alcohol studies that report the efficacy of motivational interventions include research by Woollard et al. (1995) who investigated the effects of a lifestyle modification program on the blood pressure and cardiovascular risk of hypertensive patients in a general practice setting. One hundred and sixty-six patients were randomly assigned either to high level counselling (six individual sessions based on the stages of change model and using MI strategies), low level counselling (one individual session and five telephone sessions based on the stages of change model and using MI strategies), or General Practitioner (G.P.) care. At an 18-week follow-up the participants in the low-level counselling group reported lower levels of alcohol and salt intake than the control group. Participants in the high-level counselling group reported lower levels of alcohol and salt intake than either the low level counselling or the control groups and also reported significant weight losses and improvements in blood pressure.

6.3 Health Behaviour Change Strategies

Rollnick, Mason and Butler (2000) describe a method of enhancing health behaviour change that draws on principles and 'spirit' of Motivational Interviewing. Rollnick et al. (2000) do not give their approach a specific name, rather, they describe it as a method incorporating a collection of strategies drawn from Motivational Interviewing (Miller & Rollnick, 1991) and the Stages of Change model (Prochaska & DiClemente, 1982), based on a patient-centered framework. Rollnick et al. assume that the practitioners for which their method has been developed (medical and allied health practitioners) will not have the advanced counseling skills required to execute Motivational Interviewing at the appropriate level and their goal, therefore, is to "provide a conceptual aid for guiding conversations about change, not to construct a comprehensive model of behaviour change" (p. 185).

The framework presented by Rollnick et al. (2000) is structured around a number of key tasks. These are to establish a rapport with the client, set an agenda for the discussion during the interview (this is negotiated between the practitioner and client and is particularly salient when there are multiple behaviours to be discussed) and assess readiness, importance and confidence regarding change for each specific behaviour. The two other tasks that occur throughout the consultation are exchanging information and reducing resistance (see Figure 6.1).

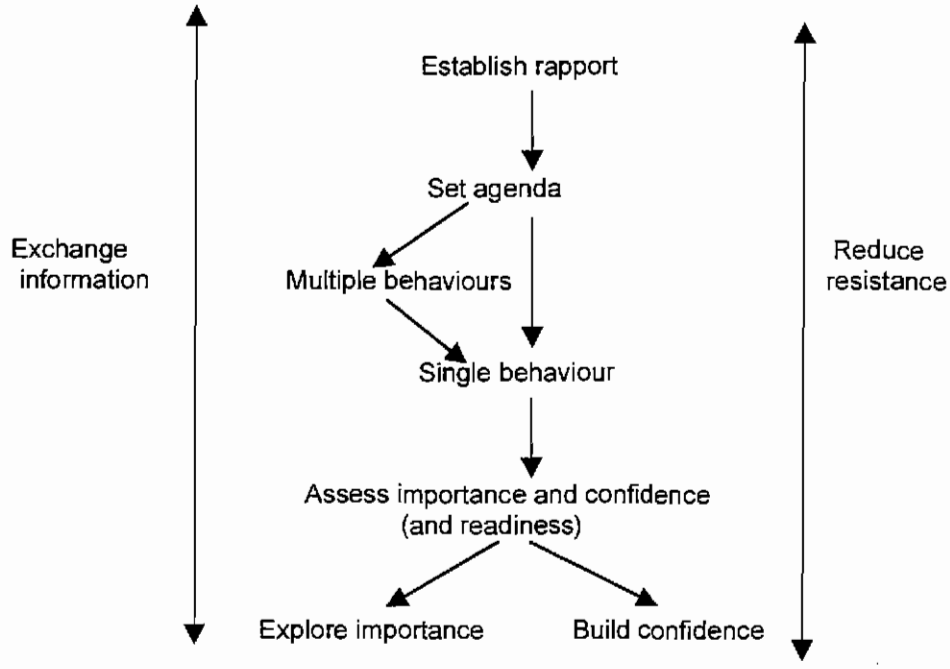

Figure 6.1 Key tasks in consultations about behaviour change (Rollnick, Mason & Butler, 2000)

The concept of readiness is derived from the stages of change model (Prochaska & DiClemente, 1982) and related to motivation for change (as discussed earlier). The concepts of importance and confidence are described (in various guises) in a number of different behaviour change models such as the theory of Reasoned Action (Ajzen & Fishbein, 1980) which is based on the individual's attitude/beliefs about the consequences of performing a behaviour and their perception of the social pressure exerted on them to perform the behaviour; the pros and cons construct within the Decisional-Balance model (Janis & Mann, 1977) and outcome and efficacy expectations incorporated in Self-Efficacy theory (Bandura, 1977). According to Bandura (1977), 'outcome expectations' (importance) relates to personal judgments about whether the behaviour change will lead to valued outcomes and 'efficacy expectations' (confidence) refers to a person's confidence in their

ability to master a particular behaviour and maintain that behaviour over a range of circumstances. Whilst most health behaviour change models focus on either outcome expectations or efficacy expectations, few models have focused on the interplay between both concepts and their combined relationship to readiness (motivation) to change.

In a study of smokers (Rollnick, Butler & Stott, 1997), individuals were asked to explain why they had placed themselves at a given position on a readiness continuum. The two themes that repeatedly emerged were importance and confidence. Some participants believed that it was very important that they change their smoking behaviour but lacked the confidence (low confidence) to do so, whereas other smokers felt confident to quit at any time if they so wished but did not believe that their smoking was a problem (low importance). For completely different reasons neither of these types of participants were ready to stop smoking. Rollnick et al. (2000) add that although issues related to importance and confidence are usually distinct, at times the distinction is blurred, for example when an individual would like to change but does not place high value on change because of the perceived unpleasant outcomes of coping with maintaining change in difficult situations. Rollnick et al. (2000) assert that the value of the concepts readiness, importance and confidence are in the opportunity they provide to discuss the context in which behaviour occurs.

Rollnick et al. (2000) caution against the idea of assigning individuals to stages of change and stage based-interventions. They argue that this is an oversimplified approach that can lead to individuals being labled with a stage–linked (trait-like) identity. Rollnick et al. add that stage labels do not always clearly refer to the behaviour change required and frequently several changes are involved. For example, dietary change may involve eating less fat, eating more fibre, omitting certain foods completely. Individuals may be in different stages for different aspects of the behaviour change required, as discussed in Chapters Four and Five in relation to chronic pain.

The appeal of the method described by Rollnick et al. (2000) is its fluid, congruent approach using the concepts of importance and confidence to identify *why* a person is more or less ready to change a particular behaviour. This knowledge assists in enhancing behaviour change by contextualising the reasons for inaction. Whilst some of the strategies incorporated in this method have been evaluated in randomised controlled trials, other aspects are as yet untested. However, the intuitive value of the relationship between importance and confidence warrant further exploration in terms of developing standardised interventions to enhance behaviour change.

6.4 Application of Motivational Interventions to Chronic Pain.

Motivational Interventions are currently being used in a number of healthcare settings including diabetes management, exercise adherence, mammography screening and weight loss. In 1996, Jensen proposed the use of Motivational

Interviewing techniques for practitioners working with clients with chronic pain in order to enhance motivation to engage in adaptive coping strategies and adopt a self-management approach.

According to Jensen (1996), treatment should be tailored to each client's stage of readiness to change in order to facilitate movement through the stages towards engaging in and maintaining behaviours consistent with a self-management approach. Kerns and Rosenberg (2000) also concluded that based on their findings, prescription of 'stage-matched' interventions and the use of client-centred techniques such as Motivational Interviewing (Miller & Rollnick, 1991) could significantly enhance engagement in treatment, reduce rates of drop-out and assist in maintenance of treatment gains. To date, however, there are no published studies that attempt to demonstrate or refute these hypotheses and clearly there is a need for systematic empirical research in this area.

One of the difficulties in applying Brief Motivational Interventions to management of chronic pain is that there exists no clear measure of an individual's current self-management strategies across the various activities that constitute this type of approach. Therefore, there is currently no means of providing specific feedback to the client regarding their pain management status for each activity. Jensen (1996) suggests the use of a standardised measure of physical functioning such as the Sickness Impact Profile (Bergner, Bobbitt, Carter & Gilson, 1981) and a measure of psychological functioning

such as the Centre for Epidemiological Studies Depression Scale (Radloff, 1977) in addition to other information gained in an interview including opioid use, sleep disturbance and the impact of the pain on social role functioning.

It is proposed in the current study, however, that a clinical tool which measures readiness to adopt a self-management approach to pain within each self-management activity and which helps provide an explanation of motivational difficulties, could be used as both an assessment and feedback instrument which, when used in conjunction with a structured interview format, could form a complete Brief Motivational Intervention. The development of the Readiness to Adopt a Self-management Approach to Pain Questionnaire (RASMAP-Q) is described in Part Two.

PART TWO

Development and structure of the Readiness to Adopt a Self-management Approach to Pain Questionnaire (RASMAP-Q)

6.5 Introduction

One of the central hypotheses of the present thesis is that interventions that emphasise a self-management approach can only benefit a client who is ready (motivated) to change. Further, it is postulated that it is possible to facilitate the process (enhance motivation) in order to better prepare a client to fully engage in and maintain, a self-management approach. The Readiness to Adopt a Self-management Approach to Pain questionnaire (RASMAP-Q) (Appendix D) is a clinical tool that has been developed to both assess and enhance readiness to

adopt a self-management approach to pain. The RASMAP-Q is designed to be administered in conjunction with a structured assessment interview as a two-session Brief Motivational Intervention prior to multidisciplinary pain treatment.

The RASMAP-Q has three primary functions. Firstly, it provides a multidimensional descriptive function in that it describes readiness to change across five self-management activities. Secondly, it has an explanatory function in that it provides information which explains *why* a client may be more or less ready to change for each self-management activity, and thirdly, it provides a structured framework for provision of feedback using Motivational Interviewing strategies. Although the RASMAP-Q items loosely correspond to the stages of change, the main focus is on the processes of change. The primary goal of the RASMAP-Q brief intervention is to increase readiness by assisting the client to identify the reasons for inaction, discuss discrepancies between beliefs about a behaviour and actual engagement in the behaviour and to elicit change talk from the client.

The RASMAP-Q is *not* intended for use as psychometric measure or as a replacement for psychometric assessment. The RASMAP-Q is a clinical tool that forms the basis of a brief intervention. As discussed earlier, attempts to measure stage of change have generally not been successful, as individuals can shift from stage to stage within a short time frame and may even be in two stages of change simultaneously as they voice their ambivalence (Rollnick, 1998). It may be that stage of readiness to adopt a self-management approach

to pain is not amenable to assessment by traditional psychometric measures due to the multi-dimensional nature of the change required, the instability of the construct itself and the lack of a clear commonly shared definition of self-management.

The RASMAP-Q is not a stage-based intervention. Although it may be most useful when administered to individuals who are less ready to change prior to treatment, it can be used to increase motivation and strengthen commitment at any level of readiness to change. The RASMAP-Q is not intended as a stand-alone treatment, it is intended for use prior to treatment to increase rates of engagement in treatment and adherence to treatment recommendations.

6.6 Structure of the RASMAP-Q

As demonstrated in Study 1, clients may present as being in different stages of readiness to adopt a self-management approach for different activities. Therefore, it is important to assess each self-management activity separately. This type of multi-dimensional assessment provides a clearer conceptualisation of the client's motivation and allows for more accurate treatment planning. The RASMAP-Q assesses the five major activities generally included in multi-disciplinary pain management treatments (exercise, activity pacing, relaxation techniques, cognitive (thought) techniques and medication use). Within each activity the RASMAP-Q measures beliefs about the activity, behaviour (frequency and duration of use of the activity), level of importance (value expectancy) placed on the activity and level of confidence

(self-efficacy) in increasing or decreasing the activity.

6.7 Self-management Activities

6.7.1 Exercise

Many individuals with chronic pain are afraid to exercise because they have a fear that they will harm themselves further. Often individuals remember that when they first injured themselves they were advised to rest and guard the injured area. These may have been helpful strategies in managing pain at the acute stage. However, if pain has progressed to the chronic stage these strategies are no longer helpful and may in fact worsen the pain by contributing to loss of fitness and muscle tone, stiffness and abnormal movement patterns. By not moving, stretching or engaging in some type of exercise, individuals are placing themselves at greater risk of re-injury by becoming less fit. Using exercise to help manage chronic pain includes the following benefits: increased strength, flexibility and endurance, increased muscle support to the spine, increased fitness and productivity, reduced risk of re-injury and reduced risk of physical de-conditioning and weight gain. In addition, individuals who exercise regularly to help manage their pain generally experience improved mood, increased social interaction and improved sleep.

The two main types of exercise used to help manage chronic pain are exercises for strength and flexibility and exercises for fitness and endurance. Stretching exercises help to lengthen injured and shortened muscles and strengthening exercises help to tighten stretched loose muscles. Exercise for fitness and

endurance includes activities such as walking, swimming, stationary cycling or using a treadmill.

6.7.2 Activity Pacing

Activity pacing is a specific method to help patients manage their pain by structuring and alternating their daily activities with the goal of gradually increasing their activity level. Often people with chronic pain attempt to perform activities until severe pain forces them to stop. This activity level is usually followed by extended period of rest and recovery, increased muscle tension, fear (of re-injury) and loss of confidence. Activity pacing works by setting small achievable goals for engaging in moderate activity followed by limited rest. This cycle is repeated through the day and with practice over a few weeks, patients report that their pain levels and rest periods decrease and endurance and activity levels gradually increase. Benefits of activity pacing include a reduction of the opportunity to experience extreme pain, fewer and shorter pain episodes, increased productivity and a reduction in reported tension and fatigue.

6.7.3 Relaxation

Relaxation training is often incorporated into pain management treatments because relaxation methods can help to break the link between stressful events and pain, reduce muscle spasm and tension that lead to pain, alter abnormal patterns of activity that lead to pain and reduce emotional responses during pain episodes. Relaxation training involves learning how to achieve a mental tranquility and physical state of reduced muscle tension, in a very brief period of

time and how to incorporate those skills into the patient's daily life to help manage their pain.

Relaxation techniques help patients to manage pain by recognising signs of tension in their body and reducing them before they reach painful levels. Research has demonstrated that in addition to reducing pain and stiffness, relaxation has numerous other benefits including feeling a greater degree of self-control, less difficulty falling asleep, decreased blood pressure, less irritability and a more positive outlook on life.

6.7.4 Cognitive Strategies

Research into the physiology of pain has demonstrated that thoughts and emotions exert a powerful influence on the way individuals experience pain. Thoughts and feelings give meaning to experiences including pain. Negative thoughts and emotions such as depression, anxiety and anger may contribute to intensified levels of pain through causing muscle tension, whereas feelings of happiness and calm can decrease the intensity of pain. Education in the use of cognitive strategies (described to participants as 'thought techniques') is based on the principles of cognitive-behaviour therapy with an emphasis on the link between thoughts (or beliefs), feelings and behaviour.

Cognitive strategies can be powerful pain management tools. By using specific techniques to identify patterns in thinking and learning more helpful alternatives, individuals learn to use adaptive cognitions to overcome difficult

days, and pain flare-ups, to stay motivated to continue self-management activities and to minimise the impact of the pain on their life.

6.7.5 Medication Use

As discussed in Chapter Five, the use of medication (particularly opioids) to manage chronic pain is a contentious subject and there is much debate regarding the suitability of this type of treatment (Jensen, 1996). It is, however, generally agreed that opioid medication should be taken only as prescribed, on a time-contingent rather than pain-contingent basis, and that clients should be closely monitored for signs of abuse/misuse of this type of medication. For the purposes of this research, medication use (including opioids and analgesics) is considered problematic if (a) it is taken in isolation (that is, without using any other self-management strategies), (b) it is taken on a pain contingent basis, or (c) it is taken in excess of prescribed dose.

If individuals use medication as part of their pain management program, it is important that they understand both the purpose and proper use of those medications. The more information individuals have regarding their medications, including how they work, their potential side effects, and their limitations in controlling pain, the more effective they can be. It is important that chronic pain patients understand that there are no perfect medications and all will have some side-effects, and in addition, that it is unlikely that any medication will eliminate their chronic pain completely.

6.8 Questionnaire Sections

The questionnaire sections within each self-management activity are designed to (1) assess beliefs about the activity, (2) assess behaviour (actual level of engagement in the activity), (3) provide information regarding the degree of importance (value expectancy) the client places on the activity in terms of its usefulness in helping to manage pain and (4) provide information regarding the level of confidence the individual has with regards to being able to engage in and maintain the particular activity (efficacy expectancy). Discrepancies between beliefs and behaviour and importance and confidence are explored during feedback to the client and the dissonance state is used to facilitate change.

6.8.1 Beliefs

Cognitive-behavioural theory provides the basis for current understanding of how beliefs affect behaviour and, therefore, why it is critical to assess and modify maladaptive pain-related beliefs in order to alter inappropriate or unhelpful pain coping behaviours. There exists a significant body of literature that explores the relationship between beliefs about pain and related behaviour (e.g., Stein et al., 1988; Flor et al., 1993; Jensen et al., 1994, 1999). It is well established that beliefs about pain and levels of coping activity (behaviour) generally correspond.

In the context of the RASMAP-Q, however, beliefs relate specifically to the helpfulness of a particular self-management activity to manage an individuals'

chronic pain rather than about the pain itself. In this context, beliefs and behaviours have been shown not always to correspond and in these instances, there exists a discrepancy. For example, an individual may believe that exercise is helpful in managing chronic pain, but they may not actually be engaging in any exercise. Conversely an individual may be engaging in a self-management activity (SMA) such as relaxation, perhaps because they have been instructed to do it by a practitioner, but not really believe that it is efficacious in managing pain and these individuals are unlikely to maintain the activity.

Where a discrepancy occurs between belief and behaviour, either the patient does not regard the activity as being important for managing their pain or they do not feel confident to engage in the activity (or both). In a clinical setting, information regarding discrepancies between beliefs and behaviour provide important information that can form the basis of feedback to the client. Discussion about discrepancies can provide valuable information regarding why the discrepancy is occurring and elicit motivational change-talk from the patient.

Beliefs are measured on the RASMAP-Q by means of a staging algorithm consisting of five statements, with one statement loosely representing each stage of readiness to change. The items on the algorithm were based on stage of change theory, clinical observation and participant statements and information gathered in Study 2a. Pre-contemplation items are characterised

by a belief that the activity would not be helpful to manage pain. Contemplation items reflect an uncertainty whether the activity may be helpful to manage their pain. Preparation items endorse the belief that the activity would be helpful to manage their pain. Action items indicate participation in the specific activity to self-manage pain and a belief that this activity is starting to be helpful. Maintenance items reflect a belief that the self-management activity is already an important part of their self-management regime and has now become a part of their lifestyle (or way of life).

6.8.2 Behaviour

The behaviour scale determines the frequency with which the self-management activity (SMA) is being completed. This section was included for two reasons. Firstly, it is evident as discussed above that beliefs and behaviour do not always correspond. The second reason for including the behaviour scale was to provide more information regarding the length of time the individual has been completing the SMA. The time dimension is primarily included to help distinguish between the Action and Maintenance stages as Maintenance is defined by the length of time an individual has been completing the SMA. Pre-contemplation behaviour items indicate that the individual never uses the SMA. Contemplation items indicate that the individual rarely uses the SMA. Preparation items reflect a clear plan to start the SMA in the next four weeks. Action stage items indicate use of the SMA regularly for less than 6 months and Maintenance items reflect use of the SMA for the previous six months or more.

During feedback to the client, the practitioner explores any belief-behaviour discrepancies ('gaps') and uses them both to explore ambivalence and to elicit change talk. Gaps can also be explored in the context of the Importance and Confidence scores, as these often provide clues as to reasons for the belief-behaviour discrepancy. The following dialogue illustrates how this may be done.

Practitioner: *I'm interested that on the one hand, you indicated that you believe that exercise would help manage your pain, but on the other hand, you never do use exercise to manage your pain, I wonder if you could tell me more about that?*

***Client**: Well, I know it would help, I just can't seem to get started.*

***Practitioner:** So you would actually like to use exercise, but something seems to be getting in the way. Of the things that may be making it difficult for you get started, what do you think would be the main thing?*

Client: *I think it's probably that I just don't know what I'm doing, I might make things worse.*

***Practitoner:** You're worried about not being clear enough about what to do and possibly even making the pain worse…. so, in light of this information, what could make it easier for you to get started?*

***Client**: Well, I guess need someone to show me how to the exercises properly so I can be sure I am doing them right.*

In this scenario the practitioner has used the belief-behaviour discrepancy to quickly determine that (a) the client thinks exercise is important, (b) the client has been considering getting started (c) the client is concerned about further injury, (d) the client needs specific information regarding exercise. The

practitioner has also elicited change-talk.

6.8.3 Importance

The importance section comprises a numerical rating scale where a score of 0= not at all important and 10=extremely important. Individuals are required to indicate by circling on the scale the number that best represents how important a particular SMA is to help manage their pain. The importance scale provides the practitioner with information regarding the personal value the client places on the particular self-management activity in terms of its usefulness in managing pain. Value expectancy (importance) is an important theme within other behaviour change theories (e.g., theory of Reasoned Action; Health Belief model) and has been demonstrated within these theories as a predictor of behaviour change.

Both the Importance and Confidence scales are designed to help explain why a client may be at a particular stage of readiness for any given self-management activity and this aspect of the RASMAP-Q is adapted from the method described by Rollnick, et al. (2000). This information helps to guide the practitioner in choosing appropriate strategies to facilitate (or enhance) motivation to change. Low scores on the Importance scale indicate a need for consciousness-raising regarding the particular activity and this is conducted in a manner that will elicit change talk. The following exchange illustrates this process.

Practitioner: *I notice that you chose a three on the importance scale for*

activity pacing so you don't think it is as important as some of the other self-management activities, however, I am interested to know more about why you chose a three rather than a one or a two?

***Client**: Well, it is probably a useful and important thing to do but I just don't know that much about it.*

In this way, the client is verbally acknowledging the presumed benefits of pacing and also providing cues to the practitioner that the client needs more information (consciousness raising) regarding the activity.

6.8.4 Confidence

The confidence rating scale on the RASMAP-Q refers to self-efficacy in relation to performing specific self-management activities. Self-efficacy is defined as the expectation or belief that one can execute a particular behaviour in order to reach a desired goal (Bandura, 1977). According to Social-learning theory, individuals' efficacy beliefs will influence their adjustment to cope with a major life stressor such a chronic pain. Individuals with high levels of self-efficacy are viewed as being more able tolerate and cope with pain, and to persist in efforts to manage pain, than individuals with low levels of self efficacy.

Research to date supports the idea that an individual's self-efficacy beliefs are related to level of functioning (e.g., Arnstein, Caudill, Mandle, Norris & Beasley, 1999) and response to chronic pain treatment recommendations (e.g., Jensen et al., 1991; Andersen et al., 1995). Post-treatment measures were

demonstrated by Dolce et al. (1986) to be positively related to use of exercise and negatively related to medication use to manage chronic pain. Similarly, in the development of the Chronic Pain Self-efficacy Scale (CPSS) by Anderson and colleagues (1995), higher levels of self-efficacy beliefs were found to be related to less daily interference due to pain, less emotional distress and higher activity levels than patients with lower self-efficacy scores.

Self-efficacy in the context of the RASMAP-Q relates to the level of confidence an individual has regarding their ability to engage in and maintain a particular pain self-management activity. Confidence in relation to adopting self-management techniques pertains to an individual's perceived ability to perform the technique (based on current knowledge) but equally importantly, it refers to their belief that they can use a technique or strategy without causing further injury. As noted in a number of studies, the fear of pain and causing further injury is a better predictor of disability and avoidance of activities than the severity of the pain itself (e.g., McCracken, Zeyfert & Gross, 1992; Waddell, Newton, Henderson, Somerville & Main, 1993; Crombez, Vlaeyen, Heuts & Lysens, 1999).

The confidence section has also been included in order to evaluate any discrepancy between the importance an individual places on an activity and their confidence to be able to actually engage in and or maintain the activity. As with the importance section, the confidence section comprises a numerical rating scale where a score of 0 = not at all confident and 10 =extremely

confident that they can use the SMA to manage their pain. Sometimes referred to in motivational interviewing terms as a confidence ruler, this measures an individual's perceived self-efficacy, and as with the Importance scale, can provide important information to the practitioner regarding the reasons why an individual may be in a particular stage of change and can help to elicit change-talk, as shown in the following example.

***Practitioner**: I notice that you chose a 4 out of 10 for confidence that you could use exercise to manage your pain, can you tell me more about what it is that is stopping you from choosing an 7 or an 8?*

***Client**: I'm worried that I might injure myself again because it hurt last time I tried.*

***Practitioner**: So fear of further pain and injury is lowering your confidence that you can use exercise to manage your pain, still, I'm interested that you chose a 4 rather than a 3 or a 2 or even a 1, what positive experiences have you had with using exercise to manage your pain in the past to make you feel as confident as a 4?*

***Client:** Well, I was thinking about when I got those exercises from the physiotherapist and she showed me how to do them. It did actually make a difference to my pain, but that was ages ago and I can't remember how to do them properly anymore.*

***Practitioner**: So the exercises did help when you were doing them?*

***Client**: Yes, actually, they did help*

Here the client has expressed their concerns relating to fear of further injury and increased pain, and inability to remember how to do the exercises properly. This

information helps to explain why he/she is less ready to change, however the practitioner is also able to use the information provided on the scale to increase self-efficacy by having the client recount successful use of exercise to manage pain. The practitioner has also ascertained that the client may need a revision of the exercise program and support to restart and maintain the activity.

According to Bandura (1997) self-efficacy can be increased by (a) skills mastery, (b) sharing vicarious experiences, (c) verbal persuasion, and (d) providing information (feedback) about the individual's physiological and affective state. The Confidence scale on the RASMAP-Q is intended to provide the clinician with the tools to utilise a number of these strategies in the Brief Motivational Intervention.

6.9 Structured Assessment Interview

The aim of the structured interview is twofold; firstly the interview provides important information regarding the client's, diagnosis, pain duration, pain location, pain intensity, medical and surgical history, psychiatric history, medication use, current coping strategies, and the impact of the pain on domestic, social and vocational functioning. Secondly, the interview is designed to elicit the four categories of change-talk, namely, problem recognition, concern over current management of the pain, intention to change towards adaptive pain management strategies, and optimism that change is possible. The client completes the RASMAP-Q prior to the initial interview. The clinician scores the questionnaire prior to the feedback session.

6.10 Structured Feedback Interview

The structured feedback interview is based on the scores on the RASMAP-Q and utilises the FRAMES techniques to facilitate change. In particular, the discrepancies between belief and behaviour scores and importance and confidence scores are explored in order to increase dissonance and elicit change talk (as discussed in detail in the next chapter). When used in conjunction, the assessment interview and feedback interview based on the RASMAP-Q scores form the complete Brief Motivational Intervention.

6.11 Chapter Summary

Motivational Interviewing and Brief Motivational Intervention techniques have shown to be efficacious in enhancing behaviour change within a number of health-care settings. Application of these types of techniques to the complex and multifaceted problem of self-management of chronic pain is yet to be demonstrated. As practitioners we assess many aspects of the impact the pain has on the individual, these assessments are generally comprehensive and time-consuming. Rather than adding to the assessment, it is proposed in this research that the *way* in which we conduct the initial assessment, the provision for structured feedback, the exploration of the reasons for inaction and the enhancement of self-efficacy may be a more beneficial use of the time taken prior to commencement of treatment. In this way, the assessment becomes a brief intervention in itself. It is anticipated that the RASMAP-Q will provide a useful and structured framework for facilitating this type of brief assessment/intervention with chronic pain patients, thereby enhancing rates of

engagement in treatment and adherence to and maintenance of treatment recommendations.

CHAPTER 7- Study 3

Assessing and enhancing readiness to adopt a self-management approach to pain: A randomised controlled trial to determine the efficacy of the RASMAP-Q intervention.

7.0 Introduction

7.1 Current Methods of Pain Assessment

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7.7 Pain management workshops
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- **7.7.4** Cognitive Strategies workshop
- **7.7.5** Medication Education workshop

7.8 Follow-ups
- **7.8.1** Four-week follow-up
- **7.8.2** Six-month follow-up

7.0 Introduction

The findings of Study 1, 2a and 2b culminated in an expanded conceptualisation of the pain stages of change model (Kerns et al., 1997) and the development of the Readiness to Adopt a Self-Management Approach to Pain Questionnaire (RASMAP-Q). Study 3 describes the evaluation of the RASMAP-Q.

Study 3 is similar in structure to the substance abuse study of Bien, Miller and Boroughs (1993) where thirty-two outpatients were randomly assigned to receive or not receive a brief motivational intervention in addition to standard outpatient treatment. The treatment group received an additional two hours of assessment and a one-hour motivational interview; control subjects received the additional assessment but received an attention-placebo interview rather than the motivational interview. The treatment group demonstrated superior clinical outcomes to the control group that were maintained at a three-month follow-up. The difference between groups was not, however, maintained at a six-month follow-up.

The study by Bien et al. (1993) is important because it was the first to use motivational interviewing within the assessment phase at the start of a treatment program with the aim of improving treatment outcome. Bien et al. contend that the *way* in which an assessment is conducted is more important than the assessment per se. If this is the case, then it is important for practitioners to maximise the time and opportunity to engage the patient during

this assessment phase, therefore, precluding the need for the addition of any further treatment components or changing the manner in which the standard treatment programs are conducted. Although the superior effects of the treatment group were time-limited, the study by Bien et al. provides an important precedent for research investigating methods that will increase engagement and adherence to standard treatment programs.

It was hypothesised in the current study that this type of intervention could be adapted for use with chronic pain patients by using the RASMAP-Q as the framework for feedback in the second phase of the assessment. Indeed, this appears to be a more theoretically sound and time and cost-effective method than adding treatment components or delivering stage-specific treatment programs. A randomised controlled trial was conducted to compare the efficacy of the RASMAP-Q brief intervention with standard pain assessment procedure (treatment as usual). The procedure and treatment protocols are described within this chapter. Chapter 8 provides details of the results of the trial.

7.1 Current methods of pain assessment

Formal assessment of pain in a clinical setting is usually conducted prior to commencement of treatment (initial assessment) and again at the conclusion of treatment (outcome assessment). Although there are commonly used measures and procedures for assessing pain prior to treatment, there is no one widely accepted standardised assessment procedure and methods of

assessment vary between treatment centres. Assessment generally consists of a specialist medical examination and review, an examination by a physiotherapist, a clinical interview with a psychologist and completion of a number of questionnaires.

At the initial assessment a clinical interview is conducted and a number of measures are administered in order to plan treatment accordingly. The aim of the interview is to ascertain what psychological, and behavioural factors are interacting with the patient's pain, mood and disability status and to determine pre-morbid functioning (including social relations, vocational and medical history). A thorough assessment of pain generally elicits details regarding pain location, pain duration, pain intensity, pain-related affect, beliefs about pain, pain behaviours, the impact of pain on social and vocational functioning and current coping strategies. Standard assessment also includes details pertaining to compensation/litigation status, pre-morbid psychological functioning, surgical and medical history, current use of medication and use of alcohol and illicit drugs (Karoly & Jensen, 1987).

Motivation for treatment is rarely formally measured and addressed during the initial interview in standard pain assessments in order to ascertain the patient's readiness to adopt a self-management approach to managing their pain. Currently, the Pain Stages of Change Questionnaire (Kerns et al., 1997) is the only measure available, and as discussed in Chapter 4, this questionnaire has

yet to demonstrate sufficient validity and reliability for standard use in pain assessment procedures.

7.2 Study Design

Study 3 comprised a randomised, controlled trial designed to assess the efficacy and utility of the RASMAP-Q. The study compared changes in readiness to adopt a self-management approach to pain, rates of engagement in treatment, and maintenance of treatment gain between a group that had been administered the RASMAP-Q intervention, and a control group that received a standard pain assessment (treatment as usual). The seventy-eight participants were administered an intervention or control assessment interview, and an intervention or control feedback interview one week later. The participants were advised that the study was "investigating how people manage their chronic pain", but were blind to the research hypotheses and were unaware that they had been allocated to either a treatment or control group.

Participants in both groups were invited to attend up to five pain management group workshops two weeks subsequent to the initial assessment. Stage of readiness to adopt a self-management approach to pain was assessed prior to the initial interview (Pre-intervention), immediately after the feedback interview (Post-intervention), immediately after the pain management workshops (Post-workshop), at a four-week follow-up, and again at a six-month follow-up.

7.3 Participants

7.3.1 Recruitment Procedure

Participants were recruited in the Far North Queensland region during a two-week period by means of newspaper advertisements (see Appendix E) one talk-back radio interview and a community newspaper article. Participants were recruited in this way as opposed to requesting referrals from health and allied health professionals to avoid possible variations in referral patterns and motivational effects.

Participants were screened by telephone prior to the initial interview to determine their potential eligibility for the study. Criteria for exclusion were being under 18 years of age, experiencing a pain duration of less than three months, having further surgery planned in the foreseeable future, major language barriers, major drug or alcohol dependency and being actively psychotic or actively suicidal.

7.3.2 Participant characteristics

Subsequent to screening for eligibility criteria, 78 participants commenced the study. The mean age of participants was 53 years (SD =11.58, range = 24 - 73), 54% were female. The mean pain duration was 13.6 years (SD = 13.2, range = 1–60). The majority of participants were of Australian or New Zealander origin (85%), the remainder originated from Europe (8%), United States of America (2%) and the United Kingdom (5%). Overall, participants had a relatively high level of education with 44% having had five or more years

of secondary education. Participant diagnoses varied, though the majority had been given a diagnosis of disc pathology (46%) or neuropathic pain (19%). Other diagnoses included osteoarthritis (13%), fibromyalgia (9%), and rheumatoid arthritis (3%). A further four percent of participants reported congenital abnormalities as the cause of pain, two percent suffered with chronic headache, the remaining four percent had pain of unknown origin (no diagnosis).

Forty-five percent of the participants were unemployed. Of the remaining participants, forty-three percent were employed, ten percent were retired and two percent were students. A small number of participants were currently litigating in relation to their pain (7%) or receiving compensation payments for their pain (8%). There were no statistically significant differences between the treatment and control groups on any of the demographic variables.

7.4 Methodology

7.4.1 Procedure

Both the James Cook University Ethics Committee, and the Cairns Base Hospital Ethics Committee granted ethics approval for the study. Participants responded to advertisements by telephone at which point they were screened for the eligibility criteria described above, and invited to attend an initial assessment interview. Participants were advised that they would be required to attend both the initial assessment interview and a feedback session the following week. They were further advised that subsequent to attending both

interviews, they would be eligible to participate in a number of pain management workshops to be conducted two weeks after the initial assessment interview.

Assessment interviews were conducted in a medical practice leased specifically for the purpose of the study. Participants were assigned to either the intervention or control group using a computer-generated random numbers table (SPSS, version 10 for MacIntosh) prior to the initial assessment. On arrival at the rooms, participants were provided with a brief overview of the study aims and procedure and were requested to read and sign a consent form (Appendix F).

Prior to interviews each participant completed a Pre-intervention questionnaire in the waiting room (Appendix G). The ten-page questionnaire comprised seven sections. Section A was designed to elicit demographic information such as gender, relationship status, age, education level, ethnicity, pain cause, pain location, pain duration and medical diagnosis (if known). Section A also included questions to ascertain compensation and litigation status, medication used to manage pain and other conditions and an assessment of any other coping strategies used to manage the individual's pain (this included both passive coping strategies such as rest, praying etc. and active coping strategies such as exercise, pacing etc.).

Sections B, C, D, E and F comprised the five self-management activities of the RASMAP-Q; Exercise, Activity Pacing, Relaxation, Thought Techniques and Medication Use as described in Chapter 6. Sections G and H were included as distress and interference have been hypothesised in earlier research to be associated with change, in that they serve to motivate action based on perceived pros and cons of a current behaviour (Prochaska et al., 1994).

Section G comprised the Pain Interference scale of the Multi-dimensional Pain Inventory (Kerns, Turk & Rudy, 1985). The scale was included in the questionnaire in order to assess whether perceived pain interference is related to stage of readiness to adopt a self-management approach and whether, as stage of readiness changes, measures on perceived pain interference would also change. The MPI measures a patient's subjective perception of the impact of pain on their lives and comprises three sections. The first consists of five sub-scales which assess; (a) perceived interference of pain in daily activities; (b) perceived support by significant others in the patient's life (e.g. spouse); (c) pain severity; (d) sense of control over life; and (e) negative mood. The second section measures three responses the patient perceives from their spouse in relation to pain: (a) punishing response; (b) solicitous response; and (c) distracting response. The third section of the MPI assesses the impact of pain on function by measuring the frequency with which the patient participates in the following four categories of activity: (a) house-work; (b) out-door work; (c) activities away from home; and (d) social activities. For

the purposes of this study, only the Interference scale was included in the research questionnaire.

The MPI was selected for use in the research questionnaire as it has a contemporary theoretical foundation, is easy to use and score, and has demonstrated reliability and construct validity (Kerns, Turk & Rudy, 1985). A further important feature of the MPI is that the computer scored version provides a normative sample of pain patients, which allows for comparison of results with a relevant population.

Section H comprised the Centre for Epidemiological Studies-Depression scale (CES-D; Radloff, 1977) in order to assess affect in relation to stage of readiness to adopt a self-management approach to pain. As discussed in Study 1, depression has been shown to be related to poorer treatment outcome and increased rates of drop-out (Kerns & Haythornthwaite, 1988) and is therefore an important factor to consider when exploring motivation for change. The CES-D was selected for use in the research questionnaire as it has been shown to be a valid instrument for assessing depression in patients who have chronic pain (Turk and Okifuji, 1994; Geisser et al., 1997) and has high internal consistency and adequate test-retest reliability (Radloff, 1977). The CES-D was also found to be sensitive to changes in the severity of depression as a result of interventions for chronic pain that are designed to directly or indirectly impact mood (Geisser et al., 1997).

The questionnaire took approximately 20-30 minutes to complete. Subsequent to completing the research questionnaire, participants were interviewed individually by one of two interviewers, both of whom were registered practicing psychologists trained in Motivational Interviewing techniques. Each interview was completed using a structured intervention interview or structured control interview format. Both interviewers completed similar numbers of control and intervention interviews.

