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THE EFFECTIVENESS OF MOTIVATIONAL ENHANCEMENT THERAPY ON PHYSIOTHERAPY FOR PATIENTS WITH CHRONIC LOW BACK PAIN: A RANDOMIZED CONTROLLED TRIAL

BY

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CERTIFICATE OF ORIGINALITY

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ABSTRACT

Background: Chronic low back pain (LBP) is a highly prevalent condition. It is a multi-facet disorder affecting many factors including the psychosocial status of the patient. Physiotherapy usually leads to satisfactory outcomes in reducing pain and improving physical functions. However, some patients do not respond well to treatments or relapse over time. Several studies have indicated that low motivation in self-management and change for maladaptive pain behavioral patterns can be obstacles to achieve desirable rehabilitation outcomes. Therefore, Motivational Enhancement Therapy can be potentially an effective treatment approach to enhance pain modulation and promote exercise compliance for this patient group.

Objectives: This thesis aimed to develop and validate a treatment package of Motivational Enhancement Therapy (MET) that can be used to augment traditional physiotherapy for pain treatment. Specifically, a randomized clinical trial was conducted to investigate the effectiveness of an integrating MET and conventional physiotherapy (PT) for enhancing treatment outcomes in patients with chronic LBP, as compared to a control group who received PT alone. The psychometric properties of the Chinese version of *Pain Self-Efficacy Questionnaire* (C-*PSEQ*) were also evaluated.

Methodology: First, the psychometric properties of the Chinese version of *PSEQ* were examined. Second, a MET treatment program focused on the principles and counseling strategies of Motivational Interviewing (MI) and motivational enhancing factors was developed. The MET is composed of the techniques of eliciting patients' self-

recognitions of pain, helping patients to recognize discrepancies between behaviors and treatment goals, providing positive feedback to patients, enhancing patients' self-efficacy and proxy efficacy beliefs in coping with pain, promoting patients' therapeutic alliance with therapists, improving their expectancy to treatment, and motivating them to self-manage their pain problems. Third, physiotherapists were recruited and put through the training of the standardized treatment protocol. Fourth, a randomized controlled trial study was conducted in a local clinical setting to examine whether the integration of MET to conventional physiotherapy would produce better treatment outcomes in terms of patients' motivation, exercise compliance, pain intensity, physical and psychosocial function than PT alone in people with chronic LBP. Also, the extent to which motivational measures would contribute to enhance the pain and physical outcomes were explored.

Results: The validation study revealed that the *C-PSEQ* was best to be presented by a one-factor structure. The Cronbach's α was 0.94. Item-total correlations ranged from 0.71 to 0.85. The scores on *C-PSEQ* was significantly correlated with the modified *Roland-Morris Disability Questionnaire* and *SF-36* subscales ($r>0.4$, $p<0.01$). However, there was no significant correlation between the *C-PSEQ* and perceived pain intensity as measured by *Visual Analog Scale*. These findings are comparable with those of the original PSEQ. For the randomized controlled study, the subjects in the experimental group (MET+PT) showed significantly better results in three motivational enhancing factors (proxy efficacy, working alliance, and expectancy to treatment), physical functions, and exercise compliance than did the control group as shown by repeated

measures ANOVA (all between-group differences: $p<0.05$). Regression models found that the motivational enhancing factors significantly predicted the perceived pain intensity, lifting capacity, and physical function.

Conclusions: Evidence of structural and substantive validity of the *C-PSEQ* is found comparable to that of the original instrument. Our proposed approach of integrating Motivational Enhancement Therapy into conventional physiotherapy significantly enhanced the motivation, physical functioning, and exercise compliance in patients with chronic LBP, as compared with those only received physiotherapy. Our findings also suggest that the increase in motivational enhancing factors might play a role in further reducing the perceived pain intensity and enhancing other physical outcomes among those who received the integrating interventions.

Key words: Chronic low back pain, Motivational Enhancement Therapy, Motivational Interviewing, exercise compliance

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CHAPTER 1

INTRODUCTION

CHAPTER 1 INTRODUCTION

This chapter describes a general background for the present thesis, including the prevalence of low back pain (LBP) and the characteristics of chronic LBP. It also illustrates some common interventions in rehabilitation for chronic LBP, and briefly addresses their successes and weaknesses.

1.1 Background

Low back pain (LBP) is one of the most common clinical conditions for physician visits (Jones and Macfarlane, 2005; Lind *et al.*, 2005). Its life-time prevalence in the general population was 70-85% (Furlan *et al.*, 2002). The pattern in the majority of LBP is non-specific (Jones and Macfarlane, 2005; Geertzen *et al.*, 2006) .

Chronic pain is conceptualized within a biopsychosocial framework, it is a dynamic interaction process (Turk *et al.*, 2003; Sowden *et al.*, 2006) and can be influenced by multi-dimensions such as medical, physical, psychological, and social aspects (Altmaier *et al.*, 1993; Cheing and Cheung, 2002; Carragee *et al.*, 2004; Gatchel, 2004; McCahon *et al.*, 2005). Besides of assessing pain intensity and physical functioning, Turk *et al.* (2003) suggested that patient's emotional functioning, perception of pain and improvement, satisfaction to treatment, and adherence to the treatment regimen are also core assessment domains for chronic pain. In addition, people's motivations in making particular change (Jensen, 2002), their self-efficacy beliefs in coping with difficulty (Arnstein *et al.*, 1999; Asghari and Nicholas, 2001; Denison *et al.*, 2004; Turner *et al.*, 2005; Meredith *et al.*, 2006), and expectations to outcomes (Kirsch, 1985; Maddux, 1999; Turk and Okifuji, 2002) are also proven to be important factors that influence the pain treatment outcomes.

1.2 Common Interventions in Rehabilitation for Chronic LBP

Physiotherapy plays an important role in pain rehabilitation. Conventional physiotherapy

treatments consists of pain modalities (Werners *et al.*, 1999), therapeutic exercise (Hayden *et al.*, 2005; Taylor *et al.*, 2007), posture correction and behavioral modification (Mendez and Gomez-Conesa, 2001) and education (Jones and Macfarlane, 2005). Conventional physiotherapy treatments have put more emphasis on pain relief and physical function improvement. Although lots of patients may achieve satisfactory improvements after receiving treatments, not many of them can maintain the treatment gains in the long run (Jensen, 2002). Exercises and behavior modification are found to be effective in pain management in terms of reducing pain intensity, improving posture and physical function, however, the compliance and adherence beyond treatment period are poor in many patients (Siuljs *et al.*, 1993; Linton *et al.*, 1996; Manigandan *et al.*, 2004). Patients may agree that exercise and behavioral changes are effective self-management strategies in managing pain and improving daily functions, they do not actually have a strong motivation to adopt these strategies in the long run. On the contrary, some other patients may engage in exercises and try to have behavioral changes during the treatment period just because they are instructed to do so, but they may not believe that those strategies are helpful and therefore are less likely to maintain these strategies in longer run (Habib *et al.*, 2005). People's low motivation in applying such self-management skills may increase the chance of symptoms relapsing, and it becomes an obstacle for achieving long-term effects (Kerssens *et al.*, 1999; Friedrich *et al.*, 2005). Unlike some other disabilities, chronic pain is hard to be separated from those psychological and social components. The pain problems will be difficult to be resolved if the treatments only focus on biological and physical components. Researches have demonstrated the impacts of psychosocial factors on quality of life, function abilities and coping with pain (Turk and Okifuji, 2002). Therefore, physiotherapists now take in account of the significant psychosocial factors and modify the conventional physiotherapy treatments so as to enhance the effectiveness of pain management. They have attempted to make a move from the traditional biomedical model to a biopsychosocial model (Friedrich *et al.*, 1998; Kerssens *et al.*, 1999).