7.5 Week 1: Assessment interviews

Both the assessment and feedback interviews followed a structured format in order to standardise (and control as much as possible) what the therapist actually said to the participants. It was also anticipated that developing a standard format would allow for replication studies in the future.

7.5.1. Intervention assessment interview

The intervention assessment interview utilised the structured format presented in Appendix H and took approximately one hour to complete. The aim of the intervention interview was to facilitate movement of individuals from the earlier stages of change for each self-management activity by using Motivational Interviewing techniques (Miller & Rollnick, 1991). The intervention assessment interview was structured in such a way as to establish a therapeutic relationship, gain insight into the extent of the current pain problem and how it may be impacting on the person's life, gather information regarding current use of self-management strategies to be presented as feedback in the

following session and to elicit and reflect the following four categories of change talk; (a) The client's recognition about the nature and extent of the problem, (b) The client's concern about how they are currently managing the problem, (c)The client's intention of changing in the direction of adaptive pain management, (d)The client's optimism that change is possible.

At the conclusion of the interview the psychologist provided a summary of the interview and the participant was invited to return the following week for feedback on the assessment results and discussion regarding assistance with learning and maintaining appropriate self-management strategies.

7.5.2 Control assessment Interview

The control assessment interview also utilised a structured format (Appendix I) and took approximately one hour to complete. The control interview was based on standard pain-clinic assessment procedure and ascertained details regarding beliefs about the cause of the pain and expected prognosis, worst, average and least pain severity ratings and factors which increase and decrease the pain. Information was also elicited relating to previous and current medical treatment and previous and planned surgical procedures related to the pain.

Additional questions were included to determine what treatment recommendations had been made and whether or not the participant was adhering to those suggestions. Participants were asked whether, and in what

way, the pain affected physical exercise, leisure and social activities, sleep, sexual activity, housework, outdoor chores and relationships. Information was elicited regarding whether the participant had ever consulted anyone for an emotional or psychiatric problem and details of diagnoses if appropriate. The final question in the interview pertained to all other health related problems. Questions related to current coping strategies including the use of drugs and alcohol had been elicited in the Pre-assessment interview questionnaire. The interview was designed to obtain information only and did not aim to elicit any motivational statements from the participant.

7.6 Week 2: Feedback interviews

In week two, each participant returned to the centre for the feedback interview. Again, both the intervention and control interviews followed a structured format.

7.6.1 Intervention feedback interview.

The intervention feedback interview (see Appendix J) was based on FRAMES principles of Brief Motivational Intervention (Miller & Rollnick, 1991) described in Chapter 6. The intervention feedback interview was presented in two parts and took approximately one hour to complete.

The aim of Part One of the interview was to increase motivation to self-manage pain more effectively and to build hope that such efforts will be beneficial (optimism). At the beginning of the interview, the interviewer clearly communicated free choice regarding what action the participant would take as

a result of the feedback they were to be provided with. The feedback interview followed the following structure: (a) feedback provided separately for each self-management activity on the RASMAP-Q. (b) Discussion of discrepancies between beliefs and behaviours on particular self-management activities in order to increase dissonance, (c) discussion of discrepancies between importance and confidence scores on particular self-management activities (this was intended to increase dissonance and to allow the interviewer to ascertain whether *consciousness-raising* or *self-efficacy* strategies were required in order to facilitate change for the activity), (d) discussion about activities where the individual was in the higher stages, to strengthen and support self-efficacy for change in other areas. Part one of the interview concluded with a summary of the interview to that point, with an overview of the problem behaviour (as experienced and described by the participant) and of the participant's reactions and change-talk. The aim of the summary was to lead the therapist from phase one to phase two strategies at which point it is possible to use techniques that strengthen commitment to change (Miller & Rollnick, 1991).

The aim of Part two of the intervention feedback interview was to provide appropriate information to the individual regarding where to access assistance in learning self-management strategies. In this research project, participants were invited to participate in up to five, three-hour pain management workshops conducted specifically for the purposes of the research (as there is no chronic pain clinic in the region). Each workshop covered one of the self-

management activities described in the RASMAP-Q. Participants were invited to participate in the workshops, which covered activities that they were not currently using to manage their pain (i.e. activities for which they were currently in the Pre-contemplation, Contemplation, or Preparation stage). Participants were also informed of any other relevant services already existing in the community where they would be able to access information and assistance with learning the particular self-management activity (e.g., hospital physiotherapists, psychologists and occupational therapists and government rehabilitation services). The rationale for providing an alternative to participation in the workshops was to provide a range, or menu of options as part of the FRAMES technique.

7.6.2 Control feedback interview

As feedback is not generally specifically provided in pain assessment procedures, the primary aim of the control feedback interview was to control for extra therapist time and attention in the treatment group (attention-placebo interview). The control feedback interview utilised a structured format (see Appendix K) and took up to one hour to complete. Whilst the therapist had a warm, empathic manner (as would be expected in a standard pain assessment procedures), there was no discussion of any detected discrepancies between belief and behaviour, or importance and confidence on any of the RASMAP-Q self-management activities and no change–talk was intentionally elicited. Subsequent to receiving feedback, the participants were clearly instructed as to which of the pain management workshops they should attend, and as with

the treatment group, were also provided information regarding alternative services available in the community (this information was provided as an ethical responsibility).

After completing the feedback interview, participants in both groups had the opportunity to register for whichever workshops had been recommended by the interviewer. Participants who chose to register were given written information about the relevant self-management activities (Appendix L) and details of the workshops (see Appendix M). Participants then completed the Post-intervention questionnaire (RASMAP-Q) to assess movement in stage of readiness to adopt a self-management approach to chronic pain.

7.6.3 Therapist adherence to treatment Protocol

As the feedback interviews were less structured than the assessment interviews, the feedback interviews for both groups were taped to ensure therapist adherence to treatment protocol. The assessment interviews were not taped as the interviews followed an entirely structured format. A random sample of the tapes of each therapist were checked for adherence to specific treatment protocols by an independent rater (a senior clinical psychologist). The rater ensured that the therapists adhered to the appropriate interview format and used a counseling style consistent with Motivational Interviewing in the treatment group interviews, and that participants in both groups were invited to attend appropriate workshops. As the interviews were based on a specific format, it was not deemed necessary to code therapist speech as has

been done in some other studies of motivational interviewing where there is no specific structure to the interviews provided to either group (e.g., Bien et al. 1993). The more structured nature of the interviews in the present study also precluded the need to have more than one rater assess adherence to protocol and to subsequently determine inter-rater reliability.

7.7 Pain management workshops

The aim of conducting the pain management workshops was primarily to provide a means of assessing rates of engagement in treatment, as at the time of conducting the research, no pain management programs were being conducted in the Far North Queensland region. It was not the primary aim of the research to evaluate the effectiveness of the workshops, however, as discussed later, significant change was demonstrated within workshop participants. It was hypothesised that participation in the workshops would facilitate change to the Preparation stage for use of each particular self-management activity.

The workshops were also conducted to provide an incentive for research participants and to increase sample size. The provision of workshops was initially a concern because of the anticipated low number of Pre-contemplators attracted by this recruitment process. These fears proved unfounded, however, as a large number of research participants volunteered "just to tell their story" rather than for the opportunity to participate in treatment.

Five, three-hour pain-management group workshops were conducted on a minimum of two occasions each to allow maximum opportunity for participation. The workshop format and handout materials were manualised for consistency and standardised presentation and were conducted by a multidisciplinary team of registered practicing health professionals who have substantial experience in working with clients with chronic pain. The workshops were presented using overhead transparencies and a white board. Each overhead transparency was provided as a handout to preclude the need for note-taking. The workshops incorporated brief written and practical exercises, all of which were provided to each participant as handouts in a folder for revision and practice at home.

Each group comprised up to twenty participants and all attendees were encouraged to bring a spouse, family member or friend as research has clearly documented the importance of significant others in the management of chronic pain (Keefe, Dunsmore, & Burnett, 1992). Each of the five workshop topics covered one of the RASMAP-Q self-management activities (Exercise, Activity Pacing, Relaxation, Cognitive Strategies and Medication Use) and each commenced with a clear rationale for adopting a self-management approach to chronic pain and an educational component regarding the multi-dimensional nature of pain, as research has shown that a strong commitment to a self-management approach can serve as a mediator or moderator of successful treatment (Kerns & Rosenberg, 2000). At the conclusion of each workshop, participants were requested to complete the relevant RASMAP-Q

activity form to assess Post-workshop stage of change on that self-management activity and an anonymous evaluation to provide facilitators with feedback and suggestions.

7.7.1 Exercise workshop

The exercise workshops (see Appendix N for the manualised version) were conducted by a Physiotherapist and a Psychologist. In the first section of the workshop, the Psychologist covered the educational component relating to self-management and barriers to exercising. The Physiotherapist then introduced the rationale for stretching and strengthening exercises, discussed guidelines for exercising, then demonstrated and guided a practical session of stretches and strengthening exercises spending time with each individual to check posture and correct execution of the exercises.

In the second half of the workshop, cardiovascular exercise (including walking, swimming, stationary bicycle, yoga and tai-chi) was discussed by the Physiotherapist. As with the earlier exercises, a rationale and guidelines were provided for frequency and intensity of exercise and participants were encouraged to ask questions and discuss current and anticipated difficulties. In the final section of the workshop, the Psychologist introduced goal-setting and action-planning and discussed ideas for starting and maintaining an exercise program.

7.7.2 Activity Pacing workshop

The activity pacing workshop (see Appendix O) was conducted by two Psychologists. Subsequent to providing the rationale for a self-management approach to pain, the concept of activity pacing was introduced in an educational format. The introduction was followed by a discussion of how activity pacing can help manage chronic pain and the benefits of this type of approach. In the second part of the workshop, participants engaged in a practical exercise utilising the principles of activity pacing. After completion of the exercise, participants discussed current and anticipated barriers to activity pacing and this was followed by a guided discussion about common problems and solutions relating to activity pacing.

7.7.3 Relaxation workshop

The relaxation workshop (see Appendix P) was conducted by two Psychologists and commenced with the self-management education component described above. The participants were provided with a rationale for and the benefits of using relaxation techniques to mange chronic pain. The next two components were practical exercises comprising awareness and body scanning techniques. Subsequent to these exercises, participants were instructed in the use of diaphragmatic breathing techniques.

In the second half of the workshop, participants were guided through a progressive muscle relaxation and a self-hypnosis technique both adapted specifically for use with chronic pain and provided with soothing background

music. The exercises had been recorded on a compact disc by one of the workshop facilitators and a tape was provided to each participant for practice at home.

7.7.4 Cognitive Strategies workshop

The cognitive strategies workshop (see Appendix Q) was conducted by two Psychologists and commenced with the self-management education component described in the other workshops. The participants were provided with a rationale for and the benefits of using cognitive strategies to mange chronic pain. The workshop was presented in two parts. In the first part, the Gate Control theory was introduced and included an overview of the physiology of pain and how pain messages are transmitted. Within this presentation the factors that 'open the gate' and factors that 'close the gate,' were discussed, with particular emphasis on the role of cognitions on pain transmission. This component was followed by an introduction to the cognitive model with an explanation of the link between thought, feelings and behaviour.

The second part of the workshop was based on the principles of cognitive therapy, commencing with an explanation of the role of negative automatic thoughts. In the next exercise participants were invited to identify, record and discuss some of their own negative automatic thoughts. The concept of thinking mistakes was presented and each example discussed in relation to living with chronic pain. When participants were confident with the concept of

thinking mistakes, they identified any thinking mistakes in their previously identified negative automatic thoughts. The final workshop component focused on teaching participants how to challenge and reframe their negative automatic thoughts.

7.7.5 Medication Education workshop

The medication education workshop (see Appendix R) was conducted by a Psychologist and a registered nurse (who is also a registered Psychologist and a rehabilitation consultant). As with the other workshops, the presentation commenced with the self-management education component described in the other workshops. The participants were provided with a rationale for and the benefits of using medication appropriately to mange chronic pain.

The workshop commenced with an educational discussion about the difference between acute and chronic pain, followed by a presentation of how pain medications work to reduce pain and the role of medication in managing chronic pain. The next component covered the side-effects of pain medication and a discussion of the various types of pain medication available, their potential benefits and commonly reported side-effects. The terms addiction, tolerance, and dependency were discussed in relation to pain medication and this component was followed by guidelines for safe and appropriate use of medication. The final components covered how to communicate with doctors and the partnership role of the health practitioner in a self-management

approach, and recommendations for how to reduce medication and incorporate other self-management activities to manage pain.

7.8 Follow-ups

7.8.1 Four-week Follow-up

The first follow-up was conducted four weeks subsequent to the workshops in order to allow time for participants to move from the Preparation stage (which is defined as having a clear plan of intent and considering taking action within the next four weeks) to the Action stage (starting to take steps to self-manage). The follow-up comprised an eight-section mail-out questionnaire comprising eight sections (Appendix S). Section A included four questions relating to participation in the workshops, action taken (if any) since the interviews and/or workshops, reasons for inaction (if applicable) and interest in participating in future workshops (if offered). Sections B,C,D,E and F comprised the five RASMAP-Q sections (Exercise, Activity Pacing, Relaxation, Thought Techniques and Medication Use). Section G was the Centre for Epidemiological Studies- Depression scale (Radloff, 1977) and section H was the pain interference scale of the Multidimensional Pain Inventory (Kerns, Turk & Rudy, 1985).

7.8.2 Six-month Follow-up

The final follow-up was conducted six months subsequent to the four-week follow-up to allow for participants to move to the Maintenance stage (which is defined as maintaining a behaviour for at least six months). The final follow-up

comprised the same mail-out questionnaire as the six-month follow-up. Chapter 8 presents the results of the randomised controlled trial and follow-ups.

CHAPTER 8

Assessing and enhancing readiness to adopt a self-management approach to pain: A randomised controlled trial to determine the efficacy of the RASMAP-Q intervention - Results Section.

8.0 Results

8.1 Enhancing Engagement in Treatment

8.2 Adherence to Treatment Recommendations
- **8.2.1**Correlations between Pre-intervention Behaviour and Medical, Psychological and Demographic Variables

8.3 Changes in behaviour and attitudes in relation to Exercise
- **8.3.1** Exercise behaviour
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8.4 Changes in behaviour and attitudes in relation to Activity Pacing
- **8.4.1** Activity pacing behaviour
- **8.4.2** Activity pacing beliefs
- **8.4.3** Activity pacing importance
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8.5 Changes in behaviour and attitudes in relation to Relaxation Techniques
- **8.5.1** Relaxation behaviour
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- **8.5.3** Relaxation importance
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8.6 Changes in behaviour and attitudes in relation to Cognitive Strategies
- **8.6.1** Cognitive strategy behaviours
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8.7 Changes in behaviour and attitudes in relation to Medication Use

8.8 Changes in Depression and Pain Interference

8.9 Analysis of attrition rates at follow-ups

8.0 Results

The aims of study 3 were to determine the impact of the brief motivational intervention on rates of engagement in treatment and, secondly, on adherence to treatment recommendations (self-management activities). Rates of engagement in treatment were determined by attendance at the specific pain management workshops that had been recommended in the feedback session of the intervention. Adherence to treatment recommendations was measured at Pre-intervention and Post-intervention with follow-ups at Post-workshop, at four-weeks and at six-months. Changes in behaviour and attitudes (beliefs) at each measurement point are presented separately for each self-management activity.

The data were analysed using SPSS 10 for Macintosh. As the *Belief* and *Behaviour* data for each self-management activity was categorical and the *Importance* and *Confidence* data violated the assumptions of normality, non-parametric statistics were performed for all analyses. The analyses included a large number of planned comparisons and results were considered statistically significant at $p<0.01$. This alpha level was selected so as to balance the increased risk of Type 1 errors associated with multiple statistical tests against the risk of Type 2 errors associated with a loss of power if the alpha level were set using a conservative Bonferroni approach. Values are reported where $p<0.05$ to allow the reader to examine the proximity to statistical significance for these results. The CES-D and Pain Interference data were analysed by means of parametric statistics.

Although it is important that the results of a trial be statistically significant, statistical significance alone is not sufficient to determine the clinical usefulness of a treatment. Appropriate cutoff points for clinically meaningful differences are a much debated issue in clinical pain trials as the majority of studies attempt to demonstrate reductions in pain intensity (a subjective experience) using a range of measures without agreement on what constitutes *enough* pain relief to be *clinically meaningful* (Farrar, 2000). The nature of clinically meaningful differences in the present study was somewhat easier to establish. The aim was to demonstrate *change in behaviour* rather than *changes in pain*, where an individual is either engaging in a specific behaviour, or they are *not* engaging in that behaviour. Accordingly, change was considered clinically meaningful where the *median* RASMAP-Q score for beliefs or behaviour within each group increased from less than four (indicating Pre-contemplation, Contemplation or Preparation) to four or greater (indicating Action or Maintenance).

It is generally agreed (e.g., Rollnick, et al. 2000; Lorig, 1995) that clinically meaningful scores on importance and confidence related to a specific activity are scores of seven or greater on a numerical rating scale of 0 to 10 where 0 = not at all important/confident and 10 = extremely important/confident. Scores of seven or greater have shown to be predictive of action, thus being clinically important, as action was precisely the outcome we were examining. Change in the present study was considered clinically meaningful where mean scores on importance and confidence increased from less than seven to seven or greater.

8.1 Enhancing engagement in treatment

The first aim of Study 3 was to examine differences between groups in rates of engagement in treatment. Chi Square analyses were computed to determine differences between groups in rates of engagement in pain management workshops. As illustrated in Table 8.1, treatment group participants were significantly more likely to attend workshops than control group participants. Using the Yates Correction for Continuity, χ^2 (1, $\underline{N}$ = 78) = 7.56, $\underline{p}$<.01.

Table 8.1 Proportions of Participants in Each Group Attending Workshops.

Group	Attended Workshop	
	yes	no
Control Group n=39	16	23
% within group	41.0%	59.0%
% within attended workshop	35.6%	69.7%
Treatment Group n=39	29	10
% within group	74.4%	25.6%
% within attended workshop	64.4%	30.3%
Total % of total sample	45 57.7%	33 42.3%

Further Chi-square analyses demonstrated that there were no significant associations between engagement in workshops and any medical, psychological or demographic variables including depression and pain interference.

As discussed in Chapter 7, adherence to treatment protocols in the interviews was substantiated by having an independent rater check a random sample of

the taped feedback sessions. Whilst it was determined that adherence to specific interview protocols had occurred, it was also deemed important to ascertain whether engagement in workshops was affected by therapist characteristics. Chi-square analyses determined that therapist characteristics did not significantly affect engagement in workshops (p=.677). The rates of engagement in workshops for participants assigned to each therapist are illustrated in Table 8.2.

Table 8.2 Rates of Engagement in Workshops for Each Therapist

Interviewer	Attended workshop		Total
	Yes	No	
Therapist 1	24	16	40
Therapist 2	21	17	38
Total	45	33	78

8.2 Adherence to Treatment recommendations

The second aim of Study 3 was to determine the impact of the intervention on adherence to treatment recommendations (self-management activities). In order to take into account the possibility of a ceiling effect, the scores of participants who were already in the Maintenance stage for a self-management activity at Pre-intervention were excluded for analyses between Pre-intervention and Post intervention. The scores for participants in the Maintenance stage at Pre-intervention were included for all subsequent analyses in order to take into account those participants who relapsed to an earlier stage of change during the follow-up period. All changes referred to within the results section are indicative of positive change.

8.2.1 Correlations between Pre-intervention Behaviour and Medical, Psychological and Demographic Variables

Spearman's Rank Order correlations confirmed that other than the finding that males were significantly more likely to be in the Pre-contemplation stage for relaxation behaviour than women at Pre-intervention (r=.299, p<.01), there were no significant correlations between Pre-intervention behaviour and any medical, psychological or demographic variables (including depression and pain interference) for each of the five self-management activities (See Appendix T).

8.3 Changes in attitude and behaviour in relation to Exercise

In order to determine change between measurement points, the categorical data obtained from the RASMAP-Q exercise belief and behaviour scores were analysed by means of non-parametric statistics.

8.3.1 Exercise Behaviour

Change between Pre-intervention and Post-intervention. Wilcoxon Signed Rank tests failed to demonstrate statistically significant change in exercise behaviour from Pre-intervention to Post-intervention within either group.

Change between Post-Intervention and Post workshop. Eighteen participants attended an exercise workshop. Eight participants were from the control group and ten were from the treatment group. Wilcoxon Signed Rank test analyses demonstrated that there was no statistically significant change in exercise

behaviour between Post-intervention and Post-workshop within workshop attendees in either group between these measurement points.

Change between Post-intervention and the four-week follow-up. There was no statistically significant change in exercise behaviour from Post-intervention to the four-week follow-up within either group.

Change between the four-week follow-up and the six-month follow-up. No statistically significant change in exercise behaviour occurred within either group between the four-week follow-up and the six-month follow-up.

Change between Post-intervention and the six-month follow-up. Change in exercise behaviour was approaching statistical significance between Post-intervention and the six-month follow-up within the treatment group (p=.050). The change within the control group failed to reach statistical significance. Figure 8.1 illustrates the changes over time in the RASMAP-Q mean rank scores for exercise behaviour in both groups.

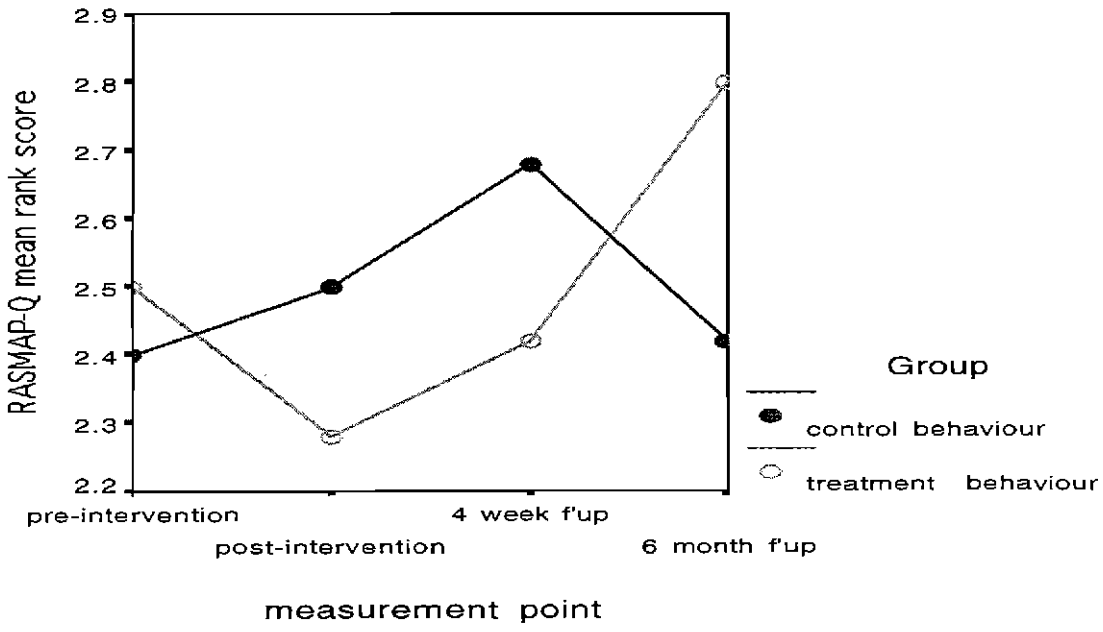

Figure 8.1 RASMAP-Q mean rank scores for exercise behaviour over time

Clinically meaningful change in exercise behaviour. Clinically meaningful change was determined by examining the RASMAP-Q *median* exercise behaviour scores. As discussed earlier in the chapter, change was considered clinically meaningful if median scores increased from less than four (not yet in the Action stage) to greater than four (Action or Maintenance stage). Clinically meaningful change in exercise behaviour occurred within the treatment *and* control groups between Post-intervention and the four-week follow-up with an increase in the median score from three to four in both groups. However, the control group exercise behaviour scores decreased between the four-week and six-month follow-ups with a reduction in the median score from four (Action) to three (Preparation) between these measurement points.

Change within workshop attendees and non-attendees. In order to determine the effect of the workshops on exercise behaviour, Friedman analyses were computed separately for those participants who attended an exercise workshop and those who did not attend within both the treatment group and the control group (the mean rank scores from the Friedman's analyses are illustrated in Table 8.3). The Friedman's analyses failed to demonstrate statistically significant exercise behaviour change over time within workshop attendees in either group.

Table 8.3 RASMAP-Q Mean Rank Scores for Exercise Behaviour Over Time

	Attending W'Shop		Not Attending W'Shop	
Exercise behaviour	Control	Treatment	Control	Treatment
Pre-intervention	2.79	2.57	2.42	2.61
Post-intervention	3.21	2.29	2.42	2.39
Post-workshop	3.21	2.79	////////////////	////////////////
4 week follow-up	3.00	3.79	2.69	2.22
6 month follow-up	2.79	3.57	2.47	2.78

RASMAP-Q *median* scores were also examined in order to determine clinically meaningful change in exercise behaviour within groups. Clinically meaningful exercise behaviour change was evident within the treatment group exercise workshop attendees as their median score increased from two (Contemplation) at Post-intervention to four (Action) at the four-week follow-up and this score was maintained at the six-month follow-up. In contrast, the control group attendee median score failed to demonstrate clinically meaningful change and was less than four at all measurement points indicating lack of movement to the Action stage.

8.3.2 Exercise Beliefs

Change between Pre-intervention and Post-intervention. No significant change in exercise beliefs was demonstrated within the treatment group between Pre-intervention and Post-Intervention. The change in exercise beliefs within the control group was approaching statistical significance (p=.037).

Change between Post-intervention and Post-workshop. There was no statistically significant change in exercise beliefs between Post-intervention and Post-workshop, within workshop participants in either group.

Change between Post-intervention and the four-week follow-up. Wilcoxon Signed Rank test analyses demonstrated statistically significant change in exercise beliefs within the treatment group between Post-intervention and the four-week follow-up (Z =-2.668, p<.01). No statistically significant change in exercise beliefs was demonstrated within the control group participants.

Change between the four-week follow-up and the six-month follow-up. No statistically significant change in exercise beliefs was evident within either group between these measurement points. However, although the change was not statistically significant, as illustrated in Figure 8.2, the treatment group exercise belief scores continued to *increase*, whereas the control group exercise belief scores *decreased* between these measurement points.

Change between Post-intervention and the six-month follow-up. Statistically significant change in exercise beliefs occurred within the treatment group between these measurement points ($\underline{Z}$=-2.600, $\underline{p}$<.01). The change in exercise beliefs within the control group failed to reach statistical significance.

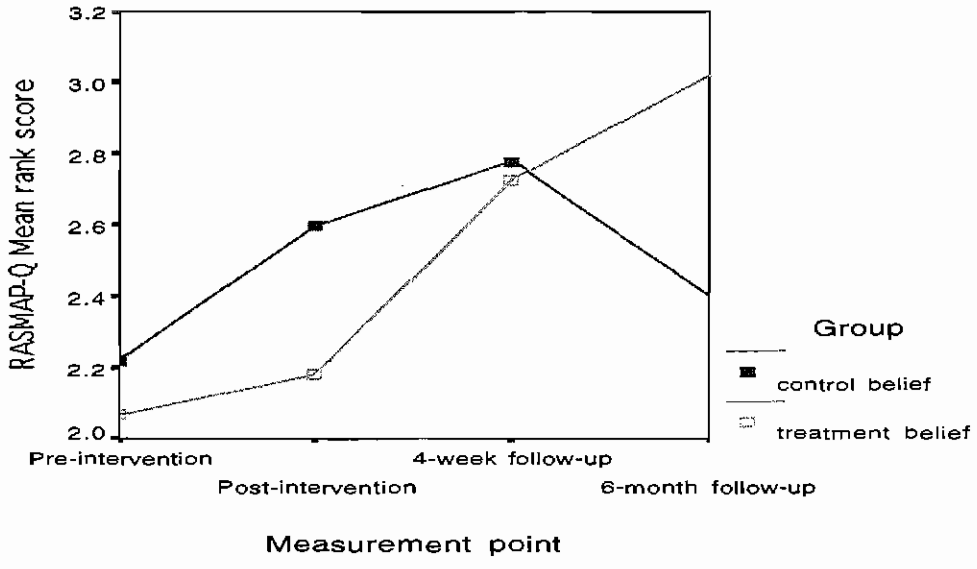

Figure 8.2 RASMAP-Q mean rank scores for exercise beliefs over time

Clinically meaningful change in exercise beliefs. As with exercise behaviour, Clinically meaningful change was determined by examining the RASMAP-Q *median* scores. The change in treatment group exercise beliefs was clinically meaningful between Post-intervention and the four-week follow-up as the

median RASMAP-Q exercise belief score increased from three (Preparation) to four (Action) between these measurement points and the change was maintained at the six-month follow-up. As with exercise behaviour, the change in exercise beliefs within the control group was not clinically meaningful between any of the measurement points.

Change within workshop attendees and non-attendees. As with exercise behaviour, Friedman's analyses were computed separately for participants who attended an exercise workshop and participants who did not attend, to determine the effect of the workshops. The RASMAP-Q mean rank scores are presented in Table 8.4. Statistically significant change in exercise beliefs was demonstrated for participants in the treatment group who did not attend a workshop, χ^2 (3, N = 23) = 21.080, p<.001.

Table 8.4 RASMAP-Q Mean Rank Scores for Exercise Beliefs Over Time

	Attending W'Shop		Not Attending W'Shop	
Exercise beliefs	Control	Treatment	Control	Treatment
Pre-intervention	2.00	2.79	2.39	2.00
Post-intervention	3.14	2.71	2.56	2.17
Post-workshop	3.43	2.64	////////////////	////////////////
4 week follow-up	3.21	3.29	2.78	2.76
6 month follow-up	3.21	3.57	2.28	3.07

RASMAP-Q *median* scores were also examined to determine clinically meaningful change in exercise beliefs within workshop attendees and non-attendees. Clinically meaningful change was demonstrated within workshop attendees in both groups as the median RASMAP-Q exercise belief score for both control and treatment workshop attendees increased from three

(Preparation) to four (Action) between the four-week follow-up and the six-month follow-up. The control group participants who did not attend an exercise workshop failed to demonstrate statistically significant or clinically meaningful change in exercise beliefs over time.

8.3.3 Exercise Importance

As the importance and confidence data for each self-management activity violated the assumption of normal distribution, non-parametric tests were also used for these analyses. The data were *not* categorical (as were the belief and behaviour data), therefore, mean scores are reported rather than the mean rank scores. The importance and confidence data reflect the workshop attendees and non-attendees combined within each group.

At Post-intervention, and both the four-week follow-up and the six-month follow-up, the treatment group mean RASMAP-Q exercise importance scores demonstrated clinically meaningful change in that they were greater than seven out of ten (see Table 8.5). The control group mean RASMAP-Q exercise importance scores remained the same at each measurement point and were less than seven. Mann-Whitney-U analyses demonstrated a significant difference in mean exercise importance scores between groups at the four-week follow-up (Z=-2.722, p=.006). Friedman's analyses failed to demonstrate any statistically significant change in mean RASMAP-Q exercise importance scores over time within either group.

Table 8.5 Mean RASMAP-Q Exercise Importance Scores

Measurement point	n	Treatment group Mean (SD)	n	Control Group Mean (SD)	P value
Pre-Intervention	39	6.9 (3.52)	39	6.2 (3.58)	.419
Post-intervention	39	7.5 (2.83)	39	6.2 (3.44)	.381
4-week follow-up	35	7.9 (2.86)	29	6.2 (2.84)	.006*
6-month follow-up	31	7.6 (3.02)	25	6.2 (3.41)	.147

8.3.4 Exercise Confidence

As illustrated in Table 8.6, at Post-intervention both the treatment and control group had a mean RASMAP-Q exercise confidence score of less than seven. At the four-week follow-up the treatment group demonstrated clinically meaningful change with a mean RASMAP-Q exercise confidence score of 7.9. The control group had a mean RASMAP-Q exercise confidence score of less than seven at 5.2 and, as with exercise importance, the difference between the groups at that measurement point was statistically significant (Z=-2.63, p=.010). This difference was not maintained at the six-month follow-up however, and at this measurement point both the treatment group and the control group had mean RASMAP-Q exercise confidence scores of less than seven.

Table 8.6 Mean RASMAP-Q Exercise Confidence Scores

Measurement point	n	Treatment group Mean (SD)	n	Control Group Mean (SD)	P value
Pre-Intervention	39	5.2 (3.77)	39	3.9 (3.32)	.112
Post-intervention	39	6.1 (3.42)	39	5.6 (3.32)	.479
4-week follow-up	35	7.1 (2.86)	29	5.2 (2.77)	.010*
6-month follow-up	31	6.5 (3.32)	25	5.5 (3.39)	.280

Friedman's analyses demonstrated significant change in mean RASMAP-Q exercise confidence scores over time within the treatment group χ^2 (3, N=30),

=12.436, p=.006). The change within the control group was approaching statistical significance (p=.020). Figure 8.3 presents the mean RASMAP-Q scores for exercise importance and exercise confidence for both groups to illustrate change over time.

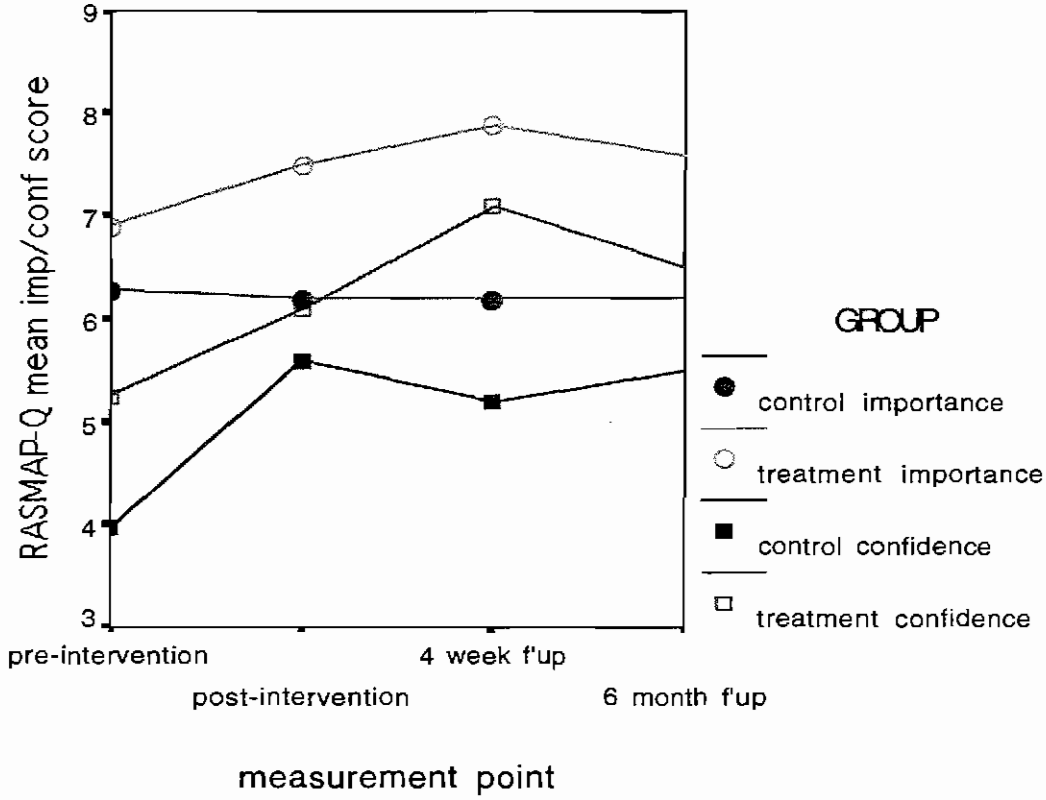

Figure 8.3 RASMAP-Q mean exercise importance and confidence scores over time.

8.4 Changes in attitude and behaviour in relation to Activity Pacing

As with the analysis of exercise, the categorical data obtained from the RASMAP-Q activity pacing belief and behaviour scores were analysed by means of non-parametric statistics in order to determine change between measurement points.

8.4.1 Activity Pacing Behaviour

Change between Pre-intervention and Post-intervention. No statistically significant change was demonstrated for activity pacing behaviour for either group between Pre and Post intervention.

Change between Post-intervention and Post-workshop. Nineteen participants attended an activity pacing workshop. Eight participants were from the control group and eleven participants were from the treatment group. Wilcoxon Signed Rank test analyses demonstrated that there was no statistically significant change in activity pacing behaviour between Post-intervention and Post-workshop within workshop participants in either group.

Change between Post-intervention and the four-week follow-up. Wilcoxon Signed Rank tests demonstrated change in activity pacing behaviour within the treatment group that was approaching statistical significance between these measurement points ($\underline{p}$=.041). The change within the control group failed to reach statistical significance.

Change between the four-week follow-up and the six-month follow-up. No statistically significant change was evident within either group between these measurement points. However, as illustrated in Figure 8.4, the treatment group mean rank activity pacing behaviour scores continued to increase, whereas activity pacing behaviour within the control group decreased.

Change between Post-intervention and the six-month follow-up. Wilcoxon Signed rank tests demonstrated that change in activity pacing behaviour within the treatment group was approaching significance ($\underline{p}$=.050). No statistically

significant change in activity pacing behaviour was demonstrated within the control group.

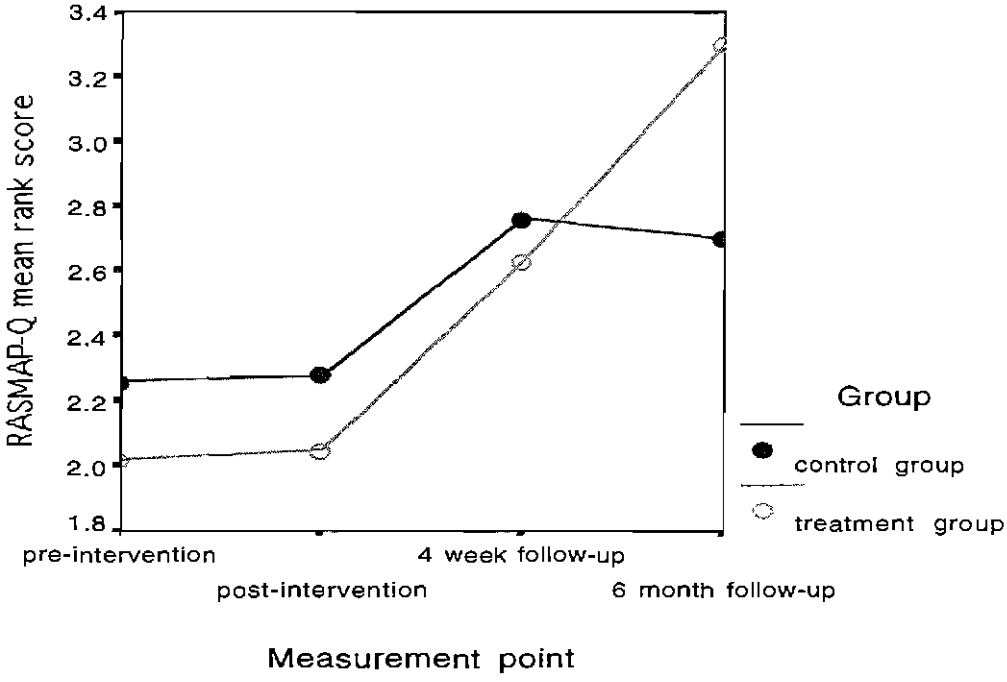

Figure 8.4 RASMAP-Q mean rank scores for activity pacing behaviour over time

Clinically meaningful change in activity pacing behaviour. The change in activity pacing behaviour between Post-intervention and the four-week follow-up was clinically meaningful within both groups as the median RASMAP-Q activity pacing behaviour score increased from three (Preparation) to four (Action) between these measurement points. Change in activity pacing behaviour within the treatment group was also clinically meaningful between the four-week and six-month follow-ups with the RASMAP-Q median activity pacing behaviour score increasing from four (Action) to five (Maintenance) between these measurement points.

Change within workshop attendees and non-attendees. Friedman's tests were employed to examine the changes over time in activity pacing behaviour separately for workshop attendees and non-attendees (see Table 8.7). The results of these tests demonstrated increases in activity pacing behaviour over time within the treatment group workshop attendees and the change was approaching statistical significance (p=.030).

Table 8.7 RASMAP-Q Mean Rank Scores for Activity Pacing Behaviour Over Tme

	Attending W'Shop		Not Attending W'Shop	
Activity pacing behaviour	Control	Treatment	Control	Treatment
Pre-intervention	3.29	2.56	2.58	2.40
Post-intervention	1.93	2.31	2.18	2.27
Post-workshop	2.79	2.63	////////////////	////////////////
4 week follow-up	2.93	3.38	2.64	2.47
6 month follow-up	4.07	4.13	2.60	2.87

The *median* RASMAP-Q activity pacing behaviour scores were also examined to determine whether the change within groups was clinically meaningful. Clinically meaningful change was clearly demonstrated within both the control group and the treatment group participants who attended an activity pacing workshop. However a greater increase in activity pacing behaviour was evident within the treatment group workshop participants with an increase in the RASMAP-Q median score from two (Contemplation) at Post Intervention to five (Maintenance) at the six-month follow-up whereas the control group workshop attendee RASMAP-Q median score increased from two (Contemplation) to four (Action) between these measurement points. The change within both the treatment and control group non-attendees failed to reach statistical significance and was not clinically meaningful.

8.4.2 Activity Pacing Beliefs

Changes between Pre-intervention and Post-intervention. Activity pacing beliefs increased between Pre and post-intervention within both groups. However, Wilcoxon Signed Rank test analyses demonstrated that the change was not statistically significant within either group between these measurement points.

Change between Post-intervention and Post-workshop. Neither the control or treatment group participants who attended an activity pacing workshop demonstrated statistically significant changes in activity pacing beliefs between Post-intervention and Post-workshop.

Change between the four-week follow-up and the six-month follow-up. No statistically significant change in activity pacing beliefs was evident for either group. However, as illustrated in Figure 8.5, treatment group activity pacing beliefs continued to increase between these measurement points

Change between Post-intervention and the four-week follow-up. Wilcoxon Signed rank test analyses demonstrated statistically significant change in activity pacing beliefs within the treatment group between Post-intervention and the four-week follow-up (Z=-2.691, p=.007 The change within the control group failed to reach statistical significance

Change between Post-intervention and the six-month follow-up. Statistically significant change in activity pacing beliefs was demonstrated within the treatment group between these measurement points (Z=-2.384, p=.01). No significant change was demonstrated within the control group.

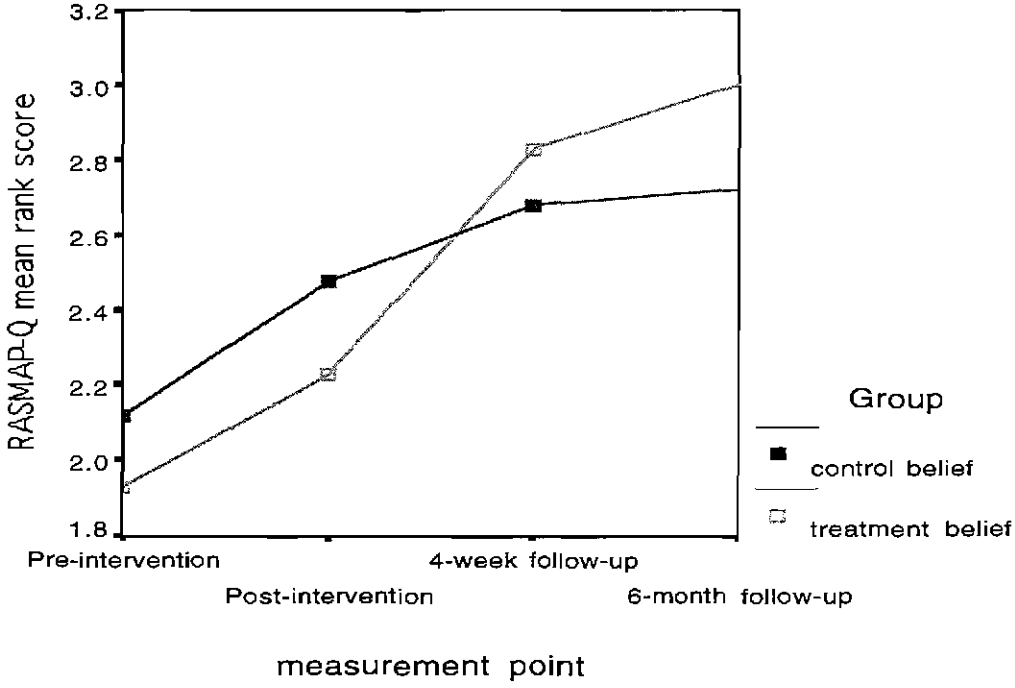

Figure 8.5 RASMAP-Q mean rank scores for activity pacing beliefs over time

Clinically meaningful change in activity pacing beliefs. RASMAP-Q *median* activity pacing belief scores were examined in order to determine clinically meaningful change over time. Clinically meaningful change in activity pacing beliefs was evident within the treatment group with an increase in the median score from three (Preparation) at Pre-intervention to four (Action) at Post-intervention and this score was maintained at all subsequent follow-up points. Clinically meaningful change also occurred within the control group with an increase in the median score from three to four between the four-week follow-up and the six-month follow-up.

Change within workshop attendees and non-attendees. Friedman tests were employed to examine the changes over time in activity pacing beliefs separately for workshop attendees and non-attendees. The RASMAP-Q mean rank scores are illustrated in Table 8.8. The results of these tests demonstrate statistically significant change in activity pacing beliefs within the treatment group participants who attended an activity pacing workshop χ^2 (4, N=8) = 14.900, p=.005) The change within the control group participants who attended a workshop was approaching statistical significance (p=.018). Statistically significant change in activity pacing beliefs was also demonstrated within the treatment group participants who did not attend an activity pacing workshop χ^2 (3, N=22) = 14.007, p=.003).

Table 8.8 RASMAP-Q Mean Rank Scores for Activity Pacing Beliefs Over Time

	Attending W'Shop		Not Attending W'Shop	
Activity pacing beliefs	Control	Treatment	Control	Treatment
Pre-intervention	1.86	2.75	2.12	1.93
Post-intervention	2.71	2.38	2.48	2.23
Post-workshop	3.00	2.00	////////////////	////////////////
4 week follow-up	3.50	3.56	2.68	2.83
6 month follow-up	3.93	4.31	2.72	3.00

The change in activity pacing beliefs was clinically meaningful within the treatment group workshop attendees with an increase in the median score from three (Preparation) to four (Action) between Post-workshop and the four-week follow-up and this change was maintained at the six-month follow-up. Treatment group non-attendees demonstrated clinically meaningful change in activity pacing beliefs between Pre and Post-intervention with an increase in

the median score from three (Preparation) to four (Action) and an increase from four (Action), to five (Maintenance) between Post-intervention and the four-week follow-up. The change in these participants was not maintained between the four-week follow-up and the six-month follow-up, however, with a decrease in the median activity pacing belief score from five to four between these measurement points. No clinically meaningful change was evident within either the control group attendees or the control group non-attendees as both had a median score of three (Preparation) at all measurement points.

8.4.3 Activity Pacing Importance

As with the analysis of exercise, the mean RASMAP-Q activity pacing importance and confidence scores reflect the workshop attendees and non-attendees combined within each group.

As illustrated in Table 8.9, there was no significant difference in RASMAP-Q mean activity pacing importance scores between groups at Post-intervention with both groups scoring over seven. At the four-week follow-up, Mann-Whitney-U analyses demonstrated significantly higher mean activity pacing importance scores in the treatment group than the control group (Z=-3.293, p =.001). The results at this follow-up point were also clinically meaningful, as the control group mean scores had reduced to less than seven, at 6.8. At the six-month follow-up both groups had a mean RASMAP-Q activity pacing importance score of greater than seven, however, the difference between the groups was no longer statistically significant. Friedman's analyses failed to

demonstrate statistically significant change in mean RASMAP-Q activity pacing importance scores over time within either group.

Table 8.9 Mean RASMAP-Q Activity Pacing Importance Scores

Measurement point	n	Treatment group Mean (SD)	n	Control Group Mean (SD)	P value
Pre-Intervention	39	7.4 (2.91)	39	7.1 (3.80)	.860
Post-intervention	39	8.1 (2.28)	39	7.3 (3.22)	.725
4-week follow-up	35	8.9 (1.65)	29	6.8 (3.18)	.001*
6-month follow-up	31	8.7 (1.75)	25	7.5 (2.66)	.070

8.4.4 Activity Pacing Confidence

As illustrated in Table 8.10, there was no significant difference in mean RASMAP-Q activity pacing confidence scores between groups at Post-intervention, however, the treatment group mean score was greater than seven at 7.2 and the control group mean score was less than seven at 6.2. At the four-week follow-up, Mann-Whitney-U analyses demonstrated that the treatment group had significantly higher mean RASMAP-Q activity pacing confidence scores than the control group (Z=-3.502, p<.001). As with activity pacing importance, the difference between groups was clinically meaningful as the control group mean score had decreased even more, to 6.0. However, unlike the activity pacing importance scores, at the six-month follow-up, the treatment group had a mean confidence score of greater than seven at 7.6 and the control group had a mean confidence score of less than seven at 5.8 and the difference between the groups was approaching statistical significance (p=.034).

Table 8.10 Mean RASMAP-Q Activity Pacing Confidence Scores

Measurement point	n	Treatment group Mean (SD)	n	Control Group Mean (SD)	P value
Pre-Intervention	39	5.5 (3.51)	39	4.7 (3.46)	.324
Post-intervention	39	7.2 (2.55)	39	6.2 (3.41)	.291
4-week follow-up	35	8.2 (1.92)	29	6.0 (2.90)	.000*
6-month follow-up	31	7.6 (2.30)	25	5.8 (3.10)	.034

Friedman's analyses demonstrated statistically significant change in mean RASMAP-Q activity pacing confidence scores over time within the treatment group χ^2 (3, N =30) = 18.439, p<.001). The change within the control group failed to reach statistical significance. Figure 8.6 presents the mean RASMAP-Q activity pacing scores for both groups to illustrate change in importance and confidence over time.

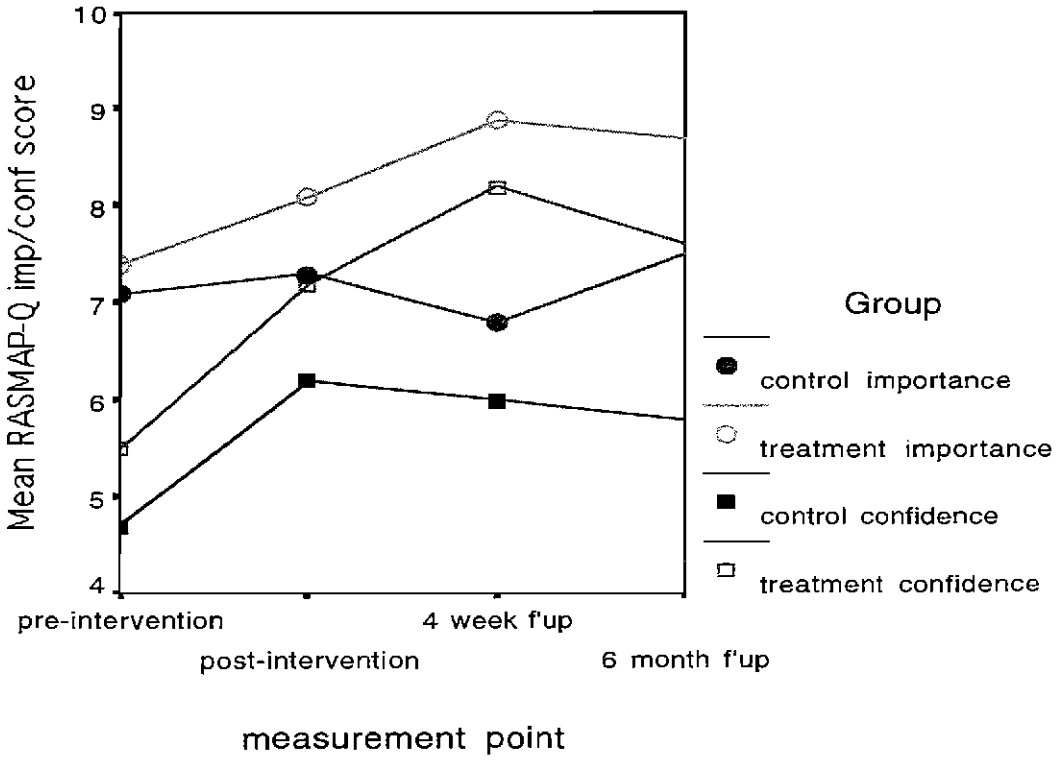

Figure 8.6 Mean RASMAP-Q activity pacing importance and confidence scores over time

8.5 Changes in attitude and behaviour in relation to Relaxation

As with the analysis of exercise and activity pacing, the categorical data obtained from the RASMAP-Q relaxation belief and behaviour scores were analysed by means of non-parametric statistics in order to determine change between measurement points.

8.5.1 Relaxation Behaviour

Change between Pre-intervention and Post-intervention. Wilcoxon Signed Rank tests failed to demonstrate statistically significant change in relaxation behaviour within either group between these measurement points.

Change between Post-intervention and Post-workshop. Thirty-three participants attended a relaxation workshop. Twenty-one participants were from the treatment group and twelve were from the control group. No statistically significant change in relaxation behaviour was demonstrated within either group between these measurement points.

Change between Post-intervention and the four-week follow-up. Wilcoxon Signed Rank test analyses demonstrated statistically significant change in treatment group relaxation behaviour (Z=-2.562, p=.010). The change in relaxation behaviour within the control group failed to reach statistical significance.

Change between the four-week follow-up and the six-month follow-up. As with the previous measurement point, the change within the treatment group was statistically significant (Z=-2.645, p=.008). As illustrated in Figure 8.7,

relaxation behaviour continued to increase within the treatment group whereas relaxation behaviour decreased within the control group.

Change between Post-intervention and the six-month follow-up. Wilcoxon Signed Rank test analyses demonstrated statistically significant change in relaxation behaviour within the treatment group between these measurement points (Z=-3.458, p=.001). The change in relaxation behaviour within the control group again failed to reach statistical significance.

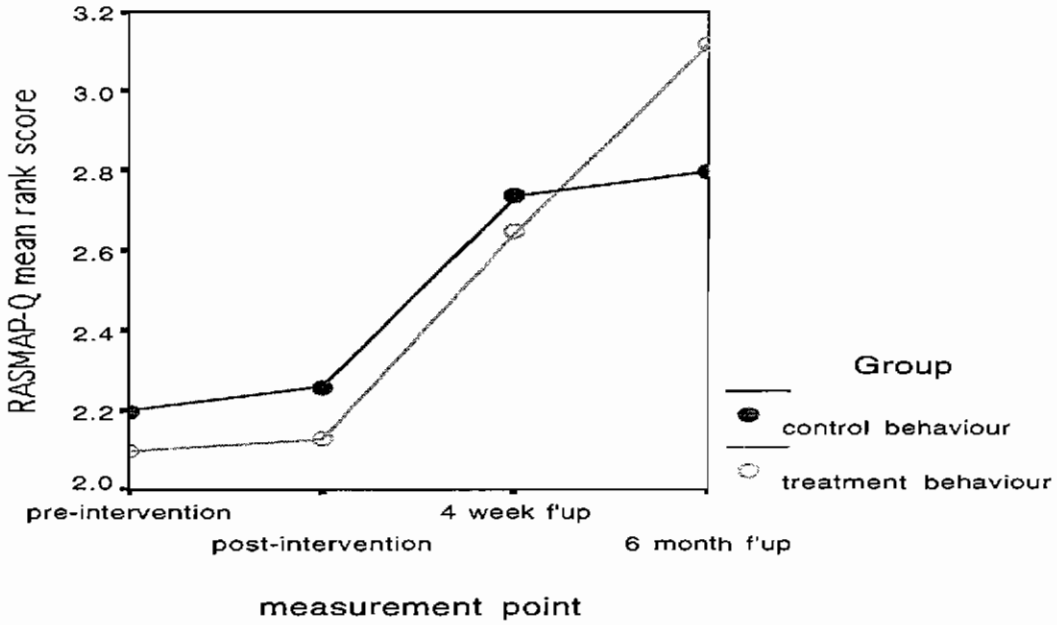

Figure 8.7 RASMAP-Q mean rank scores for relaxation behaviour over time

Clinically meaningful change in relaxation behaviour. As with the analysis of exercise and activity pacing, the RASMAP-Q *median* scores were examined to determine clinically meaningful change in relaxation behaviour. The change within the treatment group was clinically meaningful between Post-intervention and the four-week follow-up with an increase in the RASMAP-Q median relaxation behaviour score from two (Contemplation) to four (Action) and this

median score was maintained at the six-month follow-up. In contrast, the control group median score reduced from three (Preparation) at the four-week follow-up, to two (Contemplation) at the six-month follow-up.

Change in workshop attendees and non-attendees. Friedman tests were employed to examine the changes over time in relaxation behaviour separately for workshop attendees and non-attendees. The RASMAP-Q mean rank scores from these analyses are presented in Table 8.11.

Table 8.11 RASMAP-Q Mean Rank Scores for Relaxation Behaviour over Time

	Attending W'Shop		Not Attending W'Shop	
Relaxation behaviour	Control	Treatment	Control	Treatment
Pre-intervention	2.17	2.40	2.26	2.02
Post-intervention	2.67	2.13	2.28	2.05
Post-workshop	3.61	2.80	////////////////	////////////////
4 week follow-up	3.50	3.67	2.76	2.63
6 month follow-up	3.06	4.00	2.70	3.30

Statistically significant change in relaxation behaviour was demonstrated within both the treatment group participants who attended a relaxation workshop, χ^2 (4, N=15) =23.596, $p<.001$ and the treatment group participants who did not attend a workshop, χ^2 (3, N=16) = 15.381, $p=.002$). The change within the treatment group workshop attendees was clinically meaningful with an increase in the median score from three (Preparation) at Post-intervention, to four (Action) at the four-week follow-up and this change was maintained at the six-month follow-up. The change in relaxation behaviour within the treatment group non-attendees was clinically meaningful between the four-

week and six-month follow-ups with an increase in the median RASMAP-Q relaxation behaviour score from four (Action) to five (Maintenance) between these measurement points. The change in relaxation behaviour within both the control group participants that attended a workshop and the control group participants that did not attend, was not clinically meaningful and failed to reach statistical significance.

8.5.2 Relaxation Beliefs

Change between Pre-intervention and Post-intervention. Wilcoxon Signed Rank tests demonstrated statistically significant change in relaxation beliefs between Pre and Post-intervention within the treatment group (Z=-3.124, p=.002).

Change between Post-intervention and Post-workshop. No statistically significant change in relaxation beliefs was demonstrated within workshop participants in either group between Post-intervention and Post-workshop.

Change between Post-intervention and the four-week follow-up. Statistically significant change in relaxation beliefs within the treatment group was demonstrated between these measurement points (Z=-2.643, p=.008), whereas the change in control group relaxation beliefs failed to reach significance.

Change between the four-week follow-up and the six-month follow-up. No statistically significant change in relaxation beliefs was demonstrated within either group between these measurement points. However, as clearly illustrated in Figure 8.8 treatment group relaxation beliefs continued to

increase between the four-week and six-month follow-ups, whereas the control group relaxation beliefs decreased between these measurement points.

Change between Post-intervention and the six-month follow-up. Statistically significant change in relaxation beliefs within the treatment group was demonstrated between these measurement points (Z=-2.549, p=.01). The control group change in relaxation beliefs failed to reach statistical significance.

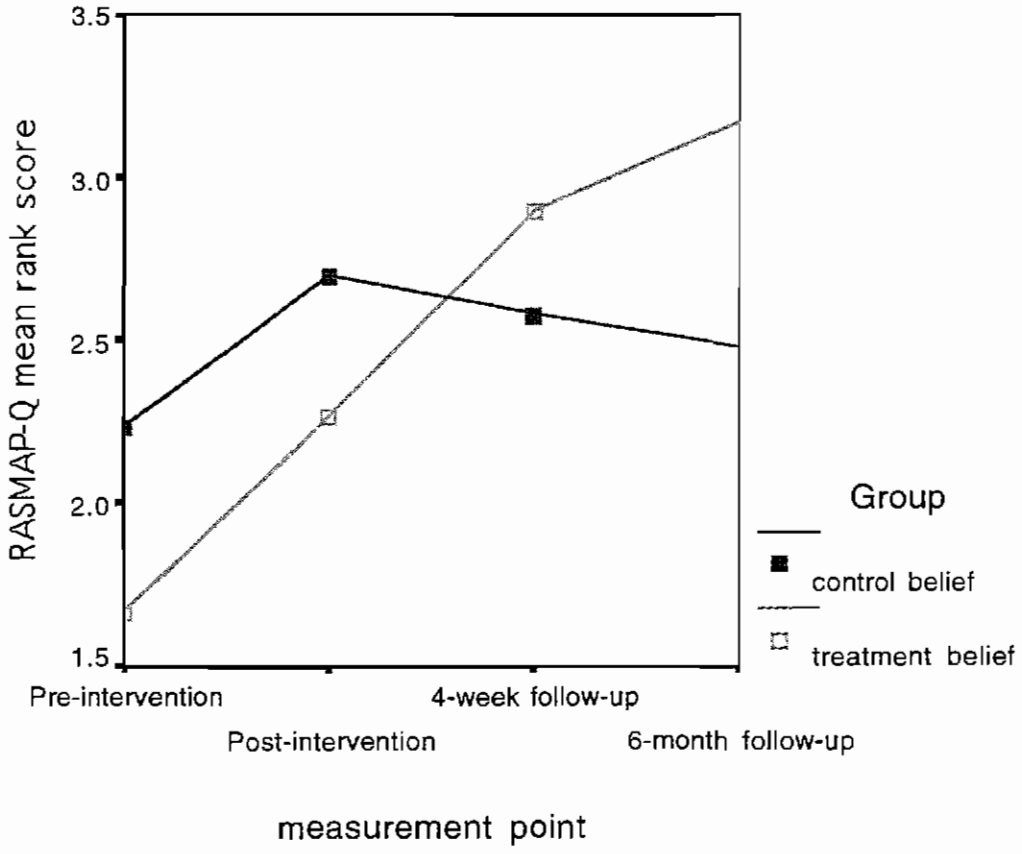

Figure 8.8 RASMAP-Q mean rank scores for relaxation belief s over time

Clinically meaningful change in relaxation beliefs. As with relaxation behaviour, RASMAP-Q median relaxation belief scores were examined to

determine clinically meaningful change between measurement points. Clinically meaningful change occurred within the treatment group between Post-intervention and the four-week follow-up with an increase in the median score from three (Preparation) to four (Action) and the change was maintained at the six-month follow-up. The control group median score was not clinically meaningful at any of the measurement points.

Change in workshop attendees and non-attendees. As with relaxation behaviour, Friedman's tests were used to explore changes in relaxation beliefs over time, separately for relaxation workshop attendees and non-attendees. The RASMAP-Q mean rank scores from these analyses are presented in Table 8.12. Statistically significant change in relaxation beliefs was demonstrated within both the treatment group who attended a relaxation workshop χ^2 (4, N=15) = 21.935, p<.001, and the treatment group participants who did not attend, χ^2 (3, N= 15) = 16.240, p<.001.

Table 8.12 RASMAP-Q Mean Rank Scores for Relaxation Beliefs over Time

	Attending W'Shop		Not Attending W'Shop	
Relaxation beliefs	Control	Treatment	Control	Treatment
Pre-intervention	2.06	1.80	2.24	1.67
Post-intervention	3.22	2.63	2.70	2.27
Post-workshop	3.56	3.13	////////////////	////////////////
4 week follow-up	3.39	3.70	2.58	2.90
6 month follow-up	2.78	3.73	2.48	3.17

The change in both treatment group attendees and non-attendees was also clinically meaningful with an increase in the median score from three (Preparation) at Post intervention to four (Action) at the four-week and six-

month follow-ups. No statistically significant or clinically meaningful change in relaxation beliefs was demonstrated for the control group attendees or non-attendees.

8.5.3 Relaxation Importance

As with the analysis of exercise and activity pacing, the mean RASMAP-Q scores for relaxation importance and confidence reflect the workshop attendees and non-attendees combined within each group.

As illustrated in Table 8.13, at Post-intervention the treatment group mean RASMAP-Q relaxation importance score was greater than seven at 7.6 and the control mean score was less than seven at 6.4 and the difference between groups was approaching statistical significance (p=.049). At the four-week follow-up, Mann-Whitney-U analyses demonstrated that the treatment group had a significantly higher relaxation importance mean score than the control group (Z=-3.566, p<.001). The difference between groups was also clinically meaningful as the treatment group mean score was greater than seven (8.2) and the control group mean score was less than seven (6.3). Similarly, at the six-month follow-up the treatment group maintained a mean importance score greater than seven at 8.2 whereas the control group mean was less than seven at 6.3, however, whilst this difference between the groups was clinically meaningful, it was no longer statistically significant. Friedman's analyses failed to demonstrate statistically significant change over time in relaxation importance within either group, however, clearly, clinically meaningful change occurred within the treatment group over time with scores increasing from less

than seven (6.1) at Pre-intervention to greater than seven at all subsequent measurement points.

Table 8.13 Mean RASMAP-Q Relaxation Importance Scores

Measurement point	n	Treatment group Mean (SD)	n	Control Group Mean (SD)	P value
Pre-Intervention	39	6.1 (3.98)	39	5.5 (3.46)	.430
Post-intervention	39	7.6 (2.74)	39	6.4 (3.05)	.049
4-week follow-up	35	8.2 (2.21)	29	6.3 (2.78)	.000*
6-month follow-up	31	7.6 (3.02)	25	6.2 (3.41)	.283

8.5.4 Relaxation Confidence

As illustrated in Table 8.14, at Post-intervention there was no significant difference in mean RASMAP-Q relaxation confidence scores, with both groups having a mean score of less than seven. At the four-week follow-up Mann-Whitney-U analyses demonstrated a difference between groups in mean relaxation confidence scores that was approaching statistical significance (p=.021). The difference was clinically meaningful as the treatment group had a mean score of seven and the control group had a mean score less than seven (5.5). At the six-month follow-up both groups had a mean confidence score of less than seven and there was no statistically significant difference between groups.

Table 8.14 Mean RASMAP-Q Relaxation Confidence Scores

Measurement point	n	Treatment group Mean (SD)	n	Control Group Mean (SD)	P value
Pre-Intervention	39	4.0 (3.61)	39	4.4 (3.38)	.544
Post-intervention	39	5.9 (3.23)	39	5.4 (3.04)	.434
4-week follow-up	35	7.0 (2.90)	29	5.5 (2.92)	.021
6-month follow-up	31	6.5 (2.30)	25	5.5 (3.39)	.280

Friedman's analyses demonstrated statistically significant change in relaxation confidence scores over time within the treatment group χ^2 (3, N=30)= 18.961,p<.001), however, this change was only clinically meaningful at the four-week follow-up and was not maintained at the six-month follow-up. The mean relaxation importance and confidence scores for both groups over time are presented in Figure 8.9.

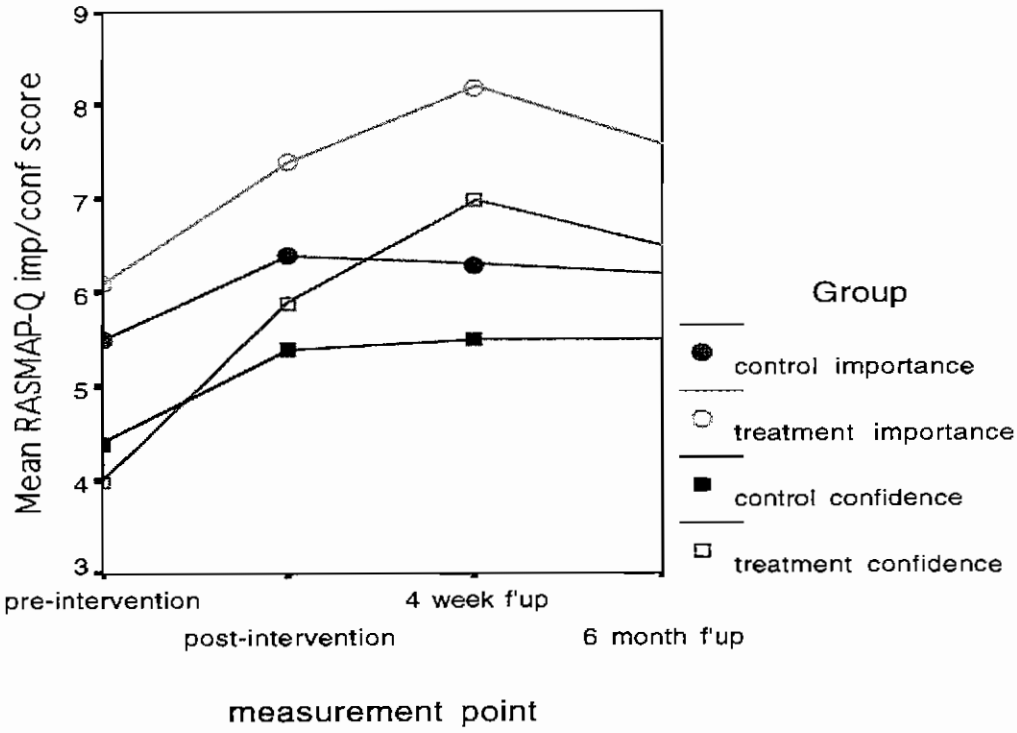

Figure 8.9 Mean relaxation importance and confidence scores over time

8.6 Changes in behaviour and attitude in relation to Cognitive Strategies

As with the analysis of exercise, activity pacing and relaxation, the categorical data obtained from the RASMAP-Q cognitive strategies belief and behaviour

scores were analysed by means of non-parametric statistics in order to determine change between measurement points.

8.6.1 Cognitive Strategy Behaviours

Changes between Pre-intervention and Post-intervention. Wilcoxon Signed Rank test analyses demonstrated no statistically significant change in cognitive strategy behaviours between Pre and Post-intervention within the control group. A negative change in cognitive strategy behaviours was evident within the treatment group and was approaching statistical significance (p=.050).

Change between Post-intervention and Post-workshop. Twenty-three participants attended a cognitive strategies workshop. Post-workshop data for one participant was missing due to illness during the workshop. Of the remaining 22 participants that attended, 14 were from the treatment group and eight were from the control group. Wilcoxon Signed Rank test analyses demonstrated statistically significant change within the treatment group workshop participants in cognitive strategy behaviours between Post-intervention and Post-workshop (Z=-2.714, p=.007). No statistically significant change in cognitive strategy behaviours was demonstrated within the control group participants who attended a cognitive strategies workshop.

Change between Post-intervention and the four-week follow-up. Wilcoxon Signed Rank tests demonstrated significant change in cognitive strategy behaviours within the treatment group between these measurement points

(Z=-2.420,p=.01). No statistically significant change in cognitive strategy behaviours was evident within the control group.

Change between the four-week follow-up and the six-month follow-up. Wilcoxon Signed Rank test analyses demonstrated change in cognitive strategy behaviours within the treatment group that was approaching statistical significance (p=.042). Figure 8.10 clearly illustrates an increase in cognitive strategy behaviours within the treatment group, whereas the control group cognitive strategy behaviours decreased between these measurement points.

Change between Post-intervention and the six-month follow-up. Wilcoxon Signed rank tests demonstrated statistically significant change in cognitive strategy behaviours within the treatment group between these measurement points (Z=-2.342,p=.01). No statistically significant change in cognitive strategy behaviours was demonstrated within the control group.

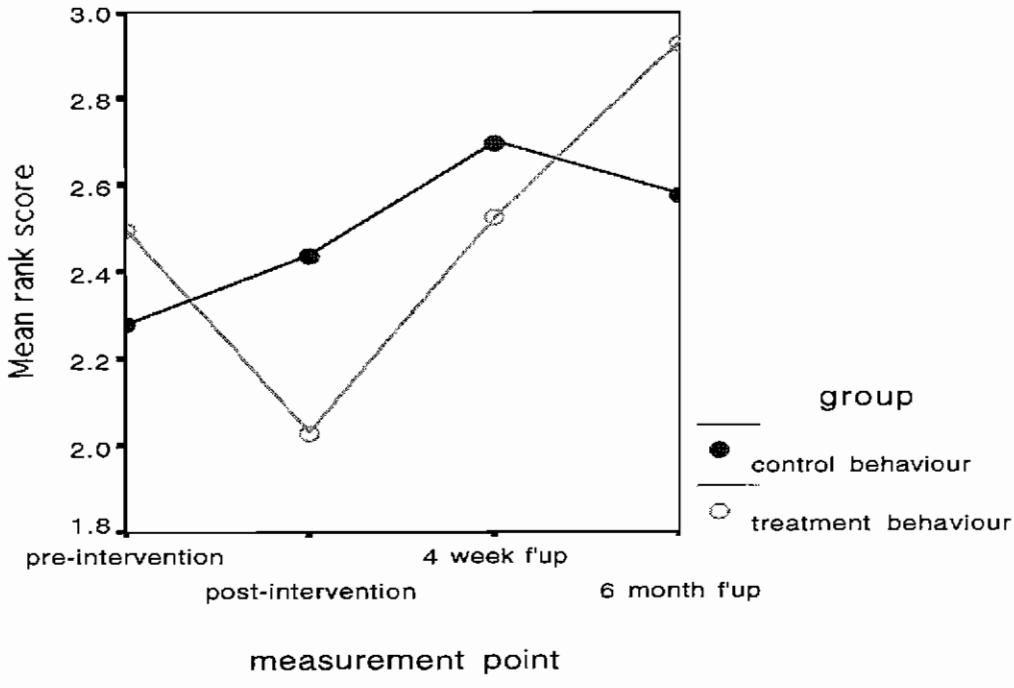

Figure 8.10 RASMAP-Q mean rank scores for cognitive strategy behaviours over time

Clinically meaningful change in cognitive strategy behaviours As with the previous analyses, clinically meaningful change was determined by median RASMAP-Q cognitive strategies behaviour scores. The change within the treatment group was clinically meaningful between Post-intervention and the four week-follow-up as the median score increased from two (Contemplation) to four (Action). The treatment group median score was also clinically meaningful between the four-week and six-month follow-up with an increase from four, to five (Maintenance) between these measurement points. The change in the control group median cognitive strategy behaviour scores was not clinically meaningful between any of the measurement points.

Change in workshop attendees and non-attendees. Friedman's tests were computed separately for workshop attendees and non-attendees to determine the effects of the cognitive strategy workshop. The RASMAP-Q mean rank scores from these analyses are presented in Table 8.15. Statistically significant change in cognitive strategy behaviours was demonstrated within the treatment group participants who attended a workshop χ^2 (4, N =11) = 15.683, p =003).

Table 8.15 RASMAP-Q Mean Rank Scores for Cognitive Strategy Behaviours over Time

	Attending W'Shop		Not Attending W'Shop	
Thought techniques behaviour	Control	Treatment	Control	Treatment
Pre-intervention	2.58	2.73	2.25	2.58
Post-intervention	2.50	1.82	2.17	2.22
Post-workshop	3.75	3.14	////////////////////	////////////////////
4 week follow-up	3.33	3.27	3.00	2.50
6 month follow-up	2.83	4.05	2.58	2.69

The change within treatment group workshop attendees was also clinically meaningful with an increase in the median score of three (Preparation) at the four-week follow-up to four (Action) at the six-month follow-up. No statistically significant or clinically meaningful change in cognitive strategy behaviours was demonstrated within the control group.

8.6.2 Cognitive Strategy Beliefs

Change between Pre-intervention and Post-intervention. Change in cognitive strategy beliefs between Pre-intervention and Post-intervention failed to reach statistical significance within either group.

Change between Post-intervention and Post-workshop. No statistically significant change in cognitive strategy beliefs was evident between these measurement points within workshop participants in either group.

Change between Post-intervention and the four-week follow-up. No statistically significant change in cognitive strategy beliefs was demonstrated within either group between these measurement points.

Change between the four-week follow-up and the six-month follow-up. The change in cognitive strategy beliefs within the treatment group was approaching statistical significance (p=.037). The change in the control group failed to reach statistical significance. Figure 8.11 clearly demonstrates increases in cognitive strategy beliefs within the treatment group and decreases in cognitive strategy beliefs within the control group between these measurement points.

Change between Post-intervention and the six-month follow-up. No statistically significant change in cognitive strategy beliefs was demonstrated within either group between these measurement points.

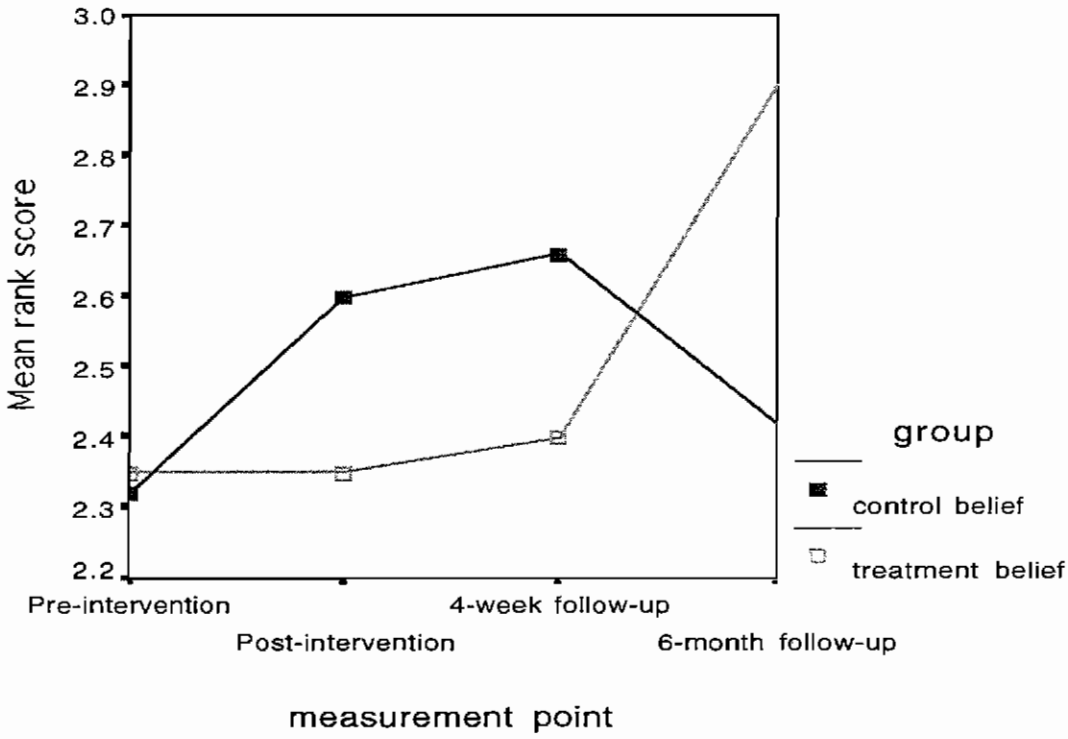

Figure 8.11 RASMAP-Q mean rank scores for cognitive strategy beliefs over time

Clinically meaningful change in cognitive strategy beliefs As with cognitive strategy behaviours, RASMAP-Q *median* scores were examined to determine clinically meaningful change in cognitive strategy beliefs. Clinically meaningful change occurred within the treatment group with an increase in the median score from three (Preparation) at Post-intervention, to four Action) at both the four-week and six-month follow-ups. The control group demonstrated clinically meaningful change between Pre and Post-intervention, with an increase from three (Preparation) to four (Action) between these measurement points.

However, this change was not maintained at subsequent follow-ups with a decrease in the median cognitive strategy beliefs score from four to three.

Change in workshop attendees and non-attendees Friedman's tests were employed to explore changes in cognitive strategy beliefs separately for workshop attendees and non-attendees. The RASMAP-Q mean rank scores from these analyses are presented in Table 8.16. No statistically significant change in cognitive strategy beliefs was evident for attendees or non-attendees within either group.

Table 8.16 RASMAP-Q Mean Ranks for Cognitive Strategy Beliefs over Time

	Attending W'Shop		Not Attending W'Shop	
Thought techniques beliefs	Control	Treatment	Control	Treatment
Pre-intervention	2.83	2.55	2.22	2.35
Post-intervention	2.67	2.64	2.72	2.35
Post-workshop	3.50	3.09	////////////////////	////////////////////
4 week follow-up	3.25	2.86	2.56	2.40
6 month follow-up	2.75	3.86	2.50	2.90

Clinically meaningful change in cognitive strategy beliefs was evident within the treatment group workshop attendees as their median score increased from three (Preparation) at the four-week follow-up to four (Action) at the six-month follow-up. The change in cognitive strategy beliefs within the control group attendees and non-attendees was not clinically meaningful between any of the measurement points.

8.6.3 Cognitive Strategies Importance

As with the analysis of exercise, activity pacing and relaxation, the mean RASMAP-Q scores for cognitive strategies importance and confidence reflect the workshop attendees and non-attendees combined within each group.

As illustrated in Table 8.17, at Post-intervention and at the four-week follow-up there was no significant difference between groups on RASMAP-Q mean cognitive strategies importance scores, however, both groups had a mean score of greater than seven. Although there was no statistically significant difference between groups at the six-month follow-up, the difference between groups was clinically meaningful as the treatment group mean score was greater than seven at 7.6 and the control group mean score was less than seven at 6.2. Friedman's analyses demonstrated statistically significant change in cognitive strategies importance over time within the treatment group χ^2 (3, N=30)= 10.004, p=.019). The change over time within the control group failed to reach statistical significance.

Table 8.17 Mean RASMAP-Q Cognitive Strategies Importance Scores

Measurement point	n	Treatment group Mean (SD)	n	Control Group Mean (SD)	P value
Pre-Intervention	39	6.4 (3.63)	39	7.0 (3.49)	.458
Post-intervention	39	7.5 (3.16)	39	7.8 (2.64)	.942
4-week follow-up	35	7.5 (2.79)	29	7.9 (2.51)	.901
6-month follow-up	31	7.6 (3.02)	25	6.2 (3.41)	.615

8.6.4 Cognitive Strategies Confidence

As illustrated in Table 8.18, at Post-intervention, both groups had increased their mean RASMAP-Q cognitive strategies confidence scores. There was no

statistically significant difference between the groups. Surprisingly, the control group mean score was seven and the treatment group mean score was less than seven at 6.3. At both the four-week follow-up and the six-month follow-up there were no statistically significant differences between groups on mean cognitive strategies confidence scores and both groups had a mean score of less than seven.

Table 8.18 Mean RASMAP-Q Cognitive Strategies Confidence Scores

Measurement point	n	Treatment group Mean (SD)	n	Control Group Mean (SD)	P value
Pre-Intervention	39	5.6 (3.72)	39	6.2 (3.32)	.578
Post-intervention	39	6.3 (3.38)	39	7.0 (2.87)	.461
4-week follow-up	38	6.4 (2.87)	29	6.4 (3.00)	.780
6-month follow-up	31	6.2 (2.90)	25	5.3 (3.51)	.410

Friedman's analyses failed to demonstrate statistically significant change over time in mean cognitive strategies confidence within either group. Figure 8.12 illustrates the changes in mean cognitive strategies importance and confidence scores in both groups over time.

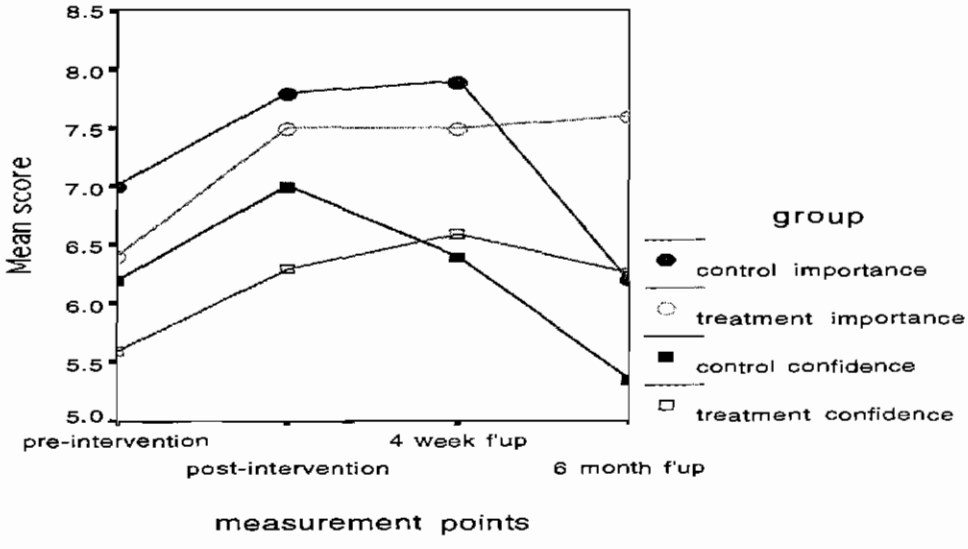

Figure 8.12 Mean RASMAP-Q cognitive strategies importance and confidence scores over time

8.7 Changes in behaviour and attitudes in relation to Medication Use

Based on the management styles identified in Chapter 5, participants with a RASMAP-Q medication *behaviour* score of one (I use medication most days as and when I feel I need it) and a RASMAP-Q medication *belief* score of one (medication is the *only* way of effectively managing my pain) were classified as having a maladaptive coping style. Using these criteria, seventeen participants (21.79% of the total sample) were classified as having a maladaptive coping style at Pre-intervention. These participants used medication as their primary pain management strategy, believed that medication was the only way to manage their pain effectively, and used medication daily on a pain-contingent basis. Eleven participants were from the control group and six were from the treatment group.

Wilcoxon Sign test Analyses on the scores of participants classified as having a maladaptive management style demonstrated no statistically significant or clinically meaningful change in medication use *behaviour* within either group between Pre and Post-intervention, Post-intervention and the four-week follow-up or Post-intervention and the six-month follow-up. There was no statistically significant change in medication use *beliefs* between Pre and Post-intervention in either the treatment group or the control group.

Change in medication use *beliefs* between Pre and Post-intervention was clinically important within both groups. In the control group 40% of the participants changed their *beliefs* to an adaptive management style, in the

treatment group 50% of the participants changed their *beliefs* to an adaptive management style. This change was not maintained, however, as no significant change in medication use *beliefs* was evident between Post-intervention and either follow-up in either group.

Four of the seventeen participants who were classified as having a maladaptive management style, registered to attend a medication education workshop, however, only one participant (from the treatment group) actually attended. However, ten of these participants (six of the eleven control group participants and four of the six treatment group participants) registered for and attended other workshops.

In relation to medication use, the *importance* construct pertained to how important an individual believes it is to use self-management strategies other than, or in conjunction with, medication. The *confidence* construct related to the individual's confidence in their ability to use self-management activities other than, or in conjunction with medication to manage their pain. At Post-intervention 50% of the treatment group had a mean *importance* score of greater than seven compared with 45% of the control group. Thirty-three percent of the treatment group had a mean *confidence* score of greater than seven compared with 45.5% of the control group.

At the four-week follow-up, 80% of the treatment group had a mean *importance* score of greater than seven compared to 28.6% of the control

group. Similarly, 80% of the treatment group had a mean *confidence* score of greater than seven compared to 28.6% of the control group. At the six-month follow-up 66.7% of the treatment group had a mean *importance* score of greater than seven compared to 17.7% of the control group and 66.7% of the treatment group had a mean *confidence* score greater than seven compared to 16.7% of the control group.

Although no conclusions can be drawn on the basis of one participant attending a medication use workshop, it is interesting to note that the participant who did attend, changed from a maladaptive management style (using opioid medication most days on a pain contingent basis) with importance and confidence scores of less than seven at Pre-intervention, to an adaptive management style (Style C- using medication on a daily basis as prescribed, at set times of the day) at Post-workshop, with importance and confidence scores of greater than seven. Furthermore, the participant maintained this management style and importance and confidence scores at both the four-week and six-month follow-up.

8.8 Changes in Depression and Pain Interference

A one-way between-groups analysis of variance was conducted to explore the impact of the intervention on depression (CES-D scores). Figure 8.13 illustrates the changes in CES-D scores within groups over time. There was a statistically significant difference in CES-D scores between groups at the six-

month follow-up [F(1, 54) = 6.7, p=.01]. Using Cohen's classification (1988) a moderate to large effect size was demonstrated.

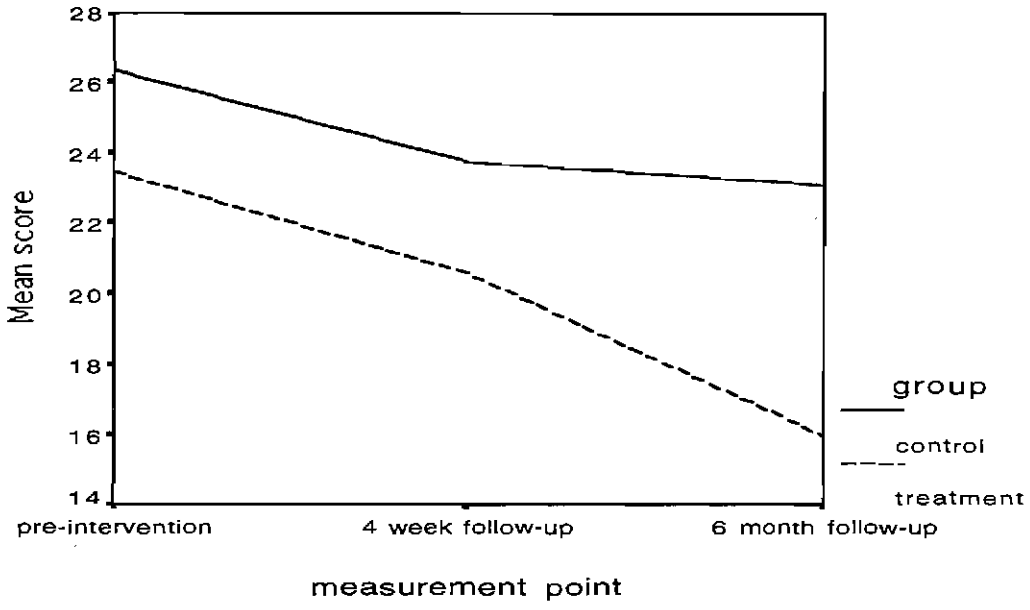

Figure 8.13 Changes in mean CES-D scores within groups over time

Pearson's product-moment correlation analyses were computed to determine any significant associations between six-month follow-up CES-D scores and six-month follow-up RASMAP-Q scores. As with the previous analyses, results were considered significant at $p<0.01$. Significant negative correlations were demonstrated between six-month follow-up CES-D scores and activity pacing confidence ($r=-.441$, $p<0.01$), CES-D scores and relaxation confidence ($r=-.436$, $p<0.01$) and CES-D scores and cognitive strategies confidence ($r=-.409$, $p<0.01$) indicating that lower depression scores were associated with higher confidence scores for these activities.

A one-way between-groups analysis of variance was conducted to explore the impact of the intervention on pain interference. As illustrated in Table 8.19, there was no significant change in pain interference within either group over time and there were no significant differences in mean scores between groups at any of the measurement points.

Table 8.19 Mean MPI Pain Interference Scores Over Time

Measurement point	n	Treatment group MPI Pain Interference Mean (SD)	n	Control Group MPI Pain Interference Mean (SD)	p-value
Pre-Intervention	39	4.00 (1.29)	39	4.50 (1.23)	.081
4-week follow-up	35	3.86 (1.26)	29	4.15 (1.31)	.375
6-month follow-up	31	3.90 (1.45)	25	4.00 (1.38)	.784

8.9 Analysis of Attrition at Follow-ups

The retention rate at the four-week follow-up was 86%. Chi square analyses demonstrated that there was no statistically significant difference in attrition between groups χ^2 (1, N =67) =1.693, p=.193. At the six-month follow-up the retention rate was 72%. As with the four-week follow-up, the difference in attrition rates between groups was not statistically significant χ^2 (1, N =56) =1.013, p=.314.

CHAPTER 9

Summary and Discussion

9.0 Introduction

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9.5 Study limitations and implications for further research

9.6 Implications for clinical practice

9.7 Concluding comments

9.0 Introduction

Given the trend for treatment plans for chronic pain to focus on self-management strategies, issues of engagement, adherence and maintenance are becoming increasingly important. It was not the intention of this study to demonstrate the efficacy of self-management strategies, rather, the aim was to explore ways in which practitioners can enhance motivation to engage in treatment and maintain the types of treatment recommendations that have already been shown to be effective. This chapter provides a summary of the results of the third study and a discussion of these findings in relation to the clinical utility of the Transtheoretical model in enhancing readiness to adopt a self-management approach to chronic pain.

9.1 Engagement in treatment

The first aim of the study was to determine whether the intervention would improve engagement in treatment.

Rates of engagement in treatment for chronic pain are generally reported to be higher in self-referred samples than in those who are physician referred (Turk, 1990). In the present study participants were self-referred, however, there was no obligation to attend the workshops in order to participate in the research. Secondly, the proportions of Pre-contemplators and Contemplators in the sample were high, and thirdly, the levels of depression and pain interference in the present sample are similar to those generally reported in pain clinic samples. Fifty-eight percent of the total sample in Study 3 attended

the recommended workshops. This figure is higher than the rates generally reported in physician referred samples and somewhat lower than usual for a self-referred sample (Turk, 1990). Taken together, these findings suggest that although the research sample was self-referred, they were more similar to a pain-clinic sample than a self-referred sample in a number of ways. What is important to note, however, is that regardless of the sample characteristics, significantly more treatment group participants attended workshops than control group participants.

The intervention clearly increased rates of engagement. Seventy-four percent of the treatment group attended workshops in comparison to forty-one percent of the control group. Further, overall about two thirds of workshop attendees comprised treatment group participants and only one third were control group participants. The increased rates of engagement in workshops within the treatment group is consistent with the findings of Swanson et al. (1999) and Daley and Zuckoff (1998) who demonstrated that a Brief Motivational Intervention significantly increased attendance at outpatient clinics in dually diagnosed patients. The only workshop that participants failed to attend in the present study was the medication education workshop. Possible reasons for non-attendance are discussed in the Medication Use section of this chapter.

Taping the interviews in Study 3 served to substantiate the intention to provide motivational interviewing to the treatment group and not to the control

group. Checking for general adherence to the interview protocols is a methodological strength of the study and provides additional support for the validity of the results. Provision of two therapists in the study appears to have controlled for effects due to therapist characteristics, as rates of engagement in treatment and adherence to treatment recommendations were similar for both psychologists. Further, the lack of significant correlations between workshop attendance and any other variables demonstrates that engagement was due to the intervention alone.

Whilst engagement in treatment was the intended outcome, it is also important to note that failure to engage in treatment subsequent to the intervention did not necessarily indicate a reduction in readiness to adopt a self-management approach. A significant proportion of participants in the treatment group who did not attend workshops were found to be actively self-managing at the four-week follow-up. This was particularly noticeable for use of relaxation and cognitive strategies and was not evident within the control group. The results indicate that for some participants, the intervention in itself did act as a stand-alone treatment. This finding supports the argument by Jensen (1996) that individuals generally know what to do but may simply lack the motivation to do it. This appeared to be the case particularly for participants who were previously self-managing their pain (and therefore had the necessary skills) but had relapsed to an earlier stage of readiness. Clearly for those participants the intervention was all that was required to facilitate action.

9.2 Adherence to treatment recommendations

The second aim of the study was to determine whether the intervention increased adherence to treatment recommendations, that is, the use of five specific self-management activities. Each self-management activity will be presented and discussed separately.

9.2.1 Exercise

A delayed superior effect was demonstrated within the treatment group for exercise *behaviour* change between the four-week and six-month follow-up. Change within the treatment group was clinically meaningful between Post-intervention and the four-week follow-up with the median score indicating movement from Preparation to Action between these measurement points. The treatment group exercise *behaviour* change was clinically meaningful and approaching statistical significance between Post-intervention and the six-month follow-up, however, the median score of 4 at the six-month follow-up indicates that most of the treatment group participants were in the Action stage rather than progressing to the Maintenance stage. As expected, the most clinically meaningful exercise *behaviour* change occurred within the treatment group participants who attended an exercise workshop moving from Contemplation at Post-intervention to Action at the four-week follow-up and this change was maintained at the six-month follow-up. Statistically significant change in exercise *beliefs* occurred within the treatment group between Post-intervention and both the four-week follow-up and six-month follow-ups. As with exercise behaviour, treatment group exercise beliefs

moved to the Action stage at the six-month follow-up. It is unclear why the treatment group exercise behaviour and belief did not progress to the Maintenance stage as expected. It may be that some individuals who had taken longer to move to the Action stage were excluded from being in the Maintenance stage due to the time frame on the RASMAP-Q Maintenance items. Alternatively, it may simply be the case that individuals with chronic pain tend to use active self-management strategies such as exercise spasmodically rather than on a regular continuous basis, particularly when their pain is more severe, and may tend to use less strenuous management techniques at these times.

Interestingly, statistically significant change in exercise *beliefs* also occurred within the treatment group participants who did *not* attend an exercise workshop. It may be that that some of these participants had previously been exercising to manage their pain and the intervention alone was sufficient to renew their belief that exercise was a helpful pain self-management activity.

Clinically meaningful change occurred within the treatment group in exercise *importance* between Pre and Post-intervention and this change was maintained at the four-week and six-month follow-up. The change over time within groups was not found to be statistically significant and this may have been due to a ceiling effect as the mean exercise importance scores were reasonably high at Pre-intervention. The difference between groups was clinically meaningful and statistically significant at the four-week-follow-up and

clinically meaningful at the six-month follow-up. In contrast to the Pre-intervention mean exercise *importance* scores, Pre-intervention mean exercise *confidence* scores were relatively low. Clinically meaningful change in exercise *confidence* occurred within the treatment group at the four-week follow-up. This change was not maintained at the six-month follow-up however.

It is difficult to ascertain the reason why *confidence* scores were not maintained at a clinically meaningful level within the treatment group at the six-month follow-up, particularly given that exercise *behaviour* change occurred at this measurement point. It appears that high exercise *importance* scores were sufficient to enable *behaviour* change, however, it is questionable whether exercise *behaviour* would continue to be maintained over a longer time period with low *confidence* scores. Strategies that may increase exercise *confidence* include reminder or booster practical sessions with a physiotherapist where participants are observed and assisted practicing these strategies. As fear of further injury was identified in Study2a as a primary barrier to self-management, it is possible that participants require longer periods of assistance to feel confident that they will not cause further harm by engaging in physical activity, and actual experience of participating in exercise without harm.

Given that the participants in Study 3 were reporting disability levels comparable to pain clinic samples, the increase in exercise behaviour within

the treatment group participants (particularly those who attended a workshop) is encouraging. The control group failed to reach a clinically meaningful score on *importance* or *confidence* at any measurement point and exercise *behaviour* decreased between the four-week and six-month follow-ups. Clear differences between groups demonstrate that the intervention is an important adjunct to the assessment process for this self-management activity.

9.2.2 Activity pacing

A superior delayed effect was clearly demonstrated for activity pacing *behaviour* within the treatment group at the six-month follow-up. The change in activity pacing *behaviour* within the treatment group was approaching statistical significance between Post-intervention and the four-week follow-up and Post-intervention and the six-month follow-up and was clearly clinically meaningful as the treatment median score indicated movement from Preparation to Action between Post-intervention and the four-week follow-up and from Action to Maintenance between the four-week and the six-month follow-up. Change in activity pacing *behaviour* within the control group failed to reach statistical significance between any of the measurement points and control group activity pacing behaviour decreased between the four-week and the six-month follow-up.

As with exercise behaviour, the greatest clinically meaningful change in activity pacing *behaviour* occurred, and was maintained, within the treatment group participants who attended a workshop and this change was

approaching statistical significance. Clinically meaningful change also occurred within the control group participants who attended a workshop. Workshop attendance appeared to be necessary for activity pacing *behaviour* change as the non-attendees in both groups demonstrated virtually no activity pacing *behaviour* change between Post-intervention and either follow-up. Most participants had been previously unaware of activity pacing as a self-management strategy and therefore required instruction in this technique by means of a workshop in order for behaviour change to occur.

Statistically significant changes in activity pacing *beliefs* were evident within the treatment group between Post-intervention and both the four-week and six-month follow-ups. Statistically significant change in activity pacing *beliefs* was evident within both the treatment group participants who attended an activity pacing workshop and the treatment group participants who did not attend a workshop, however, the change within treatment group non-attendees was not maintained at the six-month follow-up.

The treatment group mean activity pacing *importance* score was greater than seven at all measurement points. A statistically significant and clinically meaningful difference in activity pacing *importance* was evident between groups at the four-week follow-up where the control group importance dropped to less than seven. Surprisingly, the control group demonstrated a clinically meaningful change between the four-week and six-month follow-up with a mean score of greater than seven at that measurement point and the

difference between groups was no longer statistically significant. It is difficult to ascertain why the control group mean score increased again between the four and six month follow-ups. However, the data illustrates that whilst the mean score changed from being clinically meaningful at Post-intervention at 7.3, to not clinically meaningful at the four week follow-up at 6.8, and clinically meaningful again at the six-week follow-up at 7.5, the mean score is very close to seven at each of these measurement points.

Activity pacing *confidence* scores within the control group failed to reach a clinically meaningful level at any of the measurement points. At Post-intervention, a clinically meaningful change in activity pacing *confidence* was demonstrated within the treatment group whose mean score had increased to greater than seven. A score of seven or greater was maintained within the treatment group at all subsequent measurement points demonstrating a statistically significant change over time. The difference in activity pacing *confidence* between groups was statistically significant at only the four-week follow-up.

In summary, the results clearly demonstrate clinically meaningful differences between groups for activity pacing behaviour. The intervention increased activity pacing *behaviour* and the behaviour was maintained over time. The change in activity pacing *behaviour* within the treatment group was preceded by participation in activity pacing workshops and change in activity pacing

beliefs, and was associated with clinically meaningful activity pacing *importance* and *confidence* scores.

9.2.3 Relaxation

A delayed superior effect for relaxation *behaviour* change was evident within the treatment group between the four-week follow-up and the six-month follow-up. The change in relaxation behaviour within the treatment group was clearly clinically meaningful between Post-intervention and the four-week follow-up with the median scores demonstrating movement from Preparation to Action between these measurement points. There was no statistically significant or clinically meaningful relaxation *behaviour* change within the control group between any of the measurement points. The differences between groups at the six-month follow-up may have been partially due to significantly more treatment group participants attending relaxation workshops than control group participants.

Statistically significant changes in relaxation *beliefs* were evident for both groups at Post-intervention. This change was maintained in the treatment group at the four-week and six-month follow-ups, whereas the control group relaxation *beliefs* decreased between Post-intervention and the follow-up points. As with relaxation *behaviour*, this may have been due to fewer control group than treatment group participants attending relaxation workshops.

The greatest amount of clinically meaningful and statistically significant change in relaxation *behaviour* and relaxation *beliefs* was evident within the treatment group participants who attended a workshop. Statistically significant change in relaxation *behaviour* and relaxation *beliefs* also occurred in the treatment group participants who did *not* attend a relaxation workshop and this change was maintained at the six-month follow-up. This indicates that the intervention may be able to affect change as a stand-alone treatment for enhancing use of relaxation techniques.

Clinically meaningful differences between groups in relaxation *importance* scores were evident at Post-intervention, with the treatment group having a mean score of greater than seven and the control group having a mean score of less than seven. The differences between groups on relaxation *importance* was both clinically meaningful and statistically significant at the four-week follow-up and clinically meaningful at the six-month follow-up. The treatment group demonstrated clinically meaningful change in relaxation *importance* from Pre to Post-intervention and from Post-intervention to the four-week follow up. The six-month follow-up mean score had dropped slightly but was still greater than seven. The failure of treatment group relaxation *importance* scores to demonstrate statistically significant change over time was likely to be the result of a ceiling effect as fourteen treatment group participants (36%) had a Pre-intervention relaxation *importance* score of 10. The control group failed to demonstrate either a statistically significant change over time in

relaxation *importance* or a clinically meaningful level of relaxation *importance* between any of the measurement points.

A delayed superior effect for relaxation *confidence* was demonstrated within the treatment group at the four-week follow-up. The difference between groups was clinically meaningful and was approaching statistical significance. Although the treatment group scores demonstrated statistically significant change over time, the change was only clinically meaningful at the four-week follow-up and was not maintained between the four-week and six-month follow-up. However, the control group failed to demonstrate change in relaxation *confidence* that was either clinically meaningful or statistically significant between any measurement points. The increase in relaxation *confidence* within the treatment group is most likely due to participation in the relaxation workshops. The slight decrease in the group mean score at the six-month follow-up may have been caused by lower mean scores in some of the treatment group participants who did not attend a workshop.

In summary, the intervention clearly increased the use of relaxation as a self-management strategy. Although significantly more treatment group participants than control group participants attended a relaxation workshop, the intervention alone was sufficient to significantly increase relaxation *behaviour* within treatment group participants who did not attend a workshop. It is interesting to note that as with exercise and activity pacing, change in

relaxation *beliefs* preceded change in relaxation *behaviour* change and *importance* scores were higher than *confidence* scores.

9.2.4 Cognitive Strategies

Cognitive strategies *behaviour* change within the treatment group demonstrated a similar pattern to exercise, activity pacing and relaxation with a superior delayed effect apparent between the four-week follow-up and the six-month follow-up. Unlike the other self-management strategies, however, surprisingly participants in the treatment group reported moving to a lower stage of change for cognitive strategies *behaviour* between Pre and Post-intervention. This inconsistent finding is thought to have been a result of these participants having had the nature of cognitive strategies explained to them during the feedback session. It is possible that the participants may have reconsidered whether they were actually using these techniques as they had indicated at Pre-intervention.

The treatment group participants demonstrated statistically significant and clinically meaningful cognitive strategies *behaviour* change between Post-intervention and each of the subsequent follow-up points, with movement from Contemplation at Post-intervention to Maintenance at the six-month follow-up, whereas no clinically meaningful or statistically significant change occurred within the control group. Further, cognitive strategies *behaviour* within the control group decreased between the four-week and six-month follow-up points, indicating that the small amount of *behaviour* change that

did occur within the control group was not maintained. The participants who demonstrated the greatest cognitive strategies *behaviour* change over time were those in the treatment group who attended a cognitive strategies workshop.

Cognitive strategies *beliefs* increased within the treatment group between the four-week follow-up and the six-month follow-up, and the change was approaching statistical significance. Change in cognitive strategies *beliefs* within the control group was clinically meaningful between Pre and Post-intervention but only increased very slightly between Post-intervention and the four-week follow-up and decreased between the four-week and six-month follow-up. As with exercise, activity pacing and relaxation there appears to have been a lag between changes in *belief* and change in *behaviour*

Clinically meaningful change in cognitive strategies *importance* occurred within both groups between Post-intervention and the four-week follow-up, however the change in mean cognitive strategies *importance* score was not maintained within the control group at the six-month follow-up and was no longer clinically meaningful. Although there were no statistically significant differences in cognitive strategies *importance* between groups at any of the measurement points, the change over time within the treatment group reached statistical significance. The cognitive strategies *confidence* scores demonstrated a somewhat different pattern to cognitive strategies *importance*, with the control group having a mean *confidence* score greater

than seven at Post-intervention and the treatment group having a score less than seven. This may have been related to *behaviour* change decreasing within the treatment group subsequent to the intervention as discussed earlier.

Neither group demonstrated statistically significant change in cognitive strategies *confidence* over time or maintained clinically meaningful *confidence* scores at either follow-up point. It is difficult to determine why treatment group cognitive strategies *confidence* scores failed to reach a clinically meaningful level at either follow-up given the increase in cognitive strategies *behaviour* between the four-week and six-month follow-up. Cognitive strategies *behaviour* change appears to have been associated with changes in cognitive strategies *beliefs* and clinically meaningful cognitive strategies *importance* scores.

In summary the intervention significantly increased cognitive strategies behaviour change within the treatment group and the change was maintained over time with clear differences between groups evident at the six-month follow-up.

9.2.5 Consistent Patterns of Behaviour Change Noted in Exercise, Activity Pacing, Relaxation and Cognitive strategies

A number of distinct and consistent patterns of change were noted for exercise, activity pacing, relaxation and cognitive strategies. The most

important trend in the results for exercise, activity pacing, relaxation and cognitive strategies was the consistent finding that the participants who demonstrated the most behaviour change, and who maintained the change over time, were the treatment group participants who attended workshops. The findings clearly demonstrate therefore, that the intervention increased rates of engagement in workshops and that attending a workshop significantly increased adherence to treatment recommendations for these four self-management activities. These results confirm the assertion of Bernt, Maier, and Shultz (1993) and Sherbourne, Hays, Ordway, Dimatteo, & Kraviz (1993) that initial engagement in treatment is the best predictor of long-term adherence to treatment recommendations. The results also provide support for the findings of Smith et al. (1997) that MI increases adherence to treatment recommendations in relation to self-management of diabetes and Woollard et al. (1995) whose study demonstrated increased adherence to recommended changes in lifestyle to decrease hypertension.

A second trend relates to the surprising finding that generally *similar* patterns of behaviour change for exercise, activity pacing, relaxation and cognitive strategies also occurred within the control group at the measurement points between Pre-intervention and the four-week follow-up, suggesting that the interviews administered to the control group were also reasonably therapeutic. However, a consistent *difference* between groups in behaviour change for exercise, activity pacing, relaxation and cognitive strategies occurred between the four-week follow-up and the six-month follow-up, with

behaviour continuing to increase within the treatment group, but decreasing within the control group between these measurement points. The lack of durability of effect within the control group at the six-month follow-up is likely to be due to significantly fewer control group participants than treatment group participants attending workshops, with the interviews alone being insufficient to maintain change without the additive effect of the workshops.

This delayed superior clinical outcome in the treatment group is consistent with the results of studies examining the efficacy of stage-based interventions. Such studies include the findings of Gomel et al. (1993) and Prochaska et al. (1993) who demonstrated a superior delayed effect for smoking cessation in the intervention groups at 18 months post-intervention. The findings are also consistent with studies examining the efficacy of Motivational Interviewing, such as Brown and Miller (1993) who demonstrated significantly decreased alcohol intake within a Motivational Interviewing intervention group at a three-month follow-up, and Saunders, Wilkinson and Philips (1995) who reported a delayed superior outcome in abstinence of opiate users at six months. The findings of the present study indicate a more durable outcome than the study of Bien et al. (1993) who found that the superiority of the treatment group results in relation to alcohol use at a three-month follow-up was no longer statistically significant at a six-month follow-up.

A third interesting pattern in the present study was that no behaviour change was evident between Post-intervention and Post-workshop for exercise, activity pacing and relaxation. On closer inspection of the data, the apparent absence of statistically significant behaviour change between Post-intervention and Post-workshop is thought to have been caused by participants having moved to the Preparation stage prior to engaging in the exercise and relaxation workshops (rather than the Contemplation stage as expected). In fact, 44.6% of the exercise workshop participants and 47.7% of the relaxation workshop participants had moved to the Preparation stage or higher at Post-intervention and therefore, there may have been a ceiling effect. As only 9.1% of the activity pacing workshop participants were in the Preparation stage or higher at Post-intervention, it is likely that the lack of behaviour change between Post-intervention and Post-workshop in this instance was simply a function of participants being unfamiliar with this particular self-management activity and they required a sustained opportunity to practice the activity before behaviour change became evident.

The only activity where change did occur between Post-intervention and Post-workshop was cognitive strategies behaviour change where, as discussed previously, the treatment group moved to a lower stage between Pre and Post intervention. Statistically significant cognitive strategies behaviour change was demonstrated within the treatment group between Post-intervention and Post-workshop. This exception in the pattern of behaviour change provides support for the assumption that lack of behaviour

change between these measurement points in exercise and relaxation was due to a ceiling effect.

The final pattern observed was that importance scores were higher than confidence scores within each group for exercise, activity pacing, relaxation and cognitive strategies. High importance scores are thought to have been the result of a strong focus on consciousness-raising within the intervention and the educational nature of the workshops. Lower confidence scores may have been due to the brief nature of the workshops and therefore the lack of time and opportunity for practicing the self-management activities whilst observed and assisted by group facilitators. This is discussed in more detail in the study limitations and implications for further research section of this chapter.

9.2.6 Changes in Medication Use

Changes in medication use were examined somewhat differently to the other self-management activities. Based on the four management styles identified in Chapter Five, the aim of the intervention was to change behaviour from maladaptive use of medication to one of the adaptive management styles described earlier. No significant change in medication use *behaviour* was demonstrated for those participants classified as having a maladaptive management style within either group at any of the measurement points.

Clinically important changes occurred in medication use *beliefs* between Pre and Post-intervention, with participants in both groups endorsing beliefs indicative of appropriate medication use (as discussed in Chapter 5); however, this change was not maintained at either follow-up. Despite the reported change in medication use *beliefs*, the intervention failed to engage participants in a Medication Education workshop, raising the possibility of a social desirability effect in the responses at Post-intervention, as clearly the participants had no intention of attending a medication education workshop. It is thought that the lack of *behaviour* change over time in relation to medication use is primarily due to non-attendance.

It is difficult to determine exactly why participants failed to engage in a medication education workshop. Although the workshop was conducted by a registered nurse and a psychologist, participants may have been of the impression that their medication (as opposed to other self-management activities) is a medical issue that should only be discussed with physicians. Participants may also have been apprehensive about the possibility of being encouraged to manage their pain without medication (even though this was not the aim of the workshop).

Participants who were identified as having a maladaptive management style were invited to attend other workshops in addition to the Medication Education workshop. The aim of this strategy was for participants to learn how to use adaptive pain management strategies as a substitute for

maladaptive medication use. Interestingly, the majority of those participants in both groups who were classified as having a maladaptive management style did attend other workshops, indicating that it was the Medication Education workshop in particular rather than the workshops in general that they were reluctant to attend.

Statistically significant and clinically meaningful change in *importance* and *confidence* scores occurred at both follow-ups within those participants in the treatment group who were classified as having a maladaptive management style. The results indicate that these participants increased both the importance placed on the role of other self-management strategies in addition to, or in place of medication, and their confidence in being able to engage in those other self-management activities. These findings are theoretically interesting as clearly a significant proportion of the participants who were identified as having a maladaptive management style, engaged in and maintained adaptive pain management behaviours whilst continuing to use medication in an inappropriate manner. Clearly, the intervention focused more strongly on processes that facilitate acquisition of behaviours rather than cessation of behaviours and this was evident in the lack of engagement in the Medication Education workshops.

It is interesting to note that the one participant who did attend a medication education workshop was in the treatment group. This participant reported change from a maladaptive management style to an adaptive style, using his

opioid medication exactly as prescribed on a time contingent basis, and using the decrease in pain to significantly increase his use of other adaptive self-management activities. Further, the change was maintained at both the four-week and six-month follow-ups. Whilst it would be unwise to draw conclusions based on the findings of one participant, it is clearly important to develop the means of engaging greater numbers of participants in medication education workshops as this type of brief treatment may have the potential to affect change in medication use.

9.3 Changes in Depression and Pain Interference Scores

Although the intervention was not designed to directly decrease depression, it was anticipated that mood would be affected indirectly. Depression scores decreased over time within both the treatment and the control group. The difference between groups became statistically significant and clinically meaningful at the six-month follow-up. At that measurement point the mean treatment group CES-D score had reduced to 16, which is the recommended standard cutoff score in a normal population (Radloff, 1977) and lower than the cutoff score of 19 recommended by Turk and Okifuji (1994) for chronic pain patients. Using these cut-off scores, the control group mean CES-D score of 23 remained within the clinically depressed range at the six-month follow-up.

It is interesting to note that depression was significantly negatively correlated with confidence scores for activity pacing, relaxation and cognitive strategies

at the six-month follow-up. Clearly increasing individual's confidence in their ability to engage in and maintain these activities was associated with decreased depression. As these statistics are correlational, however, they cannot indicate causation. It is therefore difficult to determine whether lower depression resulted in higher confidence or whether one's confidence in being able to better manage their pain indirectly improved affect.

The final variable assessed over time was pain interference. One of the primary reasons for including the MPI Pain Interference scale was to determine whether the study sample was reporting levels of pain interference that would be considered problematic. At Pre-intervention, the participants were reporting similar levels of pain interference to the sample on which the normative data was developed and were therefore reporting moderate to high levels of pain interference.

It was anticipated that the pain interference scores would not significantly decrease and this was not the intention of the intervention. As with most pain management programs, the aim was to increase use of adaptive coping strategies despite the interference of the pain. Although the mean pain interference scores decreased slightly in both groups, as expected the difference between groups was neither statistically significant nor clinically meaningful. The results clearly indicate that the treatment group participants were able to engage in and maintain self-management activities *despite* the perceived pain-related interference in their life.

9.4 The utility of the Transtheoretical model in relation to readiness to adopt a self-management approach to pain.

One of the main aims of the research as a whole was to explore the usefulness of the Transtheoretical model in relation to chronic pain. The findings of Study 3 support the assertion of Bandura (1997), who argues that a number of determinants may form the basis of inaction, including risk-perception, efficacy-beliefs and outcome expectations. Bandura describes change in this context as 'behavioural fluctuations' where individuals are varying in their self-regulatory command rather than undergoing transformation through discrete stages. Although the Pre-contemplators and Contemplators in Study 3 were generally becoming more ready to adopt a self-management approach, there were also a number of participants becoming less ready to change or fluctuating between measurement points. The evidence that a two-session intervention can initiate behaviour change indicates that change can occur quickly and does appear to be generally related to processes such as efficacy beliefs (confidence) and outcome expectations (importance).

The stages of change described in the Transtheoretical model have been shown to be less useful than anticipated in relation to chronic pain. However, a number of the *processes* that occur prior to and during behaviour change appear to be valuable components in developing and implementing brief interventions to enhance readiness to adopt a self-management approach to chronic pain. The processes incorporated in the intervention in Study 3

include consciousness-raising, self-liberation, self re-evaluation, contingency-management and helping relationships and the self-efficacy construct. Whilst these processes and constructs were also extended during the workshops, the primary research interest is in how they enhanced change during the intervention.

The first of these processes, *consciousness-raising*, was incorporated in the RASMAP-Q as the importance scale. Consciousness-raising occurred during the intervention in the form of education about self-management strategies and by increasing participants' awareness of the beneficial consequences of engaging in and maintaining self-management activities to manage chronic pain. Consciousness-raising was a primary focus of the feedback interview where discrepancies between importance and confidence were highlighted and discussed. Further consciousness-raising occurred during the workshops that were primarily educational and presented by facilitators who were perceived by participants to have a high level of knowledge of managing chronic pain conditions.

Self-liberation is generally described as willpower and the belief that one can initiate and maintain change. Techniques that have been shown to increase self-liberation include public testimonies and being given a range of options from which to develop an action plan. Self-liberation occurred initially in the feedback interview where participants were given full responsibility regarding what, if any, action they would take subsequent to receiving feedback. On

conclusion of the feedback interview, participants were offered participation in a range of workshops and also given written information regarding a number of other appropriate services that were available in the community. The aim of offering a range of treatment options was to enhance participant's sense of control by making the choices for themselves.

Self re-evaluation relates to the cognitive and affective components of one's self-image with and without the problem behaviour. Techniques that have been shown to affect an individual's self-evaluation include healthy role models, value clarification and imagery. In the present study, self-re-evaluation is thought to have occurred primarily during the assessment interview where participants were asked to describe concerns about the way in which the pain had affected their life, concerns regarding the way in which they were currently managing their pain and what changes they would like to make to their life. The participants were asked to imagine and discuss how their life would change if they were managing their pain more effectively. It was during this process that participants appeared to start to believe that change was possible.

Contingency-management refers to the consequences (punishment or reward) of making behavioural change in a particular direction. Procedures that provide reinforcement and have been shown to increase the probability of positive behaviours being increased include contingency contracts, positive self-statements and group recognition. The primary contingency-management

technique used in the present study was positive self-statements in the form of change-talk elicited from participants during the assessment and feedback interviews.

The final process incorporated in the intervention was *helping relationships*. Helping relationships are described as a source of support and encouragement and are characterised by trust, openness and acceptance and can be developed by means of a therapeutic alliance. Motivational interviewing is a highly empathic, directive, client-centred approach where a therapeutic alliance develops easily. It was noted by both therapists that the participants in the treatment group frequently commented that the research interviews were the first time any health professional had taken the time to listen and fully understand the nature and extent of their problem as it related to all aspects of their life. Rolling with resistance, avoiding argumentation and emphasising free-will all served to strengthen the therapeutic alliance which may account for the increased rates of engagement in workshops in the treatment group as participants had trust and confidence in the therapists as a result of the intervention.

The self-efficacy construct was an integral component of the intervention. Self-efficacy was described as confidence in the RASMAP-Q. Ratings of individuals' confidence in their ability to engage in and maintain specific self-management techniques were an important focus of the feedback interview. Generally lack of self-efficacy was related to lack of knowledge in relation to

how to perform a particular self-management activity and to fear of further injury. Self-efficacy was increased in the intervention by determining and discussing reasons for low confidence scores, discussing past successes and current adaptive means of managing their pain and by developing an action plan with reasonable and achievable goals.

Based on the findings of Study 3, it appears that it is easier to enhance motivation to acquire new behaviours than to cease specific behaviours in relation to self-management of chronic pain. This was demonstrated by the failure of the intervention to engage participants in the Medication Education workshops. It may be that the processes and constructs used to cease behaviours are different to those required to acquire behaviour. For example, incorporating a stronger focus on the processes of *dramatic relief* and *environmental re-evaluation* and the construct of *decisional balance* in the intervention may have increased behaviour change in relation to ceasing inappropriate use of medication. Dramatic relief may have been used to elicit emotional arousal related to the possible outcome of inappropriate medication use. Environmental re-evaluation could have been included by discussing the impact of participants' medication use on their families and other individuals around them. Finally greater use of the decisional balance construct may have been incorporated into the intervention by including a balance sheet of pros and cons. In summary, whilst the intervention appears to have successfully facilitated acquisition of adaptive behaviours, insufficient

emphasis appears to have been placed on the processes and constructs that facilitate cessation of maladaptive behaviour.

9.5 Study Limitations and Implications for Further Research

As with most research, the study may have been strengthened in several ways.

(1) Data analysis: The first concern relates to the data analysis and the possibility of Type 2 errors. Given the categorical nature of the data and the small sample size, non-parametric methods were deemed to be the most appropriate method of data analysis. It is important to acknowledge the possibility of Type 2 errors in the results, firstly, as non-parametric analyses are typically less statistically powerful than their parametric counterparts, secondly, due to the stringent alpha level used to determine significance ($p<0.01$) and thirdly due to the small sample size.

It is also pertinent to concede to the possibility of Type 1 errors in the findings. However, given that the results for the control group were generally not even approaching significance where the treatment group was significant at $p<0.01$, one can mount an argument that there were significant differences between groups at those measurement points. Further, the differences between groups for exercise, activity pacing, relaxation and cognitive strategy behaviors at the six- month follow-up were clearly clinically meaningful with the treatment group median scores indicating increases in adherence to self-management behaviours and the control group demonstrating decreases in

self-management behaviours at this measurement point. Replication studies could be strengthened by the use of larger sample sizes to increase power and decrease the likelihood of errors.

(2) Experimental design: The use of a randomised controlled trial as an experimental design is a strength of the study, however, it may have been helpful to include a wait-list control group order to determine the extent to which change in readiness to adopt a self-management approach to pain fluctuates naturally without any significant therapist intervention. Given the time and budgetary constraints of post-graduate level research it was unfortunately not possible to include two control groups, as the wait-list control would have to have been administered the intervention on conclusion of the study. As only one control group could be included, the treatment as usual control group was deemed to be the most appropriate in order to determine whether the intervention was found to be more effective in terms of engagement and adherence than the currently accepted treatment for chronic pain. However, clearly, the design of further studies may be strengthened by the addition of a no-treatment (wait-list) control group.

A second limitation with respect to experimental design relates to the issue of self-report. It is always possible to fault findings that are based on self-report. Whilst participants may have over-reported adherence to treatment recommendations, the randomised nature of the experimental design offers no support for the treatment group being more motivated to over-report

adherence to treatment recommendations than the control group. However, as an additional measure of security against false reports, replication studies could be strengthened by the addition of collateral reports at the follow-up points where significant results were obtained.

The third issue in relation to the experimental design was that the therapists were not blind to group allocation. Obviously, due to the treatment group and the control group being administered different interviews in the intervention phase, it was impossible for the therapists to have been blind. Whilst it could be argued that therapists should have been allocated to *either* the control or treatment group, this may have introduced a number of other confounds related to therapist characteristics, therefore, it was deemed more appropriate and rigorous to have each therapist complete approximately half of both the control group and treatment group interviews. Given the highly structured nature of the assessment interviews and the taping and checking of the feedback interviews to ensure adherence to treatment protocol it is not likely that there were any major effects due to the therapists not being blind to group allocation.

(3) Generalisability to longer treatment programs: As the pain management workshops were brief and conducted over a short time-frame, it is not clear whether rates of engagement in the present study would generalise to longer treatments that require a greater commitment in terms of the time and effort required to attend. A further limitation in this respect is the inability to assess

treatment drop-outs. The workshops were presented as discrete treatment units and participants attended those for which they were in the earlier stages of change. As most participants were already using at least one self-management activity at Pre-intervention, few were asked to attend all five workshops, therefore treatment was brief and specific to their needs. Other than the Medication Use workshop, all of those participants who registered to attend workshops did actually attend.

Although the intervention was developed for individuals with chronic pain who are being treated on a continuing basis in the community, it is also important to determine whether the findings of Study 3 would generalise to longer treatment programs such as those conducted in pain clinics. If the findings are found to generalise to pain clinic treatments, the intervention could be provided in conjunction with standard assessment procedures, thus improving rates of engagement in treatment and adherence to treatment recommendations without increasing the cost or length of time of the treatment.

(4) Insufficient attention paid to processes related to ceasing behaviour. Clearly the intervention did not provide a strong enough focus on the processes associated with cessation of maladaptive behaviour. Continued investigation should focus on developing strategies to enhance behaviour change in relation to inappropriate use of medication. It would be useful to examine whether a stronger focus on dramatic relief, environmental re-

evaluation and decisional balance in the feedback session with individuals using medication inappropriately would enhance sustained behaviour change in this regard. Given that the change processes utilised in ceasing a behaviour may be different to those used when acquiring a behaviour, it may be difficult to facilitate cessation of maladaptive behaviour and acquisition of adaptive substitutes within the same brief intervention. It may be helpful in further research to determine the efficacy of discussing medication use within a separate feedback interview.

(5) Length of workshops: Although it was the intention of the researcher to determine whether change could be affected as a result of a brief motivational intervention combined with a brief treatment component, it appears that the workshops were too brief to increase confidence scores to a clinically meaningful level. It may be helpful to focus greater time and attention on the practical components of the workshops in order to increase confidence scores. It would also be interesting to note whether higher confidence scores would be associated with maintenance of treatment gains over longer follow-up periods.

(6) Measurement points: A further limitation pertains to the measurement points in Study 3 that were designed to correspond with the hypothesised time-frames of the stages of change (i.e., allowing four weeks for movement from Preparation to Action and six months to move from Action to Maintenance). Although this study design partially allows us to ascertain the

validity of the time-frames postulated by Prochaska and DiClemente (1982), it assumes that individuals will have moved through the stages in an orderly and timely manner and does not allow for examination of the extent to which behaviour change fluctuates between measurement points. Further research using a daily or weekly diary incorporating the RASMAP-Q and including information about daily life events may help to provide this information and may also assist in understanding the processes that occur prior to and in conjunction with behaviour change in relation to adopting a self-management approach to pain.

A second limitation in relation to follow-up periods, is that the length of time between the four-week follow-up and the six-month follow-up does not give a clear indication of exactly when the superior delayed effect occurred within the treatment group. Unfortunately, due to the time constraints and financial limitations inherent in doctoral-level research, longer and more frequent follow-up of participants was not possible, however this should be a focus of further research in order to more fully explore the nature of change over time and the durability of the effect within the treatment group.

(7) Sampling methodology: Although the sampling methodology in Study 3 was a strength of the present research, it could also be considered a weakness. Whilst the participants were recruited by means of media advertising to avoid differences in referral patterns, the result was a self-selected sample. Although one could argue that the population for whom this

intervention was developed would primarily be self-referred much like the participants in the Arthritis Self-Management Program (Lorig, 1995), it would be interesting to determine whether the findings would generalise to a practitioner-referred sample in the community as this type of sample is likely to comprise a significant proportion of Pre-contemplators. On the other hand, as discussed earlier, the research sample did consist of a large number of Pre-contemplators and Contemplators and as such, it is likely that the findings would generalise to a practitioner-referred sample.

(8) Participant characteristics: The research participants were heterogeneous in terms of diagnosis. Twelve of the study participants (five in the control group and seven in the treatment group) had a diagnosis of osteoarthritis or rheumatoid arthritis. Whether these participants were in a remission or acute phase during the study had the potential to slightly affect the findings as this group may only be motivated to self-manage when the symptoms are present (Turk, 1991). It was thought to be likely that these participants were in an acute phase during the study as individuals in a remission phase would have been less likely to have volunteered as research participants, however, the behaviour change analyses were re-computed with the scores of these participants excluded. The results were not found to be significantly different with, or without the scores of participants diagnosed as having osteo or rheumatoid arthritis, indicating that the inclusion of these individuals has not affected the findings. However, further research may be strengthened by

excluding individuals who have chronic conditions that are characterised by fluctuations between remission and recurrent acute phases.

(9) Sample size: Finally, the small sample size is a further limitation of the study, particularly given the attrition at the four-week and six-month follow-ups. Unfortunately, it is not possible to know the outcome of those participants who did not respond to follow-up questionnaires. This issue raises the possibility of response bias, with those who were most compliant in both groups responding to follow-ups. However, given the randomized nature of the study design and that there was no significant difference in rates of attrition between groups, it is reasonable to assume that the responses that were available were representative of each group and that attrition has not affected the outcome at the four and six month follow-ups. Further research with larger sample sizes would assist in validating these findings.

9.6 Implications for clinical practice

Despite the study limitations described above, the research findings have a number of important implications for clinical practice. Firstly, while stages of change are generally helpful in terms of providing a conceptual framework, they appear to oversimplify the nature and complexity of behaviour change and the contexts in which behaviour change occurs. As behaviour seems to fluctuate rapidly over periods of days, it may be more helpful to think of a person as being more or less ready to change and to stay congruent with that

readiness, exploring importance and confidence issues. This is a more fluid and flexible approach, responding to the changing needs of the client.

Secondly, as demonstrated in Study 3, providing individual brief intervention prior to participation in group programs ensures that participants are sufficiently prepared to engage in treatment and to adhere to and maintain treatment recommendations. Preparing clients for action in conjunction with standard assessment procedures prior to offering treatment is a more time and cost effective alternative to developing and conducting stage–based intervention. As stages of change in relation to chronic pain appear to be less stable than asserted by Prochaska (2000), stage-based interventions may be a less efficient and effective method of delivering treatment programs than preparing individuals prior to engagement in the types of brief action-oriented pain management programs such as those described in Study 3. Adherence to treatment recommendations may be further enhanced by conducting small groups and allowing sufficient time for participant discussion, which enables the facilitator to stay congruent with the changing needs of the group and "responding to the ever shifting world of behaviour change talk" (Rollnick et al. 2000, p. 24).

As noted in Chapter Two, one of the consistent predictors of drop-out from treatment is discrepant expectations (Turk & Rudy, 1990). The brief intervention described in Study 3 provides the opportunity to present the idea of a self-management approach to pain in a non-confrontational manner with

a careful and considered approach. Because this is done individually, prior to group treatment, it allows the practitioner to pay careful attention to patient beliefs and the value expectations (importance) and outcome expectations (confidence) they place on this type of approach. The practitioner has the opportunity to explore these factors in a fluid, congruent approach that enhances readiness to change. In this sense, patients enter treatment already knowing what to expect and are feeling that (a) there is value in a self-management approach and (b) that with some help, they will be able to successfully engage in and maintain a self-management approach.

A final implication for clinical practice is the suitability of the intervention for wide-spread use by multidisciplinary teams in the community much like the Arthritis Self-Management program (ASMP; Lorig, 1995). As the RASMAP-Q intervention comprises structured interview formats and the workshops are fully manualised, it is appropriate for this type of use. Although the program is not suitable to be co-conducted by lay facilitators (as is the ASMP), health practitioners experienced in working with patients with chronic pain would require minimal extra training to conduct the assessment and feedback sessions and the pain management workshops on a regular basis in the community.

9.7 Concluding comments

In concluding, it may be helpful to provide a concise overview of the aims and the outcomes of the research as a whole. The aim of the research was to

develop, implement and evaluate an intervention designed specifically to increase rates of engagement and adherence to self-management activities for chronic pain in a non pain-clinic population. Study 1 explored the utility of the Transtheoretical model as a theoretical framework for assessing readiness to adopt a self-management approach to chronic pain and for developing appropriate treatment interventions. The findings indicated that the current application of the Transtheoretical model to chronic pain, the Pain Stages of Change model (Kerns et al. 1997) may not be as useful as previously thought. Problems with the model primarily related to the lack of a clear, commonly shared definition of what constitutes a self-management approach to chronic pain. Whilst the Transtheoretical model was originally developed to explain cessation or acquisition of a single specific behaviour, self-management of chronic pain requires acquisition of a range of adaptive behaviours in addition to cessation of maladaptive behaviours. As such, the model required further adaptation in order to inform the development of interventions designed to increase engagement in treatment and adherence to self-management activities.

The findings of the qualitative interviews in Study 2a expanded our conceptualisation of what constitutes a self-management approach and how best to assess and enhance readiness to adopt this type of approach. The qualitative data highlighted the discrepancy between the theoretical understandings of practitioners and the lived experience of individuals with chronic pain, and expanded our understanding of the ways in which many

individuals in the community with chronic pain live active productive lives despite their pain.

Study 2a identified three adaptive and one maladaptive self-management styles in relation to medication use and two specific themes explaining inaction. These were lack of knowledge about particular self-management activities and/or lack of confidence to perform the activities. Due to the lack of a clear definition of what constitutes a self-management approach to pain, the apparent instability of the construct, the lack of explanatory value of stages of change and the range of activities inherent in a self-management approach, it was determined that traditional psychometric assessment may not be useful in treatment planning.

The findings of Study 2a were used to formulate and develop an expanded model incorporating both stages of change and processes of change in relation to beliefs about specific self-management activities and current self-management behaviour. The expanded model led to the development of the Readiness to Adopt a Self-Management Questionnaire (RASMAP-Q) in Study 2b. The questionnaire was designed to be administered in conjunction with standard assessment procedures using Motivational Interviewing techniques, with the aim of enhancing readiness to change prior to treatment. The RASMAP-Q formed the framework of a Brief Motivational Intervention to increase rates of engagement in treatment with a self-management focus and adherence to self-management activities.

Study 3 comprised a randomised controlled trial to evaluate the efficacy of the RASMAP-Q intervention. The findings demonstrated the following;

(1) The intervention significantly increased engagement in workshops for four of five self-management activities.

(2) A superior delayed effect was evident within the treatment group for behaviour change in four of five self-management activities between the four-week and six-month follow-ups.

(3) The greatest behaviour change that was maintained over time occurred within the treatment group participants who attended workshops.

(4) The intervention failed to increase rates of engagement in treatment and adherence to treatment recommendations in relation to inappropriate medication use.

The findings of this research as a whole indicates that the Transtheoretical model can be adapted to facilitate assessment and enhancement of readiness to adopt a self-management approach to chronic pain. The research also demonstrates how relatively minor adjustments in the way in which we practice can have a statistically and clinically significant impact on behaviour change (specifically, acquisition of adaptive behaviours). The findings provide support for the assertions of Jensen (1996) and Kerns et al. (1999) that use of motivational interviewing techniques may enhance engagement in and adherence to self-management activities for chronic pain and demonstrate, as postulated Bien et al. (1993), that "the clinical style of the assessment is more important than the assessment per se"(p.354).

The real strength of this research is that is clearly demonstrates how practitioners may enhance readiness to adopt a self-management approach in individuals who were *not* contemplating behaviour change. These individuals are representative of the particular sub-set of individuals with chronic pain who generally fail to engage in treatment and adhere to treatment recommendations. The findings have important implications for the significant proportion of individuals with chronic pain in the community who are told they have to "learn to live with it". Clearly, if our practice is congruent with the motivational needs of our clients, we can succeed in engaging a greater proportion of individuals in treatment and facilitate adherence to the self-management activities that have repeatedly shown to be effective.

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Appendix A

The Pain Stages of Change Questionnaire

Kerns, Rosenberg, Jamison, Haythornthwaite & Caudill (1997)

This questionnaire is to help us better understand the way you view your pain problem. Each statement describes how you ***may*** feel about this particular problem. Please indicate the extent to which you tend to agree or disagree with each statement. In each example, please make your choice based on **how you feel right now**, not how you have felt in the past or how you would like to feel.

1	2	3	4	5
strongly disagree	disagree	undecided or unsure	agree	strongly agree

Circle the response that **best describes** how much you **agree** or **disagree** with each statement.

1.I have been thinking that the way I cope with my pain could improve.	1	2	3	4	5
2.I am developing new ways to cope with my pain.	1	2	3	4	5
3.I have learned some good ways to keep my pain problem from interfering with my life.	1	2	3	4	5
4.When my pain flares up, I find myself automatically using coping strategies that have worked in the past, such as a relaxation exercise or mental distraction technique.	1	2	3	4	5
5.I am using some strategies that help me better deal with my pain problem on a day-to-day basis.	1	2	3	4	5
6.I have started to come up with some strategies to help myself control my pain.	1	2	3	4	5
7. I have recently realised that there is no medical cure for my pain condition, so I want to learn some ways to cope with it.	1	2	3	4	5
8. Even if my pain doesn't go away, I am ready to start changing how I deal with it.	1	2	3	4	5
9.I realise now that it's time for me to come up with a better plan to cope with my pain problem.	1	2	3	4	5
10.I use what I have learned to keep my pain under control.	1	2	3	4	5
11.I have tried everything that people have recommended to manage my pain and nothing helps.	1	2	3	4	5

12.My pain is a medical problem and I should be dealing with physicians about it.	1	2	3	4	5
13.I am currently using some suggestions people have made about how to live with my pain problem.	1	2	3	4	5
14.I am beginning to wonder if I need to get some help to develop skills for dealing with my pain.	1	2	3	4	5
15.I have recently figured out that is up to me to deal better with my pain.	1	2	3	4	5
16.Everybody I speak with tells me that I have to lean to live with my pain but I don't see why I should have to.	1	2	3	4	5
17. I have incorporated strategies for dealing with my pain into my every day life.	1	2	3	4	5
18.I have made a lot of progress in coping with my pain.	1	2	3	4	5
19. I have recently come to the conclusion that it 's time for me to change how I cope with my pain.	1	2	3	4	5
20.I'm getting help learning some strategies for coping better with my pain.	1	2	3	4	5
21.I'm starting to wonder whether it's up to me to manage my pain rather than relying on physicians.	1	2	3	4	5
22.I still think, despite what doctors tell me, there must be some surgical procedure or medication that would get rid of my pain.	1	2	3	4	5
23.I have been thinking that doctors can only do so much in managing my pain and that the rest is up to me.	1	2	3	4	5
24.The best thing I could do is to find a doctor who can figure out how to get rid of my pain once and for all.	1	2	3	4	5
25.Why can't someone just do something to take away my pain	1	2	3	4	5
26. I am learning to help myself control my pain without doctors.	1	2	3	4	5
27. I am testing out some coping skills to manage my pain better.	1	2	3	4	5
28.I have been wondering if there is something that I could do, to manage my pain better.	1	2	3	4	5
29.All of this talk about how to cope better is a waste of my time.	1	2	3	4	5
30.I am learning ways to control my pain other than with medications or surgery.	1	2	3	4	5

Appendix B

Section A. The following questions ask you about some personal details. These are purely to allow us to compare factors such as age and gender.

1. What is your sex (please circle) female male

2. Age: _____

3. Date of birth: _____

4. Usual Occupation:_____

5. Current Occupation: _____

Section B. These questions help us to better understand the nature and duration of your pain.

1. **Where** is your pain?

_____

2. What is the **cause** of your pain (if known)_____

3.What is your medical **diagnosis** (if known)_____

4. How **long** have you had **this particular** pain? _____

5. When did **this particular** pain **start?** _____

6.When do you expect **this particular** pain to **cease?** _____

7.On a scale of 0-100, with 0 meaning "no pain" and 100 meaning "pain as bad as it could be", how much pain do you have **on the average?** _____

8.On the same scale of 0 to 100, how much pain do you **have when it is at it's worst?** _____

9. How much pain do you have **when it is at it's least?** _____

10. How much pain do you have **right now?** _____

11. How often do you have **this particular** pain? _____

12. How long does **this particular** pain last? _____

13. What kinds of things **relieve** your pain? _____

_____

14. What kinds of things **increase** your pain?

_____

_____

15. Have you previously received **medical treatment** for **this particular** pain? (please circle) YES No

If yes, how long ago?

_____

What was involved in the treatment?

_____

16. Have you previously had **surgery** for **this particular** pain (please circle)

YES NO

If yes, what was the name of the operation

_____

When did the operation occur?

_____

17. Do you consider that the operation was successful YES NO

18. Do you have other surgery planned YES NO

19. Please circle any of the following methods you are **currently** using to cope with **this particular** pain:

Physiotherapy	Alcohol
Chiropractor	Hot/cold packs
Massage	Stretches
Tens Machine	Yoga
Inversion machine	Ointments
Pain management program	Copper bracelets
Back brace (for car)	Non-prescription drugs (e.g. marijuana)
Ignore the pain	Reinterpret the pain (eg, as numbness)
Distraction (eg.TV, music)	Praying
Relaxation Tape	Exercise
Other (please	

describe)_____

20. Please list all medication that you are currently taking to manage **this particular** pain.

Name of Medication	**Dose**	**Average number taken per day--**

21. When was medication **for pain** last taken?

_____

22. Please list all current medication **other** than pain medication

Name of Medication	**Dose**	**Average number taken per day**

23. Which of the following **activities** are affected by your pain and in **what way**?

Physical exercise_____

Leisure/social_____

Sleeping_____

Sexual Activity_____

Housework/chores_____

Relationships_____

24. Do you have any history of psychiatric illness, **including anxiety and depression** (please circle) YES NO

If yes, please describe diagnosis and treatment.

_____

_____

_____

_____

_____

Section C. The purpose of the following questions is help us better understand the way you view your pain problem. Each statement describes how you ***may*** feel about this particular problem. Please indicate the extent to which you tend to agree or disagree with each statement. In each example, please make your choice based on **how you feel right now**, not how you have felt in the past or how you would like to feel.

1	2	3	4	5
strongly disagree	disagree	undecided or unsure	agree	strongly agree

Circle the response that **best describes** how much you **agree** or **disagree** with each statement.

1.I have been thinking that the way I cope with my pain could improve.	1	2	3	4	5
2.I am developing new ways to cope with my pain.	1	2	3	4	5
3.I have learned some good ways to keep my pain problem from interfering with my life.	1	2	3	4	5
4.When my pain flares up, I find myself automatically using coping strategies that have worked in the past, such as a relaxation exercise or mental distraction technique.	1	2	3	4	5
5.I am using some strategies that help me better deal with my pain problem on a day-to-day basis.	1	2	3	4	5
6.I have started to come up with some strategies to help myself control my pain.	1	2	3	4	5
7. I have recently realised that there is no medical cure for my pain condition, so I want to learn some ways to cope with it.	1	2	3	4	5

Appendix B

1	2	3	4	5
strongly disagree	disagree	undecided or unsure	agree	strongly agree

8. Even if my pain doesn't go away, I am ready to start changing how I deal with it.	1	2	3	4	5
9.I realise now that it's time for me to come up with a better plan to cope with my pain problem.	1	2	3	4	5
10.I use what I have learned to keep my pain under control.	1	2	3	4	5
11.I have tried everything that people have recommended to manage my pain and nothing helps.	1	2	3	4	5
2. My pain is a medical problem and I should be dealing with physicians about it.	1	2	3	4	5
13.I am currently using some suggestions people have made about how to live with my pain problem.	1	2	3	4	5
14.I am beginning to wonder if I need to get some help to develop skills for dealing with my pain.	1	2	3	4	5
15.I have recently figured out that is up to me to deal better with my pain.	1	2	3	4	5
16.Everybody I speak with tells me that I have to lean to live with my pain but I don't see why I should have to.	1	2	3	4	5
17. I have incorporated strategies for dealing with my pain into my every day life.	1	2	3	4	5
18.I have made a lot of progress in coping with my pain.	1	2	3	4	5
19. I have recently come to the conclusion that it 's time for me to change how I cope with my pain.	1	2	3	4	5

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1	2	3	4	5
strongly disagree	disagree	undecided or unsure	agree	strongly agree

20.I'm getting help learning some strategies for coping better with my pain.	1	2	3	4	5
21.I'm starting to wonder whether it's up to me to manage my pain rather than relying on physicians.	1	2	3	4	5
22.I still think, despite what doctors tell me, there must be some surgical procedure or medication that would get rid of my pain.	1	2	3	4	5
23.I have been thinking that doctors can only do so much in managing my pain and that the rest is up to me.	1	2	3	4	5
24.The best thing I could do is to find a doctor who can figure out how to get rid of my pain once and for all.	1	2	3	4	5
25.Why can't someone just do something to take away my pain?	1	2	3	4	5
26. I am learning to help myself control my pain without doctors.	1	2	3	4	5
27. I am testing out some coping skills to manage my pain better.	1	2	3	4	5
28.I have been wondering if there is something that I could do, to manage my pain better.	1	2	3	4	5
29.All of this talk about how to cope better is a waste of my time.	1	2	3	4	5
30.I am learning ways to control my pain other than with medications or surgery.	1	2	3	4	5

Section D. This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Use the following scale to record your answers.

1. Indicate the extent you **generally feel this way, that is, how you feel on the average.**

1	2	3	4	5
very slightly or not at all	a little	moderately	quite a bit	extremely

------interested	------guilty	-----determined	------irritable
------distressed	------scared	------attentive	------alert
------excited	------hostile	------jittery	------ashamed
------upset	------enthusiastic	------active	------inspired
------strong	-----proud	------afraid	------nervous

2. Indicate to what extent you have felt this way **during the past few days**

1	2	3	4	5
very slightly or not at all.	a little	moderately	quite a bit	extremely

------interested	------guilty	------determined	------irritable
------distressed -	-----scared	------attentive	------alert
------excited	------hostile	------jittery	------ashamed
------upset	------enthusiastic	------active	------inspired
------strong	------proud	-----afraid	------nervous

Section E. In this section we are interested in ascertaining your compensation/ litigation status.

1.Are you currently receiving compensation (disability insurance)

YES NO

If yes how much do you receive monthly? $_____

2. Are you currently in the process of trying to receive compensation?

(disability insurance) YES NO

3. Are you involved in any litigation (are you suing anyone) related to your pain? YES NO

Thank you for taking the time to complete this questionnaire and for your assistance with this important research project.

If you are interested in receiving information regarding the next stage of the research that includes a pain management program to be conducted later in the year, please supply your name and contact number below. All information will remain strictly confidential and be used only for the purposes of this research.

Name_____

Phone number_____

Appendix C

STRUCTURED INTERVIEW

Name:..... M/ F
Address:..... Age:.....
..... D.O.B.....
..... Part. No.....
.....Postcode..... Date.....

PSOCQ SOC.....

1.What does a self-management approach to pain mean to you?

2. Do you think there are benefits to adopting a self-management approach to your pain? YES/NO, Why

3. Do you think there are drawbacks to a self-management approach to pain? YES/NO Why?

4.What activities do you think would be incorporated in a self-management approach to pain and why do you think each would be important?

5. How do you think continual use of pain killing medication such as Panadene, Asprin Panadene Forte, & Codeine, fits with the idea of a self-management approach to pain?

6. How do you think the use of alcohol to manage pain, fits with the idea of a self-management approach?

7. How do you think the use of non-prescription drugs such as marijuana to manage pain, fits with the idea of a self-management approach?.....

8.What self-management activities (if any) do you currently use to manage your pain

(a) What prompted you to start doing these activities?

(b) What makes you keep doing theses activities?

(c) What (if anything), makes it difficult for you to continue doing these self-management activities

9.Are there some activities that you think are important but that you do not currently do? YES/NO, If YES, why do you think that is?

10. If you do not currently do any self-management activities, what, if anything have you done to manage your pain in the past?

11.Has there been a time when you stopped doing all self-management activities? YES/NO (if NO, go to Q.13)

(a) What made you stop

(b)How long did you stop for

(c) Did you start again? YES) /NO (go to Q13), Why

12. Do you have a plan in place to prevent this situation from re-occurring YES/NO If YES please describe

13. If NO, Have you ever *felt like* stopping? YES/NO

If YES, what kept you from stopping?

On the Stages of Change model here (show model) there have been identified, five main stages of readiness to change behaviour. In the **Pre-contemplation** stage people are not ready or interested in adopting a self-management approach to their pain. In the **Contemplation** stage people are considering starting a self-management approach to pain but are not quite sure how to go about it.

Appendix C

In the **Preparation** stage people have a plan to start a self-management approach within in the next month. In the **Action** stage, people are actively starting to self-manage their pain and in the **Maintenance** stage people have been actively self-managing their pain regularly over a period of several months.

14. Using this model, in which stage do you see yourself at the moment, in terms of self-managing your pain
(a) Overall?
(b) For Medication Use
(c) For Exercise
(d) For Pacing
(e) For Relaxation
(f) For Thought techniques

15. For the activities where you are in Action or Maintenance stage, is there anything that could help you to stay in this stage?

16. For the activities where you are in the Pre-contemplation, Contemplation or Preparation stages,
(a)What is stopping you from being in a different stage
(b) What could help you to move to a different stage

17. Who (if anyone) influences your decisions regarding the way you manage your pain and why

18. Do you know where to go to get help regarding a self-management approach to pain? YES/NO
(1) If YES, Where and for what activities

(b) If NO, would you like to be given information regarding who could assist you in learning a self-management approach to your pain

19. Do you think it would have been helpful if a treating health professional e.g. doctor, physiotherapist or chiropractor, had given you this information soon after your injury, why/why not?

20. Would you be interested in participating in the next phase of this research which would include an assessment, and feedback and information regarding self-management of your pain. This would involve approximately 2 hours of your time and will be conducted later in the year YES / NO

Thank you for completing this interview and for assisting in our research. All information will remain strictly confidential and be used only for the purposes of this research.

Section A: Exercise

A. People have many different attitudes to *exercise* in relation to pain management. In this section, we are interested in your use of exercise including specific strengthening and stretching exercises, walking, swimming, gym, etc. Although the statements below look similar, they have important differences. Please read each statement carefully and make only ONE choice (by circling the appropriate number) Please make your choice based on how you feel right now, not how you would like to feel or have felt in the past.

(1) I do not believe that regular exercise would help me to manage my pain

(2) I am unsure whether regular exercise would help to manage my pain

(3) I am sure that regular exercise would help to manage my pain

(4) I know regular exercise is starting to help me to manage my pain

(5) Using regular exercise to manage my pain has become part of my way of life now.

B. In this section, please choose the statement which best describes the frequency of this activity. Please make only ONE choice (by circling the appropriate number).
I have been using exercise to manage my pain,

(1) Not at all

(2) Rarely. I sometimes consider the possibility of starting to exercise but I have no clear plan to do so

(3) Irregularly, however, I have a clear plan to start regular exercising and intend to commence within the next four weeks

(4) Three or more times per week for less than 6 months

(5) Three or more times per week for the past 6 months or more

C. On the following scale, indicate (by circling the appropriate number) how IMPORTANT you feel it is to use exercise to help manage your pain. Where 0 = Not at all important and 10 = Extremely important.

0	1	2	3	4	5	6	7	8	9	10
Not at all important										Extremely important

D. Given your current knowledge of exercise, please indicate on the following scale, how CONFIDENT you are, that you can use exercise to help manage your pain. Where 0 = Not at all confident and 10= Extremely confident.

0	1	2	3	4	5	6	7	8	9	10
Not at all confident										Extremely confident

Section B: Activity Pacing

A. In this section we are interested in the way you pace (structure and alternate) your daily activities, this includes, walking, standing, housework, driving, gardening, employment, social and leisure activities etc. Although the statements below look similar, they have important differences. Please read each statement carefully and make only ONE choice (by circling the appropriate number) Please make your choice based on how you feel right now, not how you would like to feel or have felt in the past.

(1) I do not believe that structuring and alternating my daily activities would help me to manage my pain

(2) I am not sure if structuring and alternating my daily activities would help me to manage my pain.

(3) I am sure that structuring and alternating my daily activities would help to manage my pain

(4) I know that structuring and alternating my activities is helping me to manage my pain

(5) Structuring and alternating my activities to manage my pain has become a way of life now

B. In this section, please choose the statement which best describes the frequency of this activity. Please make only ONE choice (by circling the appropriate number).
I have been structuring and alternating my daily activities to manage my pain,

(1) Not at all

(2) Rarely. I sometimes consider the possibility of starting to structure and alternate my activities but I have no clear plan to do so

(3) Irregularly, however, I have a clear plan to start structuring and alternating my activities and I intend to commence within the next four weeks

(4) Every day for less than 6 months

(5) Every day for the past 6 months or more

C. On the following scale, indicate how IMPORTANT you feel it is to structure and alternate your daily activities to help manage your pain. Where 0= Not at all important and 10 = Extremely important.

0	1	2	3	4	5	6	7	8	9	10
Not at all important										Extremely important

D. Given your current knowledge of pacing techniques, please indicate on the following scale, how CONFIDENT you are, that you can structure and alternate your daily activities to help manage your pain. Where 0= Not at all confident and 10= Extremely confident.

0	1	2	3	4	5	6	7	8	9	10
Not at all confident										Extremely confident

Appendix D

Section C: Relaxation

A. There are many different types of relaxation techniques. In this section, we are interested in your use of relaxation with or without a tape, meditation, yoga or specific breathing exercises (this type of relaxation does NOT include; sleeping, resting, watching TV etc.). Although the statements below look similar they have important differences. Please read each statement carefully and make only ONE choice (by circling the appropriate number) Please make your choice based on how you feel right now, not how you would like to feel or have felt in the past.

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(2) I am unsure whether regular use of relaxation techniques can help to manage pain

(3) I am sure that regular use of relaxation techniques would help me to manage my pain

(4) I know that regular use of relaxation techniques is starting to help manage my pain

(5) Regular use of relaxation techniques to manage my pain has become a way of life now

B. In this section, please choose the statement which best describes the frequency of this activity. Please make only ONE choice (by circling the appropriate number). I am currently using relaxation techniques to manage my pain,

(1) Not at all

(2) Rarely. I sometimes consider the possibility of starting to use relaxation techniques but I have no clear plan to do so

(3) Irregularly, however, I have a clear plan to start regularly using relaxation techniques and intend to commence within the next four weeks

(4) Three or more times per week for less than 6 months

(5) Three or more times per week for the past 6 months or more

C. On the following scale, indicate how IMPORTANT you feel it is to use relaxation techniques to help manage your pain. Where 0= Not at all important and 10 = Extremely important.

0	1	2	3	4	5	6	7	8	9	10
Not at all important										Extremely important

D. Given your current level of knowledge of relaxation techniques, please indicate on the following scale, how CONFIDENT you are that you can use relaxation techniques to help manage your pain. Where 0= Not at all confident and 10= Extremely confident.

0	1	2	3	4	5	6	7	8	9	10
Not at all confident										Extremely confident

Section D: Thought Techniques

A. Some people find they are able to help manage their pain by using thought techniques such as telling themselves they can manage despite the pain, using positive self-talk and challenging negative thoughts. In this section we are interested in your use of these types of techniques. Although the statements below look similar, they have important differences. Please read each statement carefully and make only ONE choice (by circling the appropriate number) Please make your choice based on how you feel right now, not how you would like to feel or have felt in the past.

(1) I do not believe that using thought techniques would help me to manage my pain

(2) I am unsure whether thought techniques would help me to manage my pain

(3) I am sure that thought techniques would help me to manage my pain

(4) I know that regularly using thought techniques is starting to help manage my pain

(5) Using thought techniques to manage my pain has become a way of life now

B. In this section, please choose the statement which best describes the frequency of this activity. Please make only ONE choice (by circling the appropriate number).
I am currently using thought techniques to manage my pain,

(1) Not at all

(2) Rarely. I sometimes consider the possibility of starting to use thought techniques but I have no clear plan to do so

(3) Irregularly, however, I have a clear plan to start regularly using thought techniques and intend to commence within the next four weeks

(4) Three or more times per week for less than 6 months

(5) Three or more times per week for the past 6 months or more

C. On the following scale, indicate how IMPORTANT you feel it is to use thought techniques to help manage your pain. Where 0= Not at all important and 10 = Extremely important.

0	1	2	3	4	5	6	7	8	9	10
Not at all important										Extremely important

D. Given your current knowledge of thought techniques, on the following scale, indicate how CONFIDENT you are that you can use thought techniques to help manage your pain. Where 0= Not at all confident and 10 = Extremely confident.

0	1	2	3	4	5	6	7	8	9	10
Not at all confident										Extremely confident

Section E: Medication

A People use medication in many different ways to manage their pain. In this section we are interested in your beliefs about the use of PAIN medication such as Panadol, Panadene Forte, Asprin, Codeine, M.S Contin (Morphine) –These questions do NOT refer to anti-inflamatories. Circle the statement below with which you agree most strongly. Please make only ONE choice, based on how you feel right now, not how you would like to feel or have felt in the past.

(1) Medication is the only way of effectively managing my pain

(2) Daily medication taken as prescribed, is helpful in conjunction with other self-management strategies to manage my pain

(3) Occasional short-term use of pain medication can be useful during flare-ups.

(4) I believe pain medication should be avoided

B. In this section we are interested in the way you take medication to manage your pain. This does NOT include anti-inflammatories

(1) I use pain medication most days, as and when I feel I need it

(2) I use pain medication daily as prescribed, at set times of the day

(3) I use pain medication occasionally but not regularly

(4) I rarely or never use pain medication

C. On the following scale, WHETHER OR NOT YOU USE MEDICATION, indicate how IMPORTANT you feel it is to *also* use *other* self-management strategies (such as exercise, relaxation, pacing and thought techniques to manage your pain. Where 0= Not at all important and 10 = Extremely important.

0	1	2	3	4	5	6	7	8	9	10
Not at all important										Extremely important

D. On the following scale, WHETHER OR NOT YOU USE MEDICATION indicate how CONFIDENT you are that you can *also* use *other* self-management strategies (such as exercise, relaxation, pacing and thought techniques) to manage your pain. Where 0= Not at all confident and 10 = Extremely confident.

0	1	2	3	4	5	6	7	8	9	10
Not at all confident										Extremely confident

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE

Participants required for Chronic Pain Research

If you have had pain for more than 3 months, researchers from James Cook University would like to speak with you. As a research participant, you will be requested to complete a questionnaire and to attend two interviews between 4th and the 16th June. All participants that complete both interviews will be eligible to participate free of charge in an educational pain management workshop.

To be eligible to participate in this research you must:

* **Have had pain for at least 3 months**
* **Have pain that is interfering with your life**
* **Have no further surgery planned**

Please call Suzanne Habib on 40 515130 or 0414903289 for further information.

Appendix F

Participant number_____

Consent to Participate in Research Project

I _____(print name) consent to complete a research questionnaire and to take part in an assessment interview and a feedback session as part of Doctoral research being conducted by Ms Suzanne Habib and Supervised by Dr Deborah Graham through the School of Psychology at James Cook University (Cairns campus).

I fully understand the following:

(1) I may withdraw from this research project at any stage.

3. Participation in this research is voluntary and free of charge to myself.
4. All information provided by myself, is to be kept strictly confidential.
5. I will not be identified or named in the publication or presentation of the results and findings of the research project.
6. The interview may be audio taped.
7. After completing **both** the assessment interview and the feedback session, I will be eligible to participate free of charge in a pain management workshop
8. I may be contacted up to 4 times in the 12 months after the feedback interview and asked to complete a brief research questionnaire
9. A written summary of results and findings will be provided to me, at my request, at the conclusion of the research.

I acknowledge that I have signed this Consent Form of my own free will. I confirm that I am of the legal age of consent (being 18) and that I have read or had read, and explained to me, and fully understand, this consent form. I have received a copy of the above conditions of participation.

SIGNED this day of June, 2001

.....
(Signature of participant)

RESEARCHERS STATEMENT:
I have explained to the participant, the nature and purpose of the research project and the procedures used.

..... (Signature of the researcher)

Appendix F

Information for Research Participants

The study is being conducted as part of Doctoral research by Ms Suzanne Habib a registered psychologist, and supervised by Dr Deborah Graham, Senior Lecturer in Psychology, in the school of Psychology at James Cook University. If you require any further information, please contact us on one of the numbers listed below.

(g) You may withdraw from this research project at any stage.

(h) Participation in this research is voluntary and free of charge

(i) All information provided by you, is to be kept strictly confidential.

(j) You will not be identified or named in the publication or presentation of the results and findings of the research project.

(k) The interview may be audio taped.

(l) After completing **both** the assessment interview and the feedback session, you will be eligible to participate free of charge in a pain management workshop conducted by a team of experienced allied health professionals including psychologists, nurses and physiotherapists

(m) You may be contacted up to 4 times in the 12 months after the feedback interview and asked to complete a brief research questionnaire

(n) A written summary of results and findings will be provided to you, at your request, at the conclusion of the research.

YOUR NEXT APPOINTMENT IS AT_____ ON _____THE ____JUNE 2001
at the Wallamurra Medical Centre, 191 Abbott St, Cairns
(Please call if you are unable to attend your appointment)

Contact numbers:
Suzanne Habib (Principal researcher)
40515130 - At Wallamurra Medical Centre for June only
40914443
0414903289

Dr Deborah Graham (Research Supervisor)
40 421181

Appendix G

Section A.

The following questions ask you about some personal details. This information allows us to examine relationships between factors such as age and gender.

1. What is your gender (please circle)

Female Male

2. What is your relationship status?

Married Single Divorced De-facto Widowed

3. Age:_____

4. Date of birth: _____

5. Highest education level **completed** (please circle)

Year 8 Year 9 Year 10 Year11 Year 12 TAFE/College University

6. Usual Occupation:_____

7. Current Occupation_____

8. What is your ethnic background

Australia/NZ Europe Asia Africa USA UK

9. Where is the location of your pain_____

10. What initially caused the pain_____

11. What is your medical diagnosis (if known)_____

12. How long have you experienced this pain _____

13. Are you currently receiving compensation (disability insurance) YES NO

If yes, how much do you receive monthly? $_____

14. Are you currently in the process of claiming compensation (disability insurance)?

YES NO

15. Are you involved in any litigation (are you suing anyone) in relation to your pain?

YES NO

16. What medications do you take to manage your pain (including pain killers and anti-inflamatories?)

Medication	Dose	Frequency (how often)	Effect (what does it do?)

17. Are you taking any medications **other than your pain medications** such as medication for heart problems, high blood pressure, diabetes, asthma etc?

Medication	Dose	Frequency (how often)	Effect (what does it do?)

18. Please indicate (by ticking) which (if any) of the following methods you **currently** use to manage your pain.

	Yes	No		Yes	No
Physiotherapy			Stretches		
Exercise			Yoga		
Massage			Ointments		
Chiropractor			Marijuana		
Tens machine			Praying		
Inversion Machine			Pain Management Program		
Alcohol			Cold Packs		
Relaxation Tape			Distraction(T.V, radio, reading)		
Hot Packs			Back Brace/support		

Please describe below, any other methods you currently use to manage your pain._____

_____

Section B: Exercise

A. People have many different attitudes to *exercise* in relation to pain management. In this section, we are interested in your use of exercise including specific strengthening and stretching exercises, walking, swimming, gym, etc. Although the statements below look similar, they have important differences. Please read each statement carefully and make only ONE choice (by circling the appropriate number) Please make your choice based on how you feel right now, not how you would like to feel or have felt in the past.

(1) I do not believe that regular exercise would help me to manage my pain

(2) I am unsure whether regular exercise would help to manage my pain

(3) I am sure that regular exercise would help to manage my pain

(4) I know regular exercise is starting to help me to manage my pain

(5) Using regular exercise to manage my pain has become part of my way of life now.

B. In this section, please choose the statement which best describes the frequency of this activity. Please make only ONE choice (by circling the appropriate number).
I have been using exercise to manage my pain,

(1) Not at all

(2) Rarely. I sometimes consider the possibility of starting to exercise but I have no clear plan to do so

(3) Irregularly, however, I have a clear plan to start regular exercising and intend to commence within the next four weeks

(4) Three or more times per week for less than 6 months

(5) Three or more times per week for the past 6 months or more

C. On the following scale, indicate (by circling the appropriate number) how IMPORTANT you feel it is to use exercise to help manage your pain. Where 0 = Not at all important and 10 = Extremely important.

0	1	2	3	4	5	6	7	8	9	10
Not at all important										Extremely important

D. Given your current knowledge of exercise, please indicate on the following scale, how CONFIDENT you are, that you can use exercise to help manage your pain. Where 0 = Not at all confident and 10= Extremely confident.

0	1	2	3	4	5	6	7	8	9	10
Not at all confident										Extremely confident

Section C: Activity Pacing

A. In this section we are interested in the way you pace (structure and alternate) your daily activities, this includes, walking, standing, housework, driving, gardening, employment, social and leisure activities etc. Although the statements below look similar, they have important differences. Please read each statement carefully and make only ONE choice (by circling the appropriate number) Please make your choice based on how you feel right now, not how you would like to feel or have felt in the past.

(1) I do not believe that structuring and alternating my daily activities would help me to manage my pain

(2) I am not sure if structuring and alternating my daily activities would help me to manage my pain.

(3) I am sure that structuring and alternating my daily activities would help to manage my pain

(4) I know that structuring and alternating my activities is helping me to manage my pain

(5) Structuring and alternating my activities to manage my pain has become a way of life now

B. In this section, please choose the statement which best describes the frequency of this activity. Please make only ONE choice (by circling the appropriate number).
I have been structuring and alternating my daily activities to manage my pain,

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(3) Irregularly, however, I have a clear plan to start structuring and alternating my activities and I intend to commence within the next four weeks

(4) Every day for less than 6 months

(5) Every day for the past 6 months or more

C. On the following scale, indicate how IMPORTANT you feel it is to structure and alternate your daily activities to help manage your pain. Where 0= Not at all important and 10 = Extremely important.

0	1	2	3	4	5	6	7	8	9	10
Not at all important										Extremely important

D. Given your current knowledge of pacing techniques, please indicate on the following scale, how CONFIDENT you are, that you can structure and alternate your daily activities to help manage your pain. Where 0= Not at all confident and 10= Extremely confident.

0	1	2	3	4	5	6	7	8	9	10
Not at all confident										Extremely confident

Section D: Relaxation

A. There are many different types of relaxation techniques. In this section, we are interested in your use of relaxation with or without a tape, meditation, yoga or specific breathing exercises (this type of relaxation does NOT include; sleeping, resting, watching TV etc.). Although the statements below look similar they have important differences. Please read each statement carefully and make only ONE choice (by circling the appropriate number) Please make your choice based on how you feel right now, not how you would like to feel or have felt in the past.

(1) I do not believe that regular use of relaxation techniques would help me to manage my pain

(2) I am unsure whether regular use of relaxation techniques can help to manage pain

(3) I am sure that regular use of relaxation techniques would help me to manage my pain

(4) I know that regular use of relaxation techniques is starting to help manage my pain

(5) Regular use of relaxation techniques to manage my pain has become a way of life now

B. In this section, please choose the statement which best describes the frequency of this activity. Please make only ONE choice (by circling the appropriate number).
I am currently using relaxation techniques to manage my pain,

(1) Not at all

(2) Rarely. I sometimes consider the possibility of starting to use relaxation techniques but I have no clear plan to do so

(3) Irregularly, however, I have a clear plan to start regularly using relaxation techniques and intend to commence within the next four weeks

(4) Three or more times per week for less than 6 months

(5) Three or more times per week for the past 6 months or more

C. On the following scale, indicate how IMPORTANT you feel it is to use relaxation techniques to help manage your pain. Where 0= Not at all important and 10 = Extremely important.

0	1	2	3	4	5	6	7	8	9	10
Not at all important										Extremely important

D. Given your current level of knowledge of relaxation techniques, please indicate on the following scale, how CONFIDENT you are that you can use relaxation techniques to help manage your pain. Where 0= Not at all confident and 10= Extremely confident.

0	1	2	3	4	5	6	7	8	9	10
Not at all confident										Extremely confident

Section E: Thought Techniques

A. Some people find they are able to help manage their pain by using thought techniques such as telling themselves they can manage despite the pain, using positive self-talk and challenging negative thoughts. In this section we are interested in your use of these types of techniques. Although the statements below look similar, they have important differences. Please read each statement carefully and make only ONE choice (by circling the appropriate number) Please make your choice based on how you feel right now, not how you would like to feel or have felt in the past.

(1) I do not believe that using thought techniques would help me to manage my pain

(2) I am unsure whether thought techniques would help me to manage my pain

(3) I am sure that thought techniques would help me to manage my pain

(4) I know that regularly using thought techniques is starting to help manage my pain

(5) Using thought techniques to manage my pain has become a way of life now

B. In this section, please choose the statement which best describes the frequency of this activity. Please make only ONE choice (by circling the appropriate number).
I am currently using thought techniques to manage my pain,

(1) Not at all

(2) Rarely. I sometimes consider the possibility of starting to use thought techniques but I have no clear plan to do so

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(4) Three or more times per week for less than 6 months

(5) Three or more times per week for the past 6 months or more

C. On the following scale, indicate how IMPORTANT you feel it is to use thought techniques to help manage your pain. Where 0= Not at all important and 10 = Extremely important.

0	1	2	3	4	5	6	7	8	9	10
Not at all important										Extremely important

D. Given your current knowledge of thought techniques, on the following scale, indicate how CONFIDENT you are that you can use thought techniques to help manage your pain. Where 0= Not at all confident and 10 = Extremely confident.

0	1	2	3	4	5	6	7	8	9	10
Not at all confident										Extremely confident

Section F: Medication

A. People use medication in many different ways to manage their pain. In this section we are interested in your beliefs about the use of PAIN medication such as Panadol, Panadene Forte, Asprin, Codeine, M.S Contin (Morphine) –These questions do NOT refer to anti-inflamatories. Circle the statement below with which you agree most strongly. Please make only ONE choice, based on how you feel right now, not how you would like to feel or have felt in the past.

(1) Medication is the only way of effectively managing my pain

(2) Daily medication taken as prescribed, is helpful in conjunction with other self-management strategies to manage my pain

(3) Occasional short-term use of pain medication can be useful during flare-ups.

(4) I believe pain medication should be avoided

B. In this section we are interested in the way you take medication to manage your pain. This does NOT include anti-inflamatories

(1) I use pain medication most days. as and when I feel I need it

(2) I use pain medication daily as prescribed. at set times of the day

(3) I use pain medication occasionally but not regularly

(4) I rarely or never use pain medication

C. On the following scale, WHETHER OR NOT YOU USE MEDICATION, indicate how IMPORTANT you feel it is to *also* use *other* self-management strategies (such as exercise, relaxation, pacing and thought techniques to manage your pain. Where 0= Not at all important and 10 = Extremely important.

0	1	2	3	4	5	6	7	8	9	10
Not at all important										Extremely important

D. On the following scale, WHETHER OR NOT YOU USE MEDICATION indicate how CONFIDENT you are that you can *also* use *other* self-management strategies (such as exercise, relaxation, pacing and thought techniques) to manage your pain. Where 0= Not at all confident and 10 = Extremely confident.

0	1	2	3	4	5	6	7	8	9	10
Not at all confident										Extremely confident

Section G: In this section we are interested in the extent to which you feel that your pain is interfering in your daily life. Please read each question carefully and then circle a number on the scale under that question to indicate how that specific question relates to you.

1. In general, how much does your pain interfere with your day to day activities

0	1	2	3	4	5	6
No interference						Extreme interference

2. Since the time you developed a pain problem, how much has your pain changed your ability to work (this includes paid and unpaid work)

0	1	2	3	4	5	6
No change						Extreme change

3. How much has your pain changed the amount of satisfaction or enjoyment you get from participating in social and recreational activities.

0	1	2	3	4	5	6
No change						Extreme change

4. How much has your pain changed your ability to participate in social and recreational activities?

0	1	2	3	4	5	6
No change						Extreme change

5. How much has your pain changed the amount of satisfaction you get from family related activities

0	1	2	3	4	5	6
No change						Extreme change

6. How much has your pain changed your marriage /relationship (if applicable) and other family relationships?

0	1	2	3	4	5	6
No change						Extreme change

7. How much has your pain changed the amount of satisfaction or enjoyment you get from work? (paid or unpaid)

0	1	2	3	4	5	6
No change						Extreme change

8. How much has your pain changed your ability to do household chores?

0	1	2	3	4	5	6
No change						Extreme change

9. How much has your pain changed your friendships with people other than your family?

0	1	2	3	4	5	6
No change						Extreme change

Appendix G

Section H. **This scale consists of a number of statements describing how you may sometimes feel. Please read each statement and using the following scale answer by circling the number for each statement that best describes how often you felt or behaved this way during the past week.**

0	1	2	3
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	occasionally or moderate amount of the time(3-4 days)	Most or all of the time (5-7 days)

1.I was bothered by things that don't usually bother me.	0	1	2	3
2.I did not feel like eating: my appetite was poor.	0	1	2	3
3.I felt that I could not shake off the blues even with help from family and friends.	0	1	2	3
4.I felt that I was just as good as other people.	0	1	2	3
5.I had trouble keeping my mind on what I was doing.	0	1	2	3
6.I felt depressed.	0	1	2	3
7.I felt that everything I did was an effort.	0	1	2	3
8.I felt hopeful about the future.	0	1	2	3
9. I thought my life had been a failure.	0	1	2	3
10.I felt tearful.	0	1	2	3
11.My sleep was restless.	0	1	2	3
12.I was happy.	0	1	2	3
13.I talked less than usual.	0	1	2	3
14.I felt lonely.	0	1	2	3
15.People were unfriendly.	0	1	2	3
16.I enjoyed life.	0	1	2	3
17.I had crying spells	0	1	2	3
18.I felt sad.	0	1	2	3
19.I felt that people disliked me.	0	1	2	3
20.I could not 'get going'.	0	1	2	3

THANK YOU FOR COMPLETING THIS RESEARCH QUESTIONNAIRE

Appendix H

Brief Motivational Assessment Interview

Administered by practitioner
Introduce self
"The purpose of this session is for us to get some detailed information about your pain, how it is impacting on your life, how you are currently managing it and what you would like to see change. In the next session, we will be providing you with detailed feedback about the meaning of your scores on the questionnaires you just completed and putting all of the information together to try and work out ways to help you manage your pain better. You have already provided a little information about your pain in the questionnaire, however, the first part of this interview will let me get a more detailed understanding of the nature of your pain and how it is affecting your life".

(Problem Recognition)

1. What do you think is causing your pain_____

2. Have you been given a medical diagnosis _____

3. When did your pain start? _____

4. When do you expect your pain to cease?_____

5. On a scale of 0-10 with 0 meaning "no pain" and 10 meaning "pain as bad as it could be", how much pain do you have **on the average?** _____

6.On the same scale of 0 to 10, how much pain do you **have when it is at it's worst?** _____

7. How much pain do you have **when it is at it's least?** _____

8. How much pain do you have **right now?** _____

9.How often do you have **this particular** pain? _____

10. How long does **this particular** pain last? _____

11. How would you describe your pain, what does it feel like?

_____

12. What kinds of things **increase** your pain?_____

13. What kinds of things **decrease** your pain?_____

_____

14. Have you previously received **medical treatment** for **this particular** pain? YES NO

15. Do you have further medical procedures planned YES NO

16. Have you previously had **surgery** for **this particular** pain YES NO

17. Do you consider that the operation was successful YES NO N/A

18. Do you have other surgery planned YES NO

19. How is your present living situation different from the way it was before you first experienced pain problems?

_____

_____

_____

20. Which of the following **activities** are affected by your pain and in **what way?**

Activity	Affected YES/NO	In what way?
Physical exercise		
Leisure/social		
Sleeping		
Sexual Activity		
Housework/chores		
Relationships		

Appendix H

Provide a summary of the nature and extent of the pain problem, previous unsuccessful medical treatments and the impact the pain is having on the person's life. Check for accuracy

(Concern)

21. What concerns you most about the effect of your pain on your life?

22. What concerns you most about the way you are currently managing your pain?

Summarise and reflect participants understanding of their pain problem and their concerns about their current coping, check for accuracy of reflection, then go on to next section

(Optimism)

23. What have you been advised to do to manage your pain? (e.g., medication, exercises etc.)

24.Of these methods, which have you found to be the most helpful?

25. In what way was it helpful?

26. What was easy about using this method?

27. What was difficult about using this method?

Summarise and reflect past success despite difficulties

(Intention to change)

28. The fact that you are here suggests to me that you would like to see things change. How would you like your life to be different?

29. How would you know if you were managing better? What things would change?

_____

_____

30. How would you feel about learning some new skills to help manage your pain?

_____

31. What will make it easier for you to start a new way of managing your pain?

_____

32. What will make it easier for you to maintain a new way of managing your pain?

_____

*** Provide a summary of optimism and intention to change responses and check for accuracy, then say;**

"Given the information you have provided here today, what I would like to do at this point is to schedule a further appointment so that I can give you feedback on the questionnaire you completed earlier. That way we can put all of this information, together into a clear picture of what you are doing now to manage and how we can perhaps help you to manage better in areas you may be having difficulty with. How does that sound to you? Do you have any questions?"

- **Make an appointment for the client for feedback session in 1 week.**

Appendix I

Control Assessment Interview

Administered by practitioner
Introduce self

"The purpose of this session is for us to get some detailed information about your pain, how it is impacting on your life and how you are currently managing it.

In the next session, we will be providing you with feedback about your scores on the questionnaires you just completed and giving you information on where and how you can get help to manage your pain better.

The first part of this interview will let me get a better understanding of the nature of your pain."

1. What is the cause of your pain (How did it start?)

_____

2. Have you been given a medical diagnosis? _____

3. When did your pain start? _____

4. When do you expect your pain to cease?_____

5. On a scale of 0-10 with 0 meaning "no pain" and 10 meaning "pain as bad as it could be", how much pain do you have **on the average?** _____

6. On the same scale of 0 to 10, how much pain do you **have when it is at it's worst?** _____

7. How much pain do you have **when it is at it's least?** _____

8. How much pain do you have **right now?** _____

9.How often do you have **this particular** pain? _____

10. How long does **this particular** pain last? _____

11. How would you describe your pain, what does it feel like?

12. What kinds of things **increase** your pain?

13. What kinds of things **decrease** your pain?

14. Have you previously received medical treatment for this particular pain?

YES NO

15. Do you have further medical procedures planned? YES NO

16. Have you previously had surgery for this particular pain? YES NO

17. Do you consider that the operation was successful YES N/A NO

18. Do you have other surgery planned YES N/A NO

19. What have you been advised to do to manage your pain? (eg. medication, exercises etc.)

20. Do you do what you have been advised to do to manage your pain

YES NO SOMETIMES

If NO or SOMETIMES, what stops you from doing what has been recommended

21. Which of the following activities are affected by your pain and in what way?

Activity	Affected YES/NO	In what way?
Physical exercise		
Leisure/social		
Sleeping		
Sexual Activity		
Housework/chores		
Relationships		

22.have you ever consulted anyone for an emotional or psychiatric problem
YES NO If yes, please describe

23. Do you have any other health problems (e.g., diabetes, asthma, epilepsy, high blood pressure)?

Thank you for completing this interview

"What we need to do now is make an appointment for you to come back in 1 week. Before you come back we will have scored the questionnaires you just completed to give us a better idea of which areas of pain management you need help with. At that interview I will give you some information about how

and where to get help with managing your pain according to what your specific needs are".

- **Make an appointment for the client for feedback session in 1 week.**

Appendix J

Brief Motivational Feedback Session

EMPATHY- When providing feedback and advice, the information needs to be given in an empathic manner where the practitioner uses reflective listening skills and accurately reflects an understanding of the clients meaning.

Advise the client that the aim of the session is to provide feedback based on the information provided in the interview and the responses on the questionnaires in order to see how they are currently managing their pain, where they might be able to better manage their pain and how we can help them to achieve that goal

RESPONSIBILITY- Tell the client that the purpose of the session is purely to provide feedback. What the client chooses to do with the information is entirely their choice. Should they decide they would like to know more about managing their pain better then we will be happy to assist, but ultimately it is the responsibility of the client to take whatever steps they feel comfortable with at the end of the session.

First provide a summary of the client's situation as reported by the client in the previous session to reiterate,

1. Fact that the pain is chronic
2. Fact that medical profession is unable to provide further treatment
3. The fact that the impact of pain on their life is a concern to them

Check for accuracy

"What we have learned from research findings and from working with clients with chronic pain, is that the ones who manage better are generally doing 5 main activities to manage their pain. Generally we have found that the people who use all 5 of these activities have the best outcome such as increased

activity, return to work, and increased participation in life. What we did last week was assess how much or how little you were using these activities, what your main concerns were and what you would like to be able to do. This gave us a fairly clear picture of where we might be able to go from here".

Affirm the client saying that it looks as though they are currently already using one/a number of the 5 helpful activities to manage their pain with some degree of success, such as_____ (name activities client is using with some degree of success, i.e. in Action or Maintenance stages). However, there are also a number of activities where it looks as though they may not be managing so well and this may be contributing to the intensity of the pain and the extent to which it is interfering with their life. These activities are _____**(name activities where client is in Pre-contemplation or Contemplation stages)**
Of these activities where you are not managing so well, which do you feel would be the most important to look at first? (this may not be the activity that the practitioner assumed would be the most important). **Record chosen activity here** _____
NB. (Only offer Medication as an activity to be looked at, if the client has been categorised as having a Maladaptive Coping Style)

Ask the client to explain why they chose this activity and what difference they think it would make if they addressed it (elicit change talk).

Once the client has chosen the activity they would like to look at first examine discrepancies between belief and behaviour and use these to elicit change-talk.
Look at Importance and Confidence scores and discuss discrepancies to elicit change talk.

Appendix J

If the Importance score is less than 7 and lower than the Confidence score, start with consciousness raising strategies, before moving to Self-efficacy enhancing strategies.
Look at Confidence scores, acknowledge that the client is having difficulty with this activity then say to the client that you are interested to know why they scored the number they did rather than a lower number (this should elicit some recognition that they are at least a little confident that they can do the activity).

Expand on the response and ask for examples of when in the past the client has been able to manage an activity to help with their pain. What are they still doing despite the pain

When using self-efficacy, enhancing strategies, use positive experiences with other self-management activities to demonstrate self-management ability, both in the present and the past.

Convey to the client your belief in their ability to engage in and maintain a particular self-management activity

Give the client clear advice about the need to engage in and maintain a specific self-management strategy. Within this advice provide a menu of options about where to access help regarding information and support.
Provide information sheet for the relevant specific self-management activity and information about workshops, and public and private services available.
Ask the client which (if any) option they think would be preferable for them.

If the client expresses an interest in any of the options or feels that they can confidently proceed on their own,

Ask the client to make an action plan. (I.e. put name on workshop list, call for an appointment resume an activity they feel confident with).

Make a plan to review progress by phone in four weeks if client does not register for a workshop.

If the client does not express an interest in change, roll with resistance, avoid argumentation. Express free -choice, offer to provide written information to take home, including a practitioner phone number. State to the client that assistance will be available at any time should s/he change his mind.

Thank-you for coming in again today, before you go I would like to ask you to complete a brief questionnaire again for us. As we explained last week, we will also be contacting you periodically throughout the next 12 months to assess how you are managing your pain. The first contact will be four weeks from now, then the next contact will be six months later.

Participant to complete RASMAP-Q prior to leaving.

Appendix K

CONTROL FEEDBACK SESSION

The purpose of today's session is to give you information and advice about where to go to get help with managing your pain. Since you were here last week, we have scored the questionnaires you completed and looked at them together with the information you provided in the interview.

What we have learned from research findings and from working with clients with chronic pain, is that the ones who manage better are generally doing 5 main activities to manage their pain, these are using exercise, pacing their activities, using medication appropriately, using thought techniques and using relaxation techniques. Generally we have found that the people who use all 5 of these activities have the best outcomes such as increased activity, return to work, and increased participation in life.

What we did last week was assess how much or how little you were using these activities. This gave us a fairly clear picture of where we might be able to go from here. Based on that information, it looks as though you may require some help with _____(describe activity) to help you to _____(describe benefit of activity).

I would like to give you some information about workshops we are conducting through the university research and also about agencies and services in the community where you can get help with _____(describe activity).

Do you have any questions?

Appendix K

Thank-you for coming in again today, before you go I would like to ask you to complete a brief questionnaire again for us. As we explained last week, we will also be contacting you periodically throughout the next 12 months to assess how you are managing your pain. The first contact will be four weeks from now, then the next contact will be six months later.

Allow the participant to register for the workshops at that point if they express a desire to do so.

Participant to complete RASMAP-Q prior to leaving.

Appendix L

EXERCISE FOR CHRONIC PAIN

Why do we use exercise to help manage chronic pain?

Many people who have chronic pain are afraid to exercise because they fear that they will harm themselves further. You may remember that when you first injured yourself that you were advised to rest and guard the injured area. These are helpful strategies in managing pain at the acute stage, however, if your pain has progressed to the chronic stage (after approximately 3 months) these strategies are no longer helpful and may in fact worsen the pain by contributing to loss of fitness and muscle tone, stiffness and abnormal movement patterns. By not moving, stretching or engaging in some type of exercise, you are placing yourself at greater risk of re-injury or becoming more out of shape. If you exercise slowly and carefully, you are not likely to make your condition worse and you can start to experience the following benefits.

* Increased strength and flexibility
* Increased endurance
* Increased muscle support to the spine
* Increased fitness and productivity
* Reduced risk of re-injury
* Reduced risk of physical de-conditioning and weight gain
* Improved mood
* Social interaction
* Improved sleep

Appendix L

What is involved in exercise for chronic pain?

There are two main types of exercise used to help manage chronic pain, exercises for strength and flexibility and exercises for fitness and endurance. Stretching exercises help to lengthen injured and shortened muscles and strengthening exercises help to tighten stretched loose muscles. Exercise for fitness and endurance includes activities such as walking, swimming, stationary cycling or using a treadmill.

Where can I get help with learning about exercise manage chronic pain?

As participant in this research you are eligible to participate in an 'exercise for chronic pain' workshop, free of charge. The workshop will be conducted on _____from _____to_____ at _____

If you would like to attend, you can register your name with your interviewer or phone 0414903289. Please book early as places will be limited.

Alternatively, if you are currently receiving a Centrelink benefit and you have a goal of returning to work, you may be eligible to participate in a rehabilitation program at CRS Australia where you can be taught exercises to manage your pain. You can call and ask for more information on 40 500700.

If your goal is <u>not</u> to return to work or you <u>are</u> currently employed, you can receive help with exercise through a physiotherapist with special expertise in pain management and private health rebates should apply (see the yellow pages). If you are on a low income, you may be eligible to access these services free of charge through the hospital physiotherapists.

Appendix L

ACTIVITY PACING FOR CHRONIC PAIN

What is Activity Pacing?

Activity pacing is a specific method to help you manage chronic pain by structuring and alternating your daily activities. Activity pacing works by using specific techniques involving setting small achievable goals for engaging in moderate activity followed by limited rest. This cycle is repeated through each day, and with practice, people find that their pain levels and rest periods decrease, and their activity levels gradually increase.

Benefits of Activity Pacing include;

* Avoidance of extreme pain
* Fewer and shorter pain episodes
* Increased activity and productivity
* Less tension and fatigue

Why should I learn Activity Pacing?

Activity pacing is an important component of a self-management approach to pain. People with chronic pain often attempt to perform activities until severe pain forces them to stop. This activity level is usually followed by extended period of rest, increased muscle tension, fear and loss of confidence. Learning how to pace your activities can help to break the cycle of over-exertion followed by lengthy recovery time. Activity pacing will increase your endurance and assist you to participate more fully in everyday activities.

Appendix L

Where can I learn about Activity Pacing?

As participant in this research you are eligible to participate in an 'Activity Pacing For Chronic Pain' workshop, free of charge. The workshop will be conducted on _____ _____from _____to_____ at _____

If you would like to attend, you can register your name with your interviewer or phone 40515130. Please book early as places will be limited.

Alternatively, if you are currently receiving a Centrelink benefit and you have a goal of returning to work, you may be eligible to participate in a rehabilitation program at CRS Australia, where you can be taught Activity Pacing to manage your pain. You can call 40500700 for more information.

If your goal is <u>not</u> to return to work or you <u>are</u> currently employed, you can receive help with Activity Pacing through a registered psychologist or physiotherapist with special expertise in pain management, and private health rebates should apply (see the yellow pages). If you are on a low income, you may be eligible to access these services free of charge through the hospital psychologist or physiotherapists.

Appendix L

RELAXATION EXERCISES FOR CHRONIC PAIN

Why do we use relaxation training to help manage chronic pain?

Relaxation training is often incorporated into pain management treatments because relaxation methods can,

* help to break the link between stressful events and pain
* reduce muscle spasm and tension which leads to pain
* alter abnormal patterns of activity that lead to pain
* reduce emotional responses during pain episodes

What is relaxation training?

Relaxation training involves learning how to achieve a mental and physical state of tranquility in a very brief period of time and how to incorporate those skills into your daily life to help manage your pain. Relaxation therapy involves learning a very systematic set of procedures to reduce tension and pain. Relaxation helps you to manage pain by recognising signs of stress and tension in your body and reducing them before they reach painful levels.

Being able to achieve a state of deep relaxation is a very pleasant experience. In addition to reducing pain and stiffness, research has demonstrated that relaxation has numerous other benefits including feeling a greater degree of self-control, less difficulty falling asleep, decreased blood pressure, less irritability and a more positive outlook on life. Unlike medication, there are no negative side-effects with this form of treatment.

Where can I learn about relaxation training to help manage my chronic pain? As participant in this research you are eligible to participate in a 'Relaxation Training for Chronic Pain' workshop free of charge. The workshop will be conducted on _____ from _____to_____at _____

If you would like to attend, you can register your name with your interviewer or phone 40515130. Please book early as places will be limited.

Alternatively, if you are currently receiving a Centrelink benefit and you have a goal of returning to work, you may be eligible to participate in a rehabilitation program at CRS Australia where you can be taught relaxation techniques to help manage your pain. You can call and ask for more information on 40 500700.

If your goal is not to return to work or you are currently employed, you can receive help with relaxation training through a registered psychologist with special expertise in pain management and private health rebates should apply (see the yellow pages). If you are on a low income, you may be eligible to access these services free of charge through the hospital psychologist. You may also be able to learn relaxation techniques at your local yoga or sports center.

Appendix L

THOUGHT TECHNIQUES FOR MANAGING CHRONIC PAIN

Why do we use thought techniques to manage chronic pain?

A healthy approach to managing chronic pain needs to include an exploration of the relationships of thoughts and feelings. The mind (the source of thoughts and feelings) gives meaning to experiences including pain. A self-defeated, hopeless frame of mind will most likely contribute to the interpretation of pain signals in a negative way, increasing distress and despair and causing muscle tension. Scientific medical research has demonstrated that the mind can be seen as a filter through which the pain signal passes and is either dampened or magnified in intensity. Negative thoughts and emotions such as depression, anxiety, anger and frustration may contribute to intensified levels of pain, whereas feelings of acceptance, happiness and calm can decrease the intensity of pain.

What does learning about thought techniques involve? The purpose of learning thought techniques is to help you to understand how to use your mind as a powerful pain management tool. By using specific techniques to identify patterns in your thinking and learning more helpful alternatives, you can use your thoughts to overcome difficult days, to stay motivated to continue your self-management activities and to minimise the impact of the pain on your life.

Where can I learn about thought techniques to manage my chronic pain? As participant in this research you are eligible to participate in a 'Thought Techniques for Managing Chronic Pain' workshop free of charge. The workshop will be conducted on _____ from _____to_____at_____

If you would like to attend, you can register your name with your interviewer or phone 40515130. Please book early as places will be limited.

Alternatively, if you are currently receiving a Centrelink benefit and you have a goal of returning to work, you may be eligible to participate in a rehabilitation program at CRS Australia where you can be taught thought-techniques to manage your pain. You can call and ask for more information on 40 500700.

If your goal is <u>not</u> to return to work or you <u>are</u> currently employed, you can receive help with thought-techniques training through a registered psychologist with special expertise in pain management and private health rebates should apply (see the yellow pages). If you are on a low income, you may be eligible to access these services free of charge through the hospital psychologist.

Appendix L

CRS Australia (Formerly known as Commonwealth Rehabilitation Services).

If you are currently receiving benefits from Centrelink and have a goal of returning to work, you may be eligible to participate in a rehabilitation program at CRS Australia. At CRS Australia you will be assigned a Case manager who will work with you to develop a rehabilitation program to best suit your individual needs.

The team at CRS Australia includes Physiotherapists, Occupational therapists, Psychologists, Rehabilitation Counsellors and a Job placement officer. Your case manager will liaise with other members of the team to assess your individual needs and to provide the relevant services.

CRS Australia can help you to learn strategies to reduce the impact of pain and disability on your life. Pain management programs include pain education, exercise, activity pacing, stress management, assertive communication training and relaxation training. On completion of your pain management program, you may be assisted to explore appropriate employment options.

If you are interested in finding out more about how CRS Australia can help you, contact 40 500 700 and ask to speak to a rehabilitation consultant. Please advise the consultant that you have been referred by the chronic pain research team at James Cook University.

Appendix M

EXERCISE WORKSHOP

VENUE: Meeting Room, Cairns City Library, Abbott St Cairns
DATE:
TIME:

The Exercise workshop is conducted by a physiotherapist and a psychologist, both leaders have extensive experience in providing pain management services. The group workshop is designed to provide information on exercising for chronic pain and assistance with planning, starting and maintaining a safe and appropriate, exercise program.

As the purpose of these workshops is to teach you how to manage your pain at home, we do not provide mats and pillows etc. It is important that you take some time to find something comfortable that you can use during exercise practice at home. To participate in an exercise workshop you will require the following:

*Comfortable mat (or folded blanket) to lie on

*Pillows to support if required

*Loose comfortable clothing

*Any other supports (such as hot or cold packs) to help you feel comfortable

*Reading glasses if required

*A pen

*We recognise the important role of partners and other family members - please feel free to bring a person who could help to support and encourage you to continue your exercise practice at home.

We will provide tea/coffee and biscuits during the workshop. As you are participating in a University research project, the workshop is provided free of charge. **Workshop numbers are limited. If you are unable to attend the workshop, please call us on 40 515130 so that we may offer your place to another participant.**

Appendix M

ACTIVITY PACING WORKSHOP

VENUE: Meeting Room, Cairns City Library, Abbott St. Cairns.
DATE:
TIME:

The Activity Pacing workshop is conducted by two psychologists who have considerable experience working with people who have chronic pain. The group workshop is designed to provide education and practice in using Activity pacing techniques to help manage your pain.

To participate in an Activity Pacing workshop you will require the following:

*Loose comfortable clothing

*Any other supports (such as pillows, back brace, hot or cold packs, etc.) to help you feel comfortable

*A watch

*A pen

*Reading glasses if required

*We recognise the important role of partners and other family members - please feel free to bring a person who could help to support and encourage you to continue your Activity Pacing practice at home.

We will provide Tea/Coffee and biscuits during the workshop. As you are participating in a University research project, the workshop is provided free of charge

Workshop numbers are limited.lif you are unable to attend the workshop, please call us on 40 515130 so that we may offer your place to another participant.

Appendix M

RELAXATION WORKSHOP

VENUE: Meeting room, Cairns City Library, Abbott St. Cairns
DATE:
TIME:

The relaxation workshop is conducted by two psychologists who have considerable experience working with people who have chronic pain. The group workshop is designed to provide education and practice in using a range of relaxation techniques to help manage your pain. We will provide a relaxation tape for you to use during your practice at home

As the purpose of these workshops is to teach you how to manage your pain at home, we do not provide mats and pillows etc. It is important that you take some time to find something comfortable that you can use during relaxation practice at home. If you prefer, you can practice in a sitting position.
To participate in a relaxation workshop you will require the following items:

*Comfortable mat (or folded blanket) to lie on

*Pillows to support if required

*Loose comfortable clothing

*Any other supports (such as hot or cold packs) to help you feel comfortable

*Reading glasses if required

*A pen

*We recognise the important role of partners and other family members - please feel free to bring a person who could help to support and encourage you to continue your relaxation practice at home.

We will provide Tea/Coffee and biscuits during the workshop. As you are participating in a University research project, the workshop is provided free of charge. **Workshop numbers are limited. If you are unable to attend the workshop, please call us on 40 515130 so that we may offer your place to another participant.**

Appendix M

THOUGHT TECHNIQUES WORKSHOP

VENUE: Meeting Room, Cairns City Library, Abbott St. Cairns
DATE:_____
TIME:_____

The thought techniques workshop is conducted by two psychologists who have extensive experience working with people who have chronic pain. The group workshop is designed to provide education and practice in using thought techniques to help manage your pain.

To participate in a Thought Techniques workshop you will require the following:

*Loose comfortable clothing

*Any other supports (such as pillows, back brace, hot or cold packs, etc.) to help you feel comfortable

*A pen

*Reading glasses if required

*We recognise the important role of partners and other family members - please feel free to bring a person who could help to support and encourage you to continue using your Thought Techniques at home.

We will provide Tea/Coffee and biscuits during the workshop. As you are participating in a University research project, the workshop is provided free of charge.

Workshop numbers are limited. If you are unable to attend the workshop, please call us on 40515130 so that we may offer your place to another participant.

Appendix M

MEDICATION EDUCATION WORKSHOP

VENUE: Meeting room, Cairns City Library, Abbott St. Cairns
DATE:_____
TIME:_____

The medication education workshop is conducted by a registered nurse and a registered psychologist, Both leaders have experience working with people who have chronic pain. The group workshop is designed to provide you with education regarding the types and effects of different medication, possible side-effects of medication and appropriate ways to use your medication.

To participate in a Medication Education workshop you will require the following:

* A list of all your current medication, dose and reason for taking

*Loose comfortable clothing

*Any other supports (such as pillows, back brace, hot or cold packs, etc.) to help you feel comfortable

*A pen

*Reading glasses if required

*We recognise the important role of partners and other family members - please feel free to bring a person who could help to support and encourage you to manage your medication appropriately at home.

We will provide Tea/Coffee and biscuits during the workshop. As you are participating in a University research project, the workshop is provided free of charge.

Workshop numbers are limited. If you are unable to attend the workshop, please call us on 40515130 so that we may offer your place to another participant.

Appendix N

EXERCISE WORKSHOP

1. Thank participants for coming
2. Start by introducing self and co-facilitator
3. Ask participants to briefly introduce themselves and say what they hope to get out of the workshop.
4. Workshop overview & Ground-rules **(OHT 1 & 2)** Housekeeping- tea room, toilets, smoking, emergency exits and after hours contacts

(Psychologist)

Please feel free to get up, lie down, stretch, change position or walk around to make yourselves comfortable while we are talking. You will find a folder in front of you with handouts of the all the material we will cover today so that you can review them at home and there is no need for you to take notes

Before we begin today, I would like to discuss the rationale for adopting a self-management approach to your pain. Most of you here today have experienced your pain for considerable lengths of time. Many of you have had one or more surgery and most of you will have had multiple medical examinations, tests and treatment. Yet still you find that you have persisting pain and the medical profession may be telling you they have no further treatments they can offer you.

So, where does this leave you? In the absence of any effective treatment, it starts to become apparent that you are going to have to find ways to manage the pain yourself and try to minimise the impact that it has on your life. This is what is known as a **self-management approach**, where you take primary responsibility for actively managing your pain. When health care practitioners *are* involved, their role is primarily that of teacher, guide or resource person whose main purpose is to encourage or assist you in learning and making better use of pain self-management skills.

Appendix N

All of you are likely to be already using a number of coping strategies. Some such as relaxation or pacing yourself may be helpful strategies, where others, such as long periods of inactivity or over-reliance on pain-killers and anti-inflammatories may not be helpful. The aim of this workshop is to increase the number of *helpful* strategies you have for managing your pain

Chronic pain is a complex problem. One that is affected by many different factors **(Put up OHT 3).** This is what we call the multi-dimensional model of pain and it illustrates some of the different factors that can affect how we experience pain. Explain here

Because pain is such a complex problem, we need to develop a range of strategies or tools to help us manage it. From research conducted on chronic pain all over the world, we now know, that those people who manage their pain better and have less associated disability and distress are usually using the five main strategies illustrated on this diagram **(put up OHT 4)**

So, people that manage their pain better usually use **Activity Pacing techniques** that help to reduce pain flare-ups and increase endurance and participation in daily activities. **Thought techniques** are used to decrease distress and increase positive self-talk. **Relaxation techniques** are used to decrease tension and stress. They use **Pain medication** infrequently (if at all). If they are using medication, it is in combination with the other self-management strategies (so this is not their only coping strategy).
The fifth technique is the use of **Exercise** to increase strength, flexibility and endurance.

Exercise is the self-management strategy we are going to discuss today.

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Research has shown that exercise can be helpful in managing chronic pain because it (**OHT 5**)

(1)Increases strength and flexibility
(2) Increases endurance
(3) Provides muscle support to the spine
(4) Increases fitness and productivity
(5) Reduces the risk of pain flare-ups
(6) Reduces the risk of physical de-conditioning and weight gain
(7) Makes you feel good
(8) Can provide social interaction
(9) Helps you to sleep better

Most of you will be aware of these benefits and many of you may have already been given an exercise program by a physiotherapist or doctor but are not currently regularly engaging in any exercise. Lets, take some time here to look at what makes it difficult for people to start and continue an exercise program.

Ask for examples from the group and put up on the white board
Write up Importance and Confidence on the board and put each difficulty in the appropriate column)

Lack of time
Lack of motivation
Can't remember exercises
Pain too bad to start
Weather
Don't believe it will make any difference
Hurts when I do them
Too boring

Frightened of re-injury–Physiotherapist to discuss : Hurt does not equal harm. Many people who have pain are afraid to exercise because they fear that they will harm themselves further. They also remember that when they first injured themselves that they were advised to rest and guard the injured area. While these are helpful strategies in managing pain at the acute stage, if your pain has progressed to the chronic stage (after approximately 3 months) these strategies are no longer helpful and may in fact worsen the pain by contributing to loss of fitness and muscle tone, stiffness and abnormal movement patterns. By not moving, stretching or engaging in some type of exercise, they are placing themselves at greater risk of re-injury or becoming more out of shape. If you exercise slowly and carefully, you are not likely to make your condition worse and you can start to experience the benefits that we will discuss today.

(Psychologist)

Most of these reasons for not exercising fall into one of two categories. One that reflects a belief that exercise is not an **important** part of managing chronic pain and one that reflects a lack of **confidence** in the ability to exercise with chronic pain. The aim of this workshop is to address the barriers in both of these categories by increasing your understanding of why exercise is so important in helping to manage chronic pain, and by increasing your confidence that you can safely start and maintain these types of self-management strategies

(Physiotherapist)

We are going to cover two main types of exercise today, exercises for strength and flexibility and exercises for fitness and endurance **(write up both types on the board).**

Firstly we will discuss **Strength and Flexibility Exercises**

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Gradual stretching and strengthening exercises help re-condition your muscles, a benefit which in turn aids in healing and rehabilitation and helps prevent re-injury.

These types of exercise also help to increase your mobility, circulation and range of movement

A healthy muscle can stretch or contract then return to a normal resting state. An injured or spasming muscle may be **shortened** or weak and may not be able to withstand much movement or bear much weight.

An overly **stretched** muscle (for example abdominal muscles on a large stomach) is also weak and unable to provide support to the spine and joints.

Shortened muscles need to be stretched to lengthen and increase blood supply and to increase flexibility, and **stretched** muscles need to be strengthened to bring them back to their proper length and build fiber strength to assist in movement and support. This is why a balanced exercise program includes *both* stretching and strengthening exercises.

A safe way to begin is to start with the stretching exercises until you or your physiotherapist or doctor feel you are ready to move on to strengthening exercises. You should always do your strengthening exercises **after** you are warmed up from stretching.

When we do exercises for strength and flexibility we use the following **guidelines (Put up OHT 6)**

1. Move slowly, gently and continuously. Do not bounce or jerk
2. To loosen tight muscles and limber up stiff joints, stretch just until you feel tension ....hold for 5-10 seconds, and then relax
3. Don't push your body until it hurts. Stretching should feel good, not painful.

4. Start with no more than 5 repetitions of any exercise. Take at least two weeks to increase to 10 repetitions.

5.Many short sessions are better than a few long sessions e.g., it is better for your body to do five stretches six times a day, than to do 30 stretches all in one go.

6. Always do the same number for your left side as your right side

7.Breathe naturally. Do not hold your breath

8. If you feel increased symptoms that last for more than two hours after exercising, next time do fewer repetitions or eliminate the particular exercise that seems to be causing the symptoms. Don't quit exercising

In your folder you will find illustrations of the strengthening exercises we are going to learn today. So lets stand up and find yourself a space where you can stretch out with out touching anyone.

Physiotherapist to demonstrate stretching exercises - participants do exercises with observation and assistance

Coffee/Tea break

(Physiotherapist)

Before the break we discussed strength and flexibility exercise. Now we are going to discuss exercises for fitness and endurance. These types of exercises are known as aerobic exercises. Aerobic exercise are those which elevate the heart rate through sustained movements of the body at moderate levels of intensity. Aerobic exercises include brisk walking, swimming and stationary cycling. These types of exercises have many benefits including increased stamina, weight control, and improved mood and sleep.

Warm-up

If you are going to do aerobic exercise it is important to warm up first. A warm up means that you do at least 5 minutes of a low intensity activity to allow your heart, lungs and circulation to gradually increase their work. For example, if you are going for a brisk walk, warm up with 5 minutes of slow walking first, if you are using a stationary bike, do a few minutes of cycling with no resistance at a slow pace.

Cool-Down

It is also important to have a cool-down period at the end of an aerobic exercise session to allow your breathing and heart rate to slow down and your muscles to gradually relax. You may also like to do the stretching exercises we practiced earlier, at this time as the muscles will be warm and stretching will be easier. Stretching after aerobic exercise also helps to minimise stiffness and muscle soreness that may otherwise follow aerobic exercise.

There are some general guidelines for doing aerobic exercise, these are outlined on the handout in your folder **(OHT7)**

Frequency: Three to four times per week is the recommended frequency to be aiming for.

Time: Start with just a few minutes and gradually increase the duration of your aerobic activity to around 30 minutes a session. You can safely increase the duration of your activity by alternating intervals of brisk exercise with intervals of easy activities For example, after three to five minutes of brisk walking, do one to two minutes of easy strolling then another three to five minutes of brisk exercise. As your fitness and endurance increases you will gradually be able to increase the periods of brisk activity and decrease the periods of easy activity.

If 30 minutes in one session seems to be too much, you can break your exercise into two, ten to fifteen minute sessions. Either way appears to have significant health benefits.

Intensity: Safe and effective exercise of this type should be done at no more than moderate intensity. Of course what is moderate intensity for one person may be too hard or too easy for another person. A good way to test your-self is to do the **talk test.** Moderate intensity exercise will allow you to speak comfortably. If you can't carry on a conversation because you are breathing too hard or are short of breath, you are working too hard and need to slow it down.

Walking

Walking is the aerobic activity usually recommended for people with chronic pain, it is free, you can do it anywhere, you don't need any specific equipment and you can do it with a friend or partner. Start with just a few minutes and gradually increase the distance you cover or the time you spend exercising.
Try parking a little further away from appointments and walking the rest of the way, walk in your local shopping centre when it is raining (some may even have walking clubs). Ask a friend to join you. Measure your increases in time or distance covered every few weeks, and reward yourself for increasing your activity

Other types of exercise

Water exercises – For people in pain, water exercises can be especially relaxing, because about 70% of the effects of gravity are lost in water. Since movement in water is so much easier some people are tempted to overdo this type of exercise. No matter what type of exercise you choose to do, it's always better to start out doing less than you think you can do and gradually increase the length or intensity of the exercise.

Yoga or Tai Chi exercises are helpful for people with chronic pain because they are slow and purposeful and coordinated with breathing.

Goal Setting and Action Planning (OHT 8) (Psychologist)

Many people wonder how to choose the right exercises and how to know what's best for them. The best exercises for you are the ones that will help you do what you want to do. So often, the most important decision in starting and maintaining a successful fitness program is to choose a goal (something you want to do) that exercise can help you reach. Once you have a goal in mind it's much easier to choose exercises that make sense to you. It's also much easier to maintain an exercise program if you can see how it can be helpful for you in a practical way.

1. **Choose a goal that you want to do but don't or can't do now for some physical reason.** For example you might want to be able to do the grocery shopping or take a fishing trip with friend, mow the lawn or go on a family holiday.
2. **Think about why you can't or don't enjoy doing it now.**
   It might be that you get tired before everybody else, that it's hard to manage stairs or that it's difficult for you to carry bags.
3. **Decide what it is about your abilities that makes it difficult to do what you want.**
   For example, you may need aerobic exercise to increase your fitness and endurance or you may need strengthening and flexibility exercises if bearing or carrying weight is a problem for you.
4. **Design your exercise plan.**
   Start off with short periods and a few repetitions and gradually build up.

ACTION PLANS (Psychologist)

Once you have decided your goal and worked out what type of exercise you want to do, the next step is to make an action plan. Action plans are a very important self-management tool that can help you to set and achieve realistic goals. You have an action plan worksheet in your folder so take it out now and we will work through it.

(Put up OHT 9, example action plan)

The first step in completing your action plan is to decide WHAT you are going to (this has to be very specific)

Next, write down HOW MUCH you are going to do

Then record WHEN you will do it

Next write down HOW MANY (or how often) you will do it

The final step is to rate how confident you are that you will complete you action plan where 0 = not at all confident and 10=totally confident. If you are at least 7 out of 10 confident, then this is probably a realistic plan. If you are less than 7 confident then you need to revise your plan and ask yourself WHY you are not more confident, what problems do you foresee, how can you change your plan to make it more achievable?

Take some time now to create your own Action Plan **(Ask for each participant to share their action plan with the person sitting next to them, then have participants report each others action plans. Brainstorm any problems with the group).**

Here are some ideas for making starting and maintaining exercise easier, you have this handout in your folder **(Put up OHT 10)**

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1. Consult with your doctor or physiotherapist before starting your exercise program
2. Keep your exercise goal in mind
3. Make an Action plan
4. Tell your family and friends your action plan (this is very important)
5. Choose exercises you want to do
6. Remember to do a warm up and cool down
7. Keep an exercise diary to note your progress
8. Do some self-tests of your progress (measure distance covered in a set time or time it takes to cover a set distance, number of repetitions of an exercise or stretch test)
9. Revise your program after 6 weeks, modify according to what you liked, what worked etc. then set a new goal and action plan
10. Reward yourself for a job well done!

So today we have covered a range of topics related to using exercise to help manage chronic pain. We have discussed the idea of a self-management approach and where exercise fits with this approach. We discussed the benefits of exercising and barriers to exercising. Before the break, we looked at stretching and strengthening exercises and after the break we discussed aerobic exercising for fitness and endurance. We have looked at how to decide on and set a goal for exercising and how to develop your own action plan to help you start and maintain an exercise program and to record and monitor your progress.

This brings us to the end of our Exercise workshop. We would like to conclude by moving around the room and asking what each of you feel you got out of the workshop and how you think it may be helpful in managing your pain.

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If you would like to know more about exercising for managing chronic pain, please see one of us and we will try to provide you with some additional information about where you can access services to best suit your individual needs.

Thank you all for participating in the workshop and for your valued input in our research. Before you leave today I would like to ask you to complete the questionnaire we are about to hand you (RASMAP-Q). You will also be asked to complete an anonymous written evaluation form. All of your comments will be helpful for us in continuing to develop the workshop and offer it on a regular basis. (Hand out evaluation sheets).

As you are aware, we will be contacting you periodically throughout the next 12 months by mail and telephone. The first follow-up contact will be in four weeks where we will ask you to complete a brief questionnaire. The next contact will be six months after that. So, we look forward to speaking with you soon and until then, encourage you to regularly practice your exercises. Thank you again.

Activity Pacing Workshop

1. Thank participants for coming
2. Start by introducing self and co-facilitator
3. Ask participants to briefly introduce themselves and say what they hope to get out of the workshop.
4. Ground rules and workshop overview **(OHT 1 & 2)** Housekeeping, toilets, tea-room, smoking, emergency exits, after hours numbers.

(Psychologist)

Please feel free to get up, lie down, stretch, change position or walk around to make yourselves comfortable while we are talking. In the folder in front of you, you will find handouts of all the OHT's we are presenting today so there is no need for you to take notes.

Before we begin today, I would like to discuss the rationale for adopting a self-management approach to your pain. Most of you here today have experienced your pain for considerable lengths of time. Many of you have had one or more surgery and most of you will have had multiple medical examinations, tests and treatment.

Yet still you find that you have persisting pain and the medical profession may be telling you they have no further treatments they can offer you.

So, where does this leave you? In the absence of any effective treatment, it starts to become apparent that you are going to have to find ways to manage the pain yourself and try to minimise the impact that it has on your life. This is what is known as a **self-management approach**, where you take primary responsibility for actively managing your pain. When health care practitioners *are* involved, their role is primarily that of teacher, guide or resource person whose main purpose is to encourage or assist you in learning and making better use of pain self-management skills.

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All of you are likely to be already using a number of coping strategies. Some such as exercise or relaxation techniques may be helpful strategies, where others, such as long periods of inactivity or over-reliance on pain-killers and anti-inflammatories may not be helpful.

Chronic pain is a complex problem. One that is affected by many different factors **(Put up OHT3**). This is what we call the multi-dimensional model of pain and it illustrates some of the different factors that can affect how we experience pain. **Explain here**

Because pain is such a complex problem, we need to develop a range of strategies or tools to help us manage it. From research conducted on chronic pain all over the world, we now know, that those people who manage their pain better and have less associated disability and distress are usually using the five main strategies illustrated on this diagram **(put up OHT 4)**

So, people that manage their pain better usually use **exercise** to increase strength, flexibility and endurance, **thought techniques** are used to decrease distress and increase positive self-talk. **Relaxation techniques** are used to decrease tension and stress. They use **pain medication** appropriately and in combination with the other self-management strategies (so this is not their only coping strategy).
The fifth technique is the use of **Activity pacing techniques** which is the strategy we are going to discuss today. When used as part of a self-management regime, Activity pacing techniques have been shown to be a powerful tool in helping to reduce pain flare-ups and prolonged rest and increase endurance and participation in daily activities.

Lets look first at why we learn Activity Pacing

Activity pacing is an important component of a self-management approach to pain. Often people with chronic pain attempt to perform activities (such as mowing, cleaning the carport, doing the housework or completing employment requirements, etc) until severe pain forces them to stop. This activity level is usually followed by extended period of rest, increased muscle tension, fear, and loss of confidence.

When you constantly push beyond what you are physically capable of and you maintain very high pain intensity levels for a period of time, you are probably experiencing an increase in inflammation, muscle spasm and nerve irritation. If you do this on a daily basis, your body and mind are always in a state of exhaustion. Pain researchers have found that engaging in an activity routine where physically demanding activities are regularly alternated with less physically demanding activities, can help to break the cycle of over-exertion followed by lengthy recovery time (boom-bust!).

Learning how to pace your activities will gradually increase your activity level, increase your endurance and assist you to participate in life more fully.

* **Ask participants** to provide examples of times where they have overdone an activity then 'paid' for it the next day (or few days) with increased pain and extended rest. What happened, how did they feel physically, how did they feel emotionally, what was the outcome?

What is Activity Pacing?

Activity pacing is a specific method to help you manage chronic pain by structuring and alternating your daily activities. Activity pacing works by using specific techniques involving setting small achievable goals for engaging in moderate activity followed by limited rest. This cycle is repeated through each

day, and with practice, people find that their pain levels decrease, activity levels are gradually increased and rest periods decrease.

What are the benefits of Activity Pacing? (write up on the white board and ask for any other benefits from participants)

Avoidance of extreme pain

Fewer and shorter pain episodes

Increase in productivity

Less tension and fatigue

Activity pacing techniques apply to every extended activity that you would normally undertake in the course of a normal day or a normal week. These are activities that take more than a few minutes to perform and which cause you increased pain. Examples include driving, standing, gardening, washing up, sweeping / vacuuming, walking, sitting etc.

Generate a list of extended daily activities and write up on the white board. Break down broader activities such as gardening and housework into sub-activities (e.g. watering, weeding).

What we are going to do now is learn how to rate the intensity of our pain and start to become aware of changes in intensity as we perform activities.

Draw Numeric Rating Scale on white board (1-10)

Pain is a very subjective experience, that is, no-one else knows exactly what your pain feels like, or how intense the pain feels for you. What we *do* know from research findings is that different people experience pain differently and this is affected by a number of factors. For this reason, you will be learning to rate your own pain intensity and become accustomed to automatically monitoring changes in the rating as you go about your daily activities.

Ask participants to take a moment to consider and mark on the handout, their worst pain rating

How would you rate your pain when it is at it's worst?

How would you rate your pain when it is at it's least?

How would you rate your pain on average?

How would you rate your pain right now?

Now that we know a bit more about activity pacing and how to rate our pain, lets have a short break before we start to discuss how to actually start using this technique.

Coffee/Tea break

Before the break we looked at rating our pain, we looked at out average pain rating, our highest pain rating our lowest pain rating and our pain right now. How you would rate your pain right now, is known as your **baseline** rating, that is, it is the intensity of your pain **before** you start a particular activity.

Write up BASELINE on the board

The idea of Activity Pacing is that you rate your pain before you start an activity, then change your activity when your pain goes up 2 points from baseline, to a less demanding activity until your pain goes **back to baseline**. If you continue to do this throughout the day without pushing yourself to the point of exhaustion or fatigue, your body will have the chance to recuperate effectively and your pain intensity should be no worse at the end of the day than at the beginning.

So then, your **uptime** is the length of time you can do an activity before your pain goes up 2 points from your baseline rating

Write UPTIME on the board

Your downtime **is the** length of time **it takes after you change activity, for your pain to return to the baseline rating.**

Write DOWNTIME on the board The goal of activity pacing is to **increase the uptime** and **decrease the downtime** for each activity.

Lets look now at the types of activities that would be suitable for your downtime – these are less physically demanding activities but do not generally include sleeping, resting or watching TV. Downtime activities are intended to continue productivity rather than stop productivity (**Write up on the board)**

Making a phone call

Organising the bills (writing cheques etc)

Write a letter

Do a relaxation exercise

Do some stretches

Ask for other example of downtime activities and write on the board

Steps in Activity Pacing (you will need a watch or timer, a pen and an Activity Pacing Worksheet) **Put up OHT 5**

1.Chose the activity

2. Rate and record your **baseline** pain level on the worksheet

3. Commence the activity and time how long it takes for your pain level to go up 2 points from baseline (**this is your uptime)**

4. Stop this activity and record your uptime on the worksheet

5. Change to a less physically demanding activity and time how long it takes for your pain rating to go back to baseline (**this is your downtime)**

6. Stop this activity and record your downtime on the worksheet

7. Repeat this procedure for each activity

Lets now practice our rating and timing with an activity that we can do in the building. You can choose from walking, sitting, standing, exercising etc. any extended activity that you know would raise your baseline pain rating up 2 points within a relatively short period of time, (Say, 10 minutes). For learning purposes here, during our downtime, we will do a less physically demanding activity such as lying, sitting etc. (though when you are at home you would be reading, writing a letter, doing stretches or a relaxation exercise etc). So using the steps we just discussed, choose an up-time activity and a down-time activity and complete the worksheet. When you have completed the activity, please come back to the room.

Discuss the experience with participants, ask for volunteers to present their worksheet.

Once you know your uptime and downtime for each activity, have them written somewhere prominent and set a timer each time you commence an activity. Review your worksheet every week to determine your progress and observe longer uptimes and shorter downtimes.

Lets look now at what might be some barriers to you using activity pacing
(ask for examples and write on board)
Can't do it at work
People will think I'm lazy
You have to finish every job you start
I don't like to ask for help
I'll never get anything done

Brainstorm solutions with group and ask person to choose which solution option they will try.

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Common Pacing problems

If you find you need hours or a whole day of downtime to recover after an activity you have probably not stopped your uptime activity soon enough and just need to practice responding earlier to increases in tightness, fatigue and pain. If this is happening to you, change to a downtime activity after your pain goes up 1 point from your baseline rating (rather than 2 points) until you get the hang of recognising and responding to your body's signals.

If you find that there is a delay in pain increases so that for example, you do 2hrs of mowing without any increase in pain at the time, but the next day you ache all over and need to rest for most of the day, you are probably experiencing the effects of de-conditioning.

De-conditioning is a combination of decreased muscle strength and endurance that occurs as a result of not having a regular exercise routine. This is a common problem with people who have chronic pain. A regular exercise of conditioning program may be of great benefit in these circumstances, as it will allow you to increase your endurance and limit fatigue. These types of programs may include walking, using a stationary bike or treadmill, swimming or practicing Tai Chi or yoga. The choice of exercise would depend on where you are having pain and what your physical limitations are.

If you are interested in learning more about exercise for chronic pain please see me after the workshop and I can register you for an exercise workshop with the research physiotherapist or provide you with information on where you can access the appropriate service for your individual needs.

Now, take out and complete the questions on the handout we have given you. Ask for a volunteer to share and discuss

So, using your understanding of activity pacing and your pacing worksheet you should be able to effectively structure your daily activities so that your productivity and endurance increases, and your rest and inactivity periods decrease. Using the spare pacing worksheets, time your uptime and downtime once a week to determine your progress. Your uptime for each activity should increase and your downtime should decrease. Remember, even if you only change by one or two minutes this is an achievement.

Reward yourself! ...Gradually, over a period of time you will be able to more fully participate in all activities.

This brings us to the end of our Activity pacing workshop. We would like to conclude by moving around the room and asking what each of you feel you got out of the workshop and how you think it may be helpful in managing your pain.

If you would like to know more about pacing for managing chronic pain, please see one of us and we will try to provide you with some additional information about where you can access services to best suit your individual needs.

Thank you all for participating in the workshop and for your valued input in our research. Before you leave today I would like to ask you to complete the questionnaire we are about to hand you (RASMAP-Q). You will also be asked to complete an anonymous written evaluation form. All of your comments will be helpful for us in continuing to develop the workshop and offer it on a regular basis. (Hand out evaluation sheets).

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Acknowledgement

The techniques taught in this workshop are based on the strategies described in *Manage your Pain Before it Manages You*, by Margaret Caudill (1995).

Appendix P

RELAXATION WORKSHOP

1. Welcome participants and thank for attending
2. Introduce self and co-facilitator
3. Participants to introduce themselves and say what they hope to achieve from attending the workshop
4. Workshop overview and ground rules **(OHT1 & 2)** Housekeeping

(Psychologist)
Please feel free to get up, stretch, walk around or change position while we are talking. In your folder, you will find a handout of all the overheads and material we will cover today so that you can review them at home and there is no need to take notes.

Before we begin today, I would like to discuss the rationale for adopting a self-management approach to your pain. Most of you here today have experienced your pain for considerable lengths of time. Many of you have had one or more surgeries and most of you will have had multiple medical examinations, tests and treatment. Yet still you find that you have persisting pain and the medical profession may be telling you they have no further treatments they can offer you.

So, where does this leave you? In the absence of any effective treatment, it starts to become apparent that you are going to have to find ways to manage the pain yourself and try to minimise the impact that it has on your life.

This is what is known as a **self-management approach**, where you take primary responsibility for actively managing your pain. When health care practitioners *are*

involved, their role is primarily that of teacher, guide or resource person whose main purpose is to encourage or assist you in learning and making better use of pain self-management skills.

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Chronic pain is a complex problem. One that is affected by lots of different factors **(Put up OHT 3)**. This is what we call the multi-dimensional model of pain and it illustrates some of the different factors that can affect how we experience pain. **Explain diagram in detail here**.

Because pain is such a complex problem, we need to develop a range of strategies or tools to help us manage it. From research conducted on chronic pain all over the world, we now know, that those people who manage their pain better and have less associated disability and distress are usually using the five main strategies illustrated on this diagram **(put up OHT4)** So, people that manage their pain better usually use **exercise** to increase strength, flexibility and endurance, thought techniques are used to decrease distress and increase positive self-talk, **activity pacing** to increase endurance and decrease pain flare-ups and prolonged rest. They use **pain medication** appropriately and in combination with the other self-management strategies (so this is not their only coping strategy). The fifth technique is the use of **relaxation techniques** and this is the strategy we are going to discuss today. When used as part of a self-management regime, relaxation techniques have been shown to be a powerful tool in helping to reduce stress and tension associated with chronic pain.

Appendix P

Lets begin by looking at why we use relaxation training to help manage chronic pain (Put up OHT 5)

Relaxation training is often incorporated into pain management treatments because relaxation methods can,

* help to break the link between stressful events and pain
* reduce muscle spasm and tension which leads to pain
* alter abnormal patterns of activity that lead to pain
* reduce emotional responses during pain episodes
* acts as a powerful distraction technique
* can provide some 'time out' from the pain

Being able to achieve a state of deep relaxation is a very pleasant experience. In addition to reducing pain and stiffness, research has demonstrated that relaxation has numerous other benefits including feeling a greater degree of self-control, less difficulty falling asleep, decreased blood pressure, less irritability and a more positive outlook on life.
Unlike medication, there are no negative side-effects with this form of treatment.

What is relaxation training?

Relaxation training involves learning how to achieve a mental and physical state of tranquility in a very brief period of time and how to incorporate those skills into your daily life to help manage your pain. Relaxation therapy involves learning a very systematic set of procedures to reduce tension and pain. Relaxation helps you to manage pain by recognising signs of tension in your body and reducing them before they reach painful levels. The ability to recognise how your body reacts to stress can be a powerful skill. Most people are more aware of the weather, the time of day or their bank balance than they are of the tension in their own bodies, or their personal stress response.

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For this reason, the first activity we are going to do today is an **awareness exercise** to help you to become conscious of areas of tension in your body. This activity helps to demonstrate **internal** versus **external** awareness.

Sit comfortably where you are, you can close your eyes if it helps you to concentrate at first or keep them open if you prefer.

1. First focus your attention on the outside world. In your mind, start with sentences that start with " I am aware of," for example, I am aware of the sounds of cars outside on the road, the breeze blowing, the blue carpet, the smell of coffee percolating.
2. After you have become aware of everything going on around you, shift your focus of attention to your body and your physical sensations, your internal world. For example, I am aware of feeling warm, I am aware of my stomach gurgling, tension in my neck, a tickle in my nose, a cramp in my toe.
3. Now, shuttle back and forth between your external and internal awareness. For example, I am aware of the chair pushing into my buttocks, the buzz of the air-conditioner, my shoulders hunching up, someone else coughing, a frown on my forehead, people talking. Take a moment now to continue to practice alternating between internal and external awareness. (2-3 minutes).
4. In your own time, bring your awareness back to the room and to this workshop.
5. Used at free moments during the day, this exercise allows you to separate and appreciate the real difference between your external and internal worlds. Having this ability will help you to quickly recognise feelings of stress and tension.

The next activity focuses on your internal world and is called body scanning

Once again, sit comfortably. Close your eyes. Starting with your toes and slowly moving your awareness up your body, ask yourself, "where am I tense?" Wherever you discover a tense area, exaggerate it slightly so you can become aware of it. Become aware of the tense muscles in your body. Gradually move your awareness up and around your whole body, including your face, forehead, and jaw. Be aware of the areas of tension and focus for a moment on how those tense areas feel. Now, in your own time, open your eyes, and become aware again of the external world around you.

On the handout in your folder, shade the areas of tension on both the front and back, body diagrams. The aim of this exercise is to increase your awareness of the location and sensation of tension in your body. Put the diagram to the side now but remain aware of the areas of tension you have identified in your body.

Breathing

Before we move into some of the longer relaxation techniques, we are going to take some time now to focus on our breathing. Poor breathing habits contribute to anxiety, panic attacks, muscle tension, fatigues and headaches. As you learn to be aware of your breathing, and practice slowing and normalising your breaths, your mind will quiet and your body will relax. Breathing awareness and good breathing habits will enhance your physical and psychological well-being, whether you practice them alone or in combination with any of the other techniques you will learn today.

(Put up OHT 6)

There are two types of breathing patterns. One is chest breathing and the other is belly (or diaphragmatic) breathing. Chest breathing is often associated with anxiety or other emotional distress. It is also associated with people who lead stressful lives. Chest breathing is shallow

and often irregular and rapid. In this type of breathing, when air is inhaled, the chest expands and the shoulders rise to take in the air.

Diaphragmatic breathing is the natural breathing of newborn babies and sleeping adults. Air is drawn deep into the lungs and exhaled as the diaphragm expands and contracts. This type of breathing is even and non-constricting. By becoming more aware of your own breathing patterns and shifting to more diaphragmatic breathing, you can reduce muscle tension and associated pain. Diaphragmatic breathing is the easiest and quickest way of eliciting the relaxation response.

Breathing Awareness

Lets take some time now to simply become aware of our own breathing patterns and then practice being able to comfortably use diaphragmatic breathing.

1. Close your eyes. Put your right hand on your stomach near your waistline and put your left hand on your chest, right in the centre.
2. Without trying to change your breathing, simply notice **how** you are breathing. Which hand rises the most as you inhale, the hand on your chest or the hand on your belly?

If your stomach doesn't move or moves less than your chest, then you are **chest breathing**. If your stomach expands when you inhale, you are **diaphragmatic breathing.**

Ask if all the participants are able to identify the type of breathing pattern they are using. Spend a few minutes assisting with any difficulties. I someone is still having difficulty, have an assistant teach them individually in the break.

Now that we are aware of our breathing pattern, we are going to do a deep breathing activity using diaphragmatic breathing. This exercise can also be used as a 'mini-relaxation"

Once again, sit comfortably. Close your eyes. First just focus on breathing in through your nose and out through your mouth, slow deep breaths.....in through the nose and out through the mouth. Once you feel comfortable in this pattern. Shift your focus to your stomach..... as you inhale, imagine a balloon gently inflating in your belly.....as you exhale, imagine the balloon gently deflating. Spend the next few moments just getting used to how it feels to breath like this, slowly, in through the nose..... and out through the mouth.....(2-3 minutes)

When you are ready open your eyes and bring your focus back to the workshop and the external world around you.

So now we have learned why we use relaxation to help manage chronic pain, we have learned to locate and recognise tension in our bodies and we have learned a "mini-relaxtion" technique called diaphragmatic breathing. Before we go on to learn some of the longer techniques, lets take a short break for 15 minutes to have a stretch or a walk and help ourselves to a drink

Coffee/Tea break (15-20mins)

Before we go on to learn some relaxation techniques, we are first going to discuss preparing for relaxation **(put up OHT 7)** You have a copy of these guidelines in your folder and you may find it helpful to check the list the first few times you practice.

Go briefly through the list

Progressive muscle relaxation

The first longer relaxation exercise we are going to learn today is called progressive muscle relaxation. Most people do not realise which of their muscles are chronically tense. This relaxation technique provides a way of identifying

particular muscles and muscle groups and distinguishing between the sensations of tension and deep relaxation. Excellent results have been found with this technique in the treatment of muscular tension, chronic pain, anxiety, sleeplessness, fatigue, high blood pressure and muscle spasms. During this practice we will be tensing then relaxing each of the major muscles in the body. If you are experiencing pain in any particular muscle group, leave it relaxed, focus on your breathing, and wait for the next instruction.

Dim the lights if possible. Read the following script or use Tape 1

PROGRESSIVE MUSCLE RELAXATION

Take up your relaxation position, either sitting or lying. Close your eyes.....Take your attention to your right hand. Start by clenching your right fist, make it tighter and tighter, studying the tension as you do so. Keep it clenched tight and notice the tension in your fist, hand and forearm..... Now relax..... Feel the looseness in your right hand, and notice the contrast with the feeling of tension. Repeat this procedure with your right fist again, noticing as you relax, that this feeling is the opposite of tension.....now relax and feel the difference..... Now focus your attention on your left hand, clench your fist tighter and tighter, hold that tightness and be aware of the tension in your fist, hand and forearm. Now relax.....feel the tension flow out of your fist and hand and arm..... Now clench both fists, tighter and tighter..... feel the tension..... and relax. Now bend your elbows and tense your biceps (the muscles at the top of your arms)..... Tense them as hard as you can and observe the feeling of tightness.....Now, relax, and straighten out your arms. Let the relaxation develop and feel the difference..... and repeat, bend your elbows and tighten your biceps, hold.... feel the tension..... and relax.....

Turn your attention now to your head..... wrinkle your forehead as tight as you can.....now relax and smooth it out... let yourself imagine your entire forehead

and scalp becoming smooth and at rest. Now frown, and notice the strain spreading through your forehead..... Now let go..... allow your brow to become smooth again. Close your eyes really tight now..... look for the tension..... Relax your eyes..... Let them remain closed..... gently and comfortably. Now clench your jaw, bite hard..... notice the tension throughout your jaw..... And relax your jaw. When your jaw is relaxed, your lips will be slightly parted. Take a moment to really appreciate the difference between tension and relaxation.....Press your head back as far as it can comfortably go and observe the tension in your neck..... roll your head to the right and hold.... and notice the tension shifting..... roll your head now to the left.. and hold,..... feel the tension. Straighten your head now and bring it forward. Press your chin against your chest... feel the tension in your throat.... the back of your neck... and relax, allowing your head to return to a comfortable position..... let the relaxation deepen.....Now shrug your shoulders.... keep the tension as you hunch your head down between your shoulders. .... and relax your shoulders... drop them back and down, deeper and deeper.....feel the relaxation spreading through your neck, throat and shoulders, pure relaxation..... deeper and deeper. Give your entire body a chance to relax. Feel the comfort and heaviness. Now breathe in and fill your lungs completely. Hold your breath... notice the tension... now exhale.....let your chest become loose, let the air hiss out..... continue relaxing, letting your breath come freely and gently. Repeat this several times, noticing the tension draining from your body as you exhale.....Next, take your attention to your stomach...tighten your stomach muscles and hold.... note the tension... and relax..... place your hand on your stomach, ...breathe deeply into your stomach pushing your hand up... hold .... And relax feel the contrast of relaxation as the air rushes out. Now, if you can, slightly arch your back, without straining..... keep the rest of your body as relaxed as possible... feel the tension in your lower back.....now relax.....deeper and deeper.

Take your attention now to your buttocks.... Tighten your buttocks and thighs. Flex your thighs by pressing down your heels as hard as you can..... now relax..... and feel the difference. Now curl your toes downwards, making your calves tense... study the tension.... And relax... now bend your toes towards your face ... and hold.... feel the tension in your shins..... and release....Feel the heaviness throughout your lower body as the relaxation deepens..... relax your feet.... ankles..... calves..... shins..... knees.....thighs and buttocks.....Now let the relaxation spread to your stomach....lower back...and chest.... Let go... more and more....experience the relaxation deepening in your shoulders, arms and hands..... deeper and deeper. Notice the feeling of looseness and relaxation in your neck....jaw... and face. Take a moment now to enjoy the feeling of deep relaxation throughout your whole body.....When you are ready, count to three, bring your attention back to the here and now, back to this workshop, and open your eyes, feeling fully alert and refreshed.

Allow the participants time to re-orient themselves. Put the lights back on and check around the room how each person felt and if any difficulties had been experienced. Take some time to discuss individual experiences.

Self-Hypnosis

The next technique we are going to learn today is called self-hypnosis. This type of technique is taught in pain management centres all over the world and has been shown to be effective in treating many stress-related and physical illnesses, including chronic pain, headaches, muscle spasms and anxiety. In self-hypnosis, you are aware of the experience throughout and no-one can make you do anything against your will.

You have probably experienced self-hypnosis without realising it. Remember the last time you took a long drive and got home without remembering any of the turns

on the road or the scenery you passed, not actually remembering the trip or parts of it, or times you may have become completely immersed in a book or a movie and lost all track of time. Even staring out of a window and becoming lost in a daydream is an example of a light hypnotic trance. You can train yourself to initiate and deepen these trances and use them therapeutically to help manage your pain.

We are going to practice a self-hypnosis technique now, then discuss your experiences at the end of it. So find yourself a comfortable position again and close your eyes.

Dim the lights. Read the following script or play Tape 2

Take a nice deep breath and begin to relax..... Just think about relaxing every muscle in your body from the top of your head to the tips of your toes.... Just begin to relax. And begin to notice how very comfortable your body is beginning to feel..... You are supported so you can just let go and relax....., inhale and exhale..... Notice your breathing..... notice the rhythm of your breathing and relax your breathing for a moment.....Be aware of normal sounds around you. These sounds are unimportant, discard them.....whatever you hear from now on will only help to relax you. And as you exhale, release any tension, any stress from any part of your body, mind and thought; just let that stress go. .....Just feel any stressful thoughts rushing through your mind, feel them begin to wind down, wind down, wind down and relax..... And begin with letting all the muscles in your face relax, especially your jaw.....let your teeth part just a little bit and relax this area..... This is a place where tension and stress gather, so be sure to relax your jaw and feel that relaxation go into your temples, and relax the muscles in your temples and as you think about relaxing these muscles, they will relax..... Feel them relax, and as you relax you'll be able to just drift and float into a deeper and deeper level of total relaxation..... You will continue to relax and now let all of the muscles in your forehead relax, feel those

muscles become smooth, smooth and relaxed, and rest your eyes..... Just imagine your eyelids feeling so comfortable, so heavy, so heavy, so relaxed .....and now let all of the muscles in the back of your neck and shoulders relax, feel a heavy, heavy weight being lifted off your shoulders and you feel relieved, lighter, and more relaxed..... And all of the muscles in the back of your neck and of your neck and shoulders relax,.... and feel that soothing relaxation go down your back, down, down, down, to the lower part of your back, and those muscles let go..... and with every breath you inhale, just feel your body drifting, floating, down deeper, down deeper, down deeper into total relaxation..... Let your muscles go,..... relaxing more and more. .....Let all of the muscles in your shoulders running down your arms to your fingertips relax..... And let your arms feel so heavy, so heavy, so heavy, so comfortable, so relaxed. .....You may have tingling in your fingertips. That's perfectly fine..... You may have warmth in the palms of your hands, and that's fine..... And you may find that you can barely lift your arms, they are so relaxed, they are so heavy, so heavy, so relaxed..... And now you inhale once again and relax your chest muscles,..... and now as you exhale, feel your stomach muscles relax..... As you exhale, relax all of the muscles in your stomach, ...let them go, ...and all of the muscles in your legs,.... feel them relax,..... and all of the muscles in your legs, so completely relaxed, right to the tips of your toes..... Notice how very comfortable your body feels, just drifting and floating, deeper, deeper, deeper, relaxed..... And as you are relaxing deeper and deeper, imagine a beautiful staircase, there are ten steps and the steps lead you to a special and peaceful and beautiful place..... In a moment you can begin to imagine taking a safe and gentle and easy step down, down, down on the staircase, leading you to a very peaceful, very special place for you. It may be a house you lived in as a child..... your bed.....a beautiful beach...or a favourite picnic spot ....or it may be a place in your imagination..... a huge fluffy cloud ....or a place you imagined whilst reading a book. You can move the

mountains to the beach.... or create a totally bug-free rainforest scene... a perfect peaceful and comfortable place for you. In a moment, I'm going to count backwards from 10 to 1 and you can imagine taking the steps down, and as you take each step down, feel your body relax more and more..... feel it just drift down, down each step, and relax even deeper.....10,..relax,even deeper,.....nine...eight...seven....six...five...four three...two...one, deeper, deeper, de eper relaxed, and imagine now you are in your special peaceful place..... you can see it and perhaps even feel it. This is the most peaceful place in the world for you..... Imagine yourself there and feel that sense of peace flow through you and that sense of well being.....Now focus on the part of your body that causes you pain or discomfort..... recognise the pain and relax all the muscles around that area,..... completely relaxed all around the area..... Feel those muscles relax and imagine the inflamed, sore area begin to reduce, cool and heal..... The inflamed sore area will reduce, cool, heal and feel comfortable, very comfortable..... Now feel the discomfort drain away out of the area and right out of your body..... Feel it drain, drain away....., now just imagine a warm sensation, like warm water flowing over the area and away..... The warm water flows over that area, washing away discomfort, washing away discomfort, completely away, and now soothe and relax this area, soothe and relax this area and now you can begin to feel relief, relaxation and mobility again..... Your body feels healed, relaxed and mobile..... From now on, your subconscious will keep your body relaxed and stress-free.....

Allow these positive feelings to grow stronger and stronger, feeling at peace and with a sense of well-being..... and each and every time that you choose to do this kind of relaxation, you will be able to relax, deeper and deeper. Regardless of the stress and tension that may surround your life, you may now remain more at peace, more calm, more relaxed ...and allow the stress and tension to bounce off

and away from you, just bounce off and away from you..... Enjoy these positive feelings and keep them with you long after this session is finished, for the rest of this day, this evening and tomorrow.....Enjoy your special place for another moment and then I will begin to count from 1 to 10, and as I count from 1 to 10 you can begin coming back to full consciousness, and will come back feeling refreshed as if you have had a long rest. Come back feeling alert and relaxed. Begin to come back now. One...two...coming up, three.....four, five...six...seven...eight...nine....begin to open your eyes, and ten, open your eyes and come all the way back feeling great.

Allow the participants to re-orient to the room, put the lights on and discuss the experience and any difficulties. Ask participants for comments and experiences.

Recording Relaxation Practice

When you leave today, we will give you a tape to use at home for practice. You will see in your folder that you have four relaxation recording sheets on for each of the next four weeks to help you get into the routine of practice and to let you observe your progress. On each day, you record the date, time started, time stopped, place, position, degree of relaxation at the start where 0= very relaxed and 10=very tense, degree of pain at the start where 0= least your pain has ever been and 10=the worst your pain has ever been. You then rate your degree of relaxation at the end and degree of pain at the end. There is also a space for you to record which type of relaxation exercise you used and any barriers to practicing your relaxation.

This brings us to the end of our relaxation workshop. We would like to conclude by moving around the room and asking what each of you feel you got out of the workshop and how you think it may be helpful in managing your pain.

Ask each participant which relaxation practice they think they would like to use and why.

If you would like to know more about relaxation for managing chronic pain, please see one of us and we will try to provide you with some additional information about where you can access services to best suit your individual needs.

Thank you all for participating in the workshop and for your valued input in our research. Before you leave today I would like to ask you to complete the questionnaire we are about to hand you (RASMAP-Q). You will also be asked to complete an anonymous written evaluation form. Any comments will be most helpful for us in continuing to develop the workshop and offer it on a regular basis. (Hand out evaluation sheets).

As you are aware, we will be contacting you periodically throughout the next 12 months by mail and telephone. The first follow-up contact will be in four weeks where we will ask you to complete a brief questionnaire. The next contact will be six months after that. So, we look forward to speaking with you soon and until then, encourage you to regularly practice your relaxation techniques. Thank you again.

Appendix Q

COGNITIVE STRATGIES (THOUGHT TECHNIQUES) WORKSHOP

1. Welcome participants and thank for attending
2. Introduce self and co-facilitator
3. Participants to introduce themselves and say what they hope to achieve from attending the workshop
4. Provide an overview of workshop content and ground rules **(OHT 1 & 2)** House-keeping (tea-room, toilets, smoking, emergency exits) After hours numbers listed on workshop overview sheet

Please feel free to get up, stretch, walk around or change position while we are talking. In your folder, you will find a handout of all the overheads and material we will cover today so that you can review them at home and there is no need to take notes

Before we begin today, I would like to discuss the rationale for adopting a self-management approach to your pain. Most of you here today have experienced your pain for considerable lengths of time. Many of you have had one or more surgeries and most of you will have had multiple medical examinations, tests and treatment.

Yet still you find that you have persisting pain and the medical profession may be telling you they have no further treatments they can offer you.

So, where does this leave you? In the absence of any effective treatment, it starts to become apparent that you are going to have to find ways of managing the pain yourself and try to minimise the impact that it has on your life. This is what is known as a **self-management approach**, where you take primary responsibility for actively managing your pain. When health care practitioners *are* involved, their role is primarily that of teacher, guide or resource person whose main purpose is

to encourage or assist you in learning and making better use of pain self-management skills.

All of you are likely to be already using a number of coping strategies. Some such as exercise or pacing yourself may be helpful, where others, such as long periods of inactivity or over-reliance on pain-killers and anti-inflammatories may not be helpful. The aim of these workshops is to *increase* the number of helpful strategies you have to manage your pain.

Chronic pain is a complex problem. One that is affected by lots of different factors **(OHT 3)**. This is what we call the multi-dimensional model of pain and it illustrates some of the different factors that can affect how we experience pain. **Explain here**

Because pain is such a complex problem, we need to develop a range of strategies or tools to help us manage it. From research conducted on chronic pain all over the world, we now know, that those people who manage their pain better and have less associated disability and distress, are usually using the five main strategies illustrated on this diagram **(put up OHT 4)** So, people that manage their pain better usually use **exercise** to increase strength, flexibility and endurance, **relaxation** exercises to decrease tension and stress, **activity pacing** to increase endurance and decrease pain flare-ups and prolonged rest. They use **pain medication** such as panadene and panadene forte infrequently (if at all). If they are using medication it is in combination with the other self-management strategies (so this is not their only coping strategy). The fifth technique is the use of **thought techniques** and this is the strategy we are going to discuss today. When used as part of a self-management regime, thought techniques have been shown to be a powerful tool in helping to reduce distress and disability associated with chronic pain.

Appendix Q

Why do we use thought techniques to manage chronic pain?

Research into the physiology of pain has demonstrated that thoughts and emotions can exert a powerful influence on the way we experience pain. Negative thoughts and emotions such as depression, anxiety and anger may contribute to intensified levels of pain, whereas feelings of happiness and calm can decrease the intensity of pain. GATE CONTROL THEORY (OHT 5) **discuss factors which open and close the gate.**

What does learning about thought techniques involve?

A healthy approach to managing chronic pain needs to include an exploration of the relationships of thoughts and feelings. The mind (the source of thoughts and feelings gives meaning to experiences including pain. A self-defeated, hopeless frame of mind will most likely contribute to the interpretation of pain signals in a negative way, increasing distress and despair. As we discussed in the explanation of gate control theory, the mind can be seen as a filter through which the pain signal passes and is either dampened or magnified in intensity. You may have had the experience of your pain feeling less intense on a beautiful day, when someone has said "I love you" and you received a letter from a friend you've been missing, than it does on a miserable rainy day when no-one has called or written and you have nothing to do.

One of the most powerful tools for changing the way you think is to monitor what you say to yourself as you respond to internal and external events – this is what we call your "self-talk". This approach is based on the idea that the way you feel (or your moods and emotions) are created by what you are thinking or saying to yourself. Research has shown that by altering the way you talk to yourself (your self-talk) you can change the way you feel. What I would like to do at this point, is to show you an illustration of how what we think, affects the way we feel **(OHT 6)** discuss cognitive model.

Here are some more examples of negative thoughts related to pain, that can lead to negative feelings (OHT 7). Automatic thoughts happen very quickly, so quickly in fact, you may not even be aware that they have occurred. The first thing you are aware of is that you feel a certain way. But remember, there is always a thought before a feeling. The trick here is to catch or identify the thought and then set about changing or re-framing it. Lets look at some examples of how one event can trigger a completely different thought in two different people and how then the two different people will experience different feelings or emotions about the event. (Use boss in corridor example , use broken down bus example). Now lets look at an example of how ONE person can have two different thoughts (use a pain example). So what this example illustrates is that once you identify a negative automatic thought, it is possible to change that thought or to choose a more helpful thought. Lets go now to a short break before we come back and discuss this in more detail.

Tea/ Coffee break

Thinking Mistakes.

To recap on what we were discussing before the break, please take out the worksheet headed 'Monitoring your Automatic Thoughts' **(OHT 8).**

Go ahead and complete the first 2 lines on the worksheet. The <u>situation</u> is that you wake up with increased pain on a day you had planned to visit a friend. Write down what you would find yourself saying (this is your automatic thought) and then write down how you would feel emotionally (this is your emotional response).

Ask for a couple of examples from volunteers

OK, lets put this aside for now and come back to it after we learn the skills to complete the exercise.

Appendix Q

Before the break we were discussing negative automatic thoughts, these are sometimes also sometimes called thinking mistakes. Most of us engage to some degree, in thinking mistakes. These are ways of thinking that lead to negative emotional states. Research has demonstrated that many people who are having difficulty in managing chronic pain tend to use at least a few of the following types of thinking mistakes. **(OHT 9)**

Have a look now at the handout in your folder. We are going to go through each of these thinking mistakes and look at generating some examples. Please feel free to contribute your own experience and examples.

1. Should statements. Shoulds are usually a put down, implying that you were weak, stupid, or foolish. Eg. I should be able to do all the gardening. i should be able to get back to work. Or, my partner should show me sympathy and support whenever I am in pain.

2. Black or white thinking- everything is black or white, good or bad. There is no gray area in the middle for improvement. People with chronic pain are often tempted to think like this eg. If this treatment/program doesn't work then I'm completely useless, my life will be over. Or, You try one session of using thought techniques and find it challenging so you think I can't understand this, I'll never get it. Or, if I can't do the job perfectly (and as fast as I used to do it) I can't do it at all. Cue words are, all, every, none, always, everybody and no-body. This type of thinking tends to limit your options and negate any positive information that supports your efforts to change

3.Blaming. You make someone or something else responsible for your pain. Eg. My lousy boss is to blame for my accident at work, or my family demands so much from me, I can't afford the time or money to take care of this pain. Alternatively, you may focus al the blame on yourself. (eg. This is all my fault, I'm such a hopeless person).

4.Catastrophising. People who engage in this type of thinking react to life situations by imagining the worst possible outcome then reacting to their fear-provoking scenario as though it will definitely come true. This type of thinking is characterised by "what if" statements. What if I never get any better, what if my partner leaves me, what if I am unable to work

5. Mental filtering. People who use this style of negative thinking, tend to filter out any potentially positive aspects of a situation. This type of thinking makes things worse than they are by focusing on the pain and nothing else. This type of thinking can also be very selective. You may choose to remember only those things which support your angry feelings, thus pulling your angry memories and magnifying them to the exclusion of everything else. For example feeling so angry about the doctor saying there was no more medical treatment available that you mentally filter out the doctors advice that you could actively and effectively self-manage your pain by using the exercises he gave you and a number of other strategies.

6. Emotional Reasoning. In this type of negative thinking, you let your feelings rule your reasoning ability and assume that what you feel must be true. For example If you're frightened that the pain will never stop, you believe it will never stop. If you feel guilty about needing time to heal, then taking the time must be wrong and needing time must be your fault. The strength of these feelings creates the conviction. You may find that things may seem different as you rationalise these thoughts and the emotional storm dies down.

7. Control Fallacies. Some people with chronic pain see themselves as being "externally controlled" by others, particularly doctors or insurers. They absolve themselves of any responsibility to manage their pain and by assigning someone else total power over their fate they become helpless "victims " of both their pain and of the system. Other people with chronic pain see themselves as "internally controlled" and believe that they have complete responsibility for everything and everyone.

For example; "the family will fall apart if I don't recover quickly from this mess". These people assume all of the responsibility rather than sharing some of the load.

Now that we have identified some common thinking mistakes, lets take some time to examine some of your own individual negative automatic thoughts in more detail. Lets go back to your worksheet and see if you can recognise any of the thinking mistakes in your negative automatic thought recorded here.

Ask for examples from volunteers, ask if anyone is having difficulties identifying the thinking mistake and brainstorm with the group

Ok, so now we have noticed a negative automatic thought and identified a thinking mistake, lets look at how we can challenge the thought so that it is more accurate and also more helpful. This is called re-framing the thought.

The first step in reframing is to **challenge the thought**. One way of doing this is to **look for evidence** that the thought is accurate. For example if the event is that I am having difficulty keeping up with the gardening,
My thought is "This is hopeless, I can't do *anything* any more", and the resultant feeling is depressed and frustrated, then I need to say well, what is the evidence for that negative thought. Sure, I can't do 4 hrs of mowing in one go anymore, but I can still water the lawn, pot a few plants, pull out the weeds and even do the mowing over a few days. So then actually, there is no evidence that I can't do *anything* anymore. In fact I can still do *everything*, it just takes a bit longer **and that is OK!**

So now my reframed thought is " I'm not as quick and able as I used to be but I can still get the job done in my own time" and the resultant feeling is acceptance and reduced frustration.

Also discuss, searching for evidence <u>against</u> the thought/belief; using alternative explanations; and behavioural experiments in relation to reframing negative automatic thoughts

So now go back to your own examples on your worksheets. Would someone like to offer another example for us to work through as a group then you can go on and do your individual reframes.

Use and work through an example

Ok now do your reframe on your own example and also complete the last line, that is what is the feeling or emotion now that you have looked at the thought in another way or re-framed it?

So now we have followed the whole sequence from looking at an activating event, becoming aware of an automatic negative thought that results in a certain feeling identifying the thinking mistake, challenging the thought and re-framing the thought then experiencing a different feeling. You will find in your folder a thought monitoring worksheet for you to practice with at home.

This brings us to the end of our thought techniques workshop. This has been designed to give you an idea (or a taste) of how powerful a tool the mind can be in helping you manage your pain. If you would like to know more about using thought techniques for managing chronic pain, please see one of us and we will try to provide you with some additional information about where you can access services to best suit your individual needs.

Thank you all for participating in the workshop and for your valued input in our research. Before you leave today I would like to ask you to complete the questionnaire we are about to hand you (RASMAP-Q). You will also be asked to

complete an anonymous written evaluation form. All of your comments will be helpful for us in continuing to develop the workshop and offer it on a regular basis. (Hand out evaluation sheets).

As you are aware, we will be contacting you periodically throughout the next 12 months by mail and telephone. The first follow-up contact will be in four weeks where we will ask you to complete a brief questionnaire. The next contact will be six months after that. So, we look forward to speaking with you soon and until then, encourage you to regularly practice your thought techniques. Thank you again.

Appendix R

MEDICATION WORKSHOP

1. Thank participants for coming

2. Start by introducing self and co-facilitator

3. Ask participants to briefly introduce themselves and say what is their main concern about their pain medication **(write up concerns on white board)**

4. Workshop overview & Ground rules **(on OHT 1 & 2)**

Tea room, toilets, smoking, emergency exits and phone contacts.
Please feel free to get up, lie down, stretch, change position or walk around to make yourselves comfortable while we are talking. All of the OHT's we are using today have been provided as handouts in your folder for you to review at home so there is no need for you to take notes

* Before we begin today, I would like to discuss the rationale for adopting a self-management approach to your pain. Most of you here today have experienced your pain for considerable lengths of time. Many of you have had one or more operations and most of you will have had multiple medical examinations, tests and treatments. Yet still you find that you have persisting pain and the medical profession may be telling you they have no further treatments they can offer you.
So, where does this leave you? In the absence of any effective treatment, it starts to become apparent that you are going to have to find ways to manage the pain yourself and try to minimise the impact that it has on your life.

This is what is known as a **self-management approach**, where you take primary responsibility for actively managing your pain. When health care practitioners *are* involved, their role is primarily that of teacher, guide or resource person whose main purpose is to encourage or assist you in learning and making better use of pain self-management skills.

All of you are likely to be already using a number of coping strategies. Some such as exercise or relaxation techniques may be *helpful* strategies, where others, such as long periods of inactivity or over-reliance on pain-killers and anti-inflammatories may *not be helpful.* The aim of these workshops is to increase the number of helpful ways in which you can manage your pain.

It is important at this point to distinguish between the lables ***Acute*** and ***Chronic*** pain, as your stage of pain very much determines the most effective management strategies. **(write up on board)**

Acute pain acts as a temporary warning signal and is generally of relatively short duration (e.g., labour, post-surgical or dental pain). Often the pain itself is not the underlying problem, rather it is a *symptom of* the problem and serves to motivate the individual to initiate adaptive behavioural responses. These include seeking appropriate treatment, limiting activity, taking minor analgesics and restricting activity.

As acute pain is expected to be of short duration, treatment suggestions by the medical profession often include suggestions to adopt less active behaviour patterns and to 'let pain be your guide'. Whilst this type of deactivation is strongly recommended, it is done so on the expectation that it will be a <u>temporary</u> behaviour pattern which will cease once the pain reduces and normal activity should be resuming.

Chronic Pain is usually defined as pain that has persisted for 3 months or longer. Often pain remains after the initial injury has healed and there is no longer any detectable pathology. In the chronic stage, treatment recommendations that were suitable for acute pain are no longer appropriate and can actually contribute to further discomfort, frustration, isolation and

physical de-conditioning. In this stage patients may find that their medication is increasingly less effective, they need to take larger doses to get any relief and that they are often taking additional medication to counteract the side-effects of the original medication. In this stage, self-management activities are recommended to help manage pain in addition to, or in place of medication.

*Chronic pain is a complex problem. One that is affected by many different factors **(Put up OHT 3).** This is what we call the multi-dimensional model of pain and it illustrates some of the different factors that can affect how we experience pain. **Explain each part of the OHT**

Because pain is such a complex problem, we need to develop a range of strategies or tools to help us manage it. From research conducted on chronic pain all over the world, we now know, that those people who manage their pain better and have less associated disability and distress, are usually using the five main strategies illustrated on this diagram **(put up OHT 4)**

So, people that manage their pain better usually use exercise to increase strength, flexibility and endurance, Thought techniques to decrease distress and increase positive self-talk. Relaxation techniques are used to decrease tension and stress and Activity pacing techniques to reduce pain flare-ups, increase endurance and participation in daily activities. The fifth strategy is the appropriate use of pain medication, and this is the strategy we are going to discuss today. If you use medication as part of your pain management program, it is important that you understand both the purpose and proper use of those medications. The more you know about your medications including how they work, their potential side effects, and their limitations in controlling your pain, the more effective they

can be. There are no perfect medications and all will have some side-effects, in addition, it is unlikely that any medication will eliminate your chronic pain completely. The benefits of a medication have to be carefully weighed up against the side-effects, the objective being to find the optimum therapeutic dose of a medication (i.e. the lowest dose that does the job, with as few side-effects as possible.

This workshop is designed to provide you with education and information about the most commonly used types of medication for pain, why they are generally prescribed, and what their side effects might be. We are also going to discuss how to use your medication safely and appropriately.

Firstly, lets look at how medication works.

When you burn your skin, break a bone or undergo surgery, the trauma involved activates pain nerve fibres located in the tissue of skin, bone or ligaments. Damage to the tissue results in swelling and redness (inflammation) and also makes pain fibres more sensitive. The pain fibres in the skin or bone send chemical messages to the spinal cord in the same way that power enters your home from the electricity company when you turn on the light switch. This in turn activates nerves in the spinal chord that send messages to your brain allowing you to perceive the process as painful. We can think of medications then as chemicals designed to interfere with some of this communication and hopefully reduce the number and intensity of "pain messages' that reach the spinal cord or brain.

Different types of treatments are designed to interfere with pain messages at different levels. For example, anti-inflammatories work at a tissue level, nerve

blocks, TENS machines and minor analgesics work at a spinal level and narcotics, anti-convulsants and anti-depressants work at a brain level.

What is a side-effect

A side–effect is any effect other than the one you want. Usually it is an undesirable effect, some common side-effects are stomach problems, constipation or diarrhea, sleepiness and dizziness. (Occasionally you may be prescribed a medication because it has a positive side-effect such as an anti-depressant that has the added benefit of helping you sleep).

Often we find that people with chronic pain who are using their medications inappropriately, end up taking more medication, to counteract the negative side-effects of the first medication, for example, taking a medication to help with gastric ulcers or stomach irritation that has been caused by taking too many pain relievers such as Asprin and anti-inflammatories. Lifestyle changes can also be used to manage side-effects. For example, drinking plenty of water, eating more fibre and increasing your activity can help to counteract constipation etc.

An important question to ask yourself is; Are the benefits from this medication more important than the side-effects?

Chemotherapy drugs are a good example. Many people choose to take the drugs despite the side-effects because of their lifesaving action.

Types of Medication for Pain

There are many different types of medication prescribed for pain. We are going to look at th most commonly prescribed categories today but feel free to ask questions regarding any other type of pain medication you may be taking.

Appendix R

What are the different types of medications for pain (Put up OHT 5, medication table)

Discuss medication categories in the table and the concepts of **Addiction, Tolerance and Dependency** in relation to narcotics.

It is important to distinguish between the terms, Addiction, Tolerance and Dependency **(OHT 6 and handout)**

Addiction is defined as the compulsive use of a narcotic that results in physical, psychological or social impairment with continued use despite evidence of impairment. In other words addicted people tend to abuse the drug.

Dependence is a term used when people do not demonstrate all the negative behaviours that an addicted person might, but their bodies have become adapted to the narcotic so that when they no longer have the accustomed amount of the drug, they experience withdrawal symptoms. These may include, sweating, nausea, flu-like symptoms, and a craving for more narcotics if the drug is stopped abruptly.

Tolerance refers to the reduction of benefit of the drug over a period of time without an increase in dose.

If you are taking narcotics to manage your pain it is important that you **(OHT 7).**

* Never increase the dose without discussing with your doctor (this can lead to overdose and even death)

*Take your medication on a regular schedule, not as and when you like

* Also use a range of other management strategies to manage your pain

* Use the reduction in pain to increase your activity

N.B. If you find yourself requiring increased doses of your pain medication, you may be experiencing a flare-up in your condition or there may be a certain level of tolerance developing. In either case, it is important that you discuss this with your doctor.

***Other warning signs to be aware of are;**

* Seeing more than one doctor for analgesics,

*Avoiding your own G.P and seeing the on call G.P for additional pain killers.

*Taking your prescribed medication earlier and earlier over time

*Topping up your prescribed medication with alcohol and other substances

Go back to Medication Table OHT

Discuss each section

Coffee/Tea break

Communicating with your Doctor

Many factors need to be taken into account when a doctor prescribes a medication, not only the type of pain you have, but also your weight, age, sex, allergies, other medications you are currently taking and other health problems you may have. In order for your doctor to prescribe the most effective medication, it is important that you have clear open communication and that you feel confident to discuss any fears or uncertainties in regard to side-effects and expected benefits.

Appendix S

Section H. This scale consists of a number of statements describing how you may sometimes feel. Please read each statement and using the following scale answer by circling the number for each statement that best describes how often you felt or behaved this way during the past week.

0	1	2	3
Rarely or none of the time less than 1 day)	Some or a little of the time (1-2 days)	occasionally or moderate amount of the time (3-4days)	Most or all of the time (5-7 days)

1.I was bothered by things that don't usually bother me.	0	1	2	3
2.I did not feel like eating: my appetite was poor.	0	1	2	3
3.I felt that I could not shake off the blues even with help from family and friends.	0	1	2	3
4.I felt that I was just as good as other people.	0	1	2	3
5.I had trouble keeping my mind on what I was doing.	0	1	2	3
6.I felt depressed.	0	1	2	3
7.I felt that everything I did was an effort.	0	1	2	3
8.I felt hopeful about the future.	0	1	2	3
9. I thought my life had been a failure.	0	1	2	3
10.I felt tearful.	0	1	2	3
11.My sleep was restless.	0	1	2	3
12.I was happy.	0	1	2	3
13.I talked less than usual.	0	1	2	3
14.I felt lonely.	0	1	2	3
15.People were unfriendly.	0	1	2	3
16.I enjoyed life.	0	1	2	3
17.I had crying spells	0	1	2	3
18.I felt sad.	0	1	2	3
19.I felt that people disliked me.	0	1	2	3
20.I could not 'get going'.	0	1	2	3

THANK YOU FOR COMPLETING THIS RESEARCH QUESTIONNAIRE.

Appendix T. Spearman's Rank Order Correlation Co-efficients for Pre-intervention Behaviour and Medical, Demographic and Psychological Variables

	Exercise		**Activity pacing**		**Relaxation**		**Cognitive Strategies**		**Medication Use**	
Variable		**P-value**		**P-value**		**P-value**		**P-value**		**P-value**
Gender	.157	.169	.155	.179	.299	.008*	.072	.531	.134	.242
Age	-.061	.598	-.015	.985	-.155	.177	-.098	.394	-.016	.889
Yrs Education	.237	.037	.046	.690	.253	.025	.189	.097	.237	.037
Pain duration	.081	.482	.104	.365	.143	.212	-.022	.845	.088	.442
Pain Interference	.020	.864	.161	.160	.205	.072	-.006	.955	-.250	.027
Depression	.056	.624	-.010	.929	.213	.061	.024	.834	.028	.808
Litigating	.040	.730	-.032	.781	.043	.707	.000	1.00	.097	.399
Compensation	.054	.638	.130	.255	.000	1.00	.034	.767	-.030	.796