Biopsychosocial approach is highly advocated in the pain rehabilitation by famous pain psychologists like Turk D.C. (2002) and Gatchel R.J. (2004) in the recent fifteen years. This approach

emphases the importance of the psychological and social components. This approach aims to "manage pain" rather than "cure pain", which assists patients to develop and enhance self-management belief, such as engage in treatments, make changes on maladaptive beliefs and behaviors, understand and implement pain coping skills in their daily lives. A multidisciplinary health care team provides treatments including physiotherapy, medication management, functional training, psychological treatment (e.g. problem-solving skills, pain coping skills) and education about pain and body function (Von Korff *et al.*, 1998; Lorig *et al.*, 1999; Moore *et al.*, 2000; Lorig and Holman, 2003; Gatchel, 2004; Gohner and Schlicht, 2006). Each patient enrolls in this approach is encouraged to be an active participant. The health team members' roles are mainly in helping and providing advices rather than authorizing the patients. Participants have chance to share successful experiences with the health care providers and other pain peers in order to enhance their self-efficacies on controlling pain and also to establish therapeutic alliance (Von Korff *et al.*, 1998; Lorig *et al.*, 1999; Lorig and Holman, 2003; Gohner and Schlicht, 2006).

Although the biopsychosocial approach has shown a success in improving pain, functions and the use of coping skills (Hildebrandt *et al.*, 1997; Schultz *et al.*, 2002), it seems not yet be extensively adopted in the clinical physiotherapy settings. Poor compliance is likely caused by physiotherapists' conflicting views on this treatment approach: the physiotherapists are probably recognize the effectiveness of the biopsychosocial approach but may not be very familiar with it, some of them may hesitate to modify from their routine work, other may complaint of excessive workloads, and some others seem to have difficulty in learning a new treatment strategy. From a patient's perspective, many patients who believe that traditional medical care or passive treatment is helpful in pain relief seems to underweight the importance of self-effort, so they are commonly reluctant to participate in the self-management approach. For example, patients may assume that pain relief can only be achieved by receiving analgesia or pain modalities, so they would rather not trying to do exercise and change their behaviors. Other patients may think that they perform exercises during treatment session is already good enough, and they do not keep regular exercise for the rest of the day. Patients suffering from pain for a

long time may also have low self-efficacy beliefs on coping with pain, low expectancy to treatments, or inadequate readiness to make change, which appear to have impact on the acceptance of a self-management approach (Jensen *et al.*, 2003). Those reasons consequently weaken both clinicians and patients' motivations to adhere the approach (Jensen, 2002; Strong *et al.*, 2002), causing a high refusal and dropout rate, and reducing the treatment effects.

The present study was designed to test the effectiveness of an intervention program which used a biopsychosocial model by integrating the Motivational Enhancement Therapy (MET) into the conventional pain physiotherapy (PT) for patients with chronic LBP. A pilot study was conducted to clarify the credibility of MET on patients with pain. A MET training was given to the participated physiotherapists. A randomized controlled study was conducted to examine the adjunct treatment effects of motivational enhancement therapy. We hypothesized that the integrated intervention would enhance patients' motivations to engage in therapeutic exercises and hence more effective for reducing pain and improving physical and psychosocial functions of the patients than the conventional PT alone program.

CHAPTER 2

LITERATURE REVIEW

CHAPTER 2 LITERATURE REVIEW

This chapter describes the updated literature evidence for supporting the rationale of conducting this research study. Firstly, we definite the motivation, and explain for its effects on chronic pain. Secondly, we introduce the content of Motivational Enhancement Therapy. Thirdly, we review the methodologies and findings of the previous clinical studies used motivation approach. Lastly, we would explain the rationale of objectives of the thesis.

2.1 What is Motivation?

Motivation is an individual's attempt to interpret his or her behavior performed (Gorman, 2004). Geen (1995) exemplified the basic dimensions of an individual' motivation for engaging in a human behavior, which include initiation, direction, intensity and persistence. Jensen *et al.* (2002; 2003) suggested that one's motivation can be contributed by his or her self-efficacy on doing a certain behavior, expectancy/ perceived importance to accomplish behavioral change, the state of readiness to make changes, working alliance with other people, and the previous experiences or rewards about that behavior. They also suggested that motivation can play an important role in whether or not a patient can benefit from chronic pain treatments.

Miller & Rollnick (2002) described that there are at least three critical components to communicate at a high level of motivation for change including willingness, ability and readiness. Willingness means people's perceived importance of change. That is what people want, desire or will change. People with low level of perceived importance tend to develop resistance for change. Ability refers to people's confidence in making a change. Some people who are willing to change but just unable to make a change. Readiness refers to people's priority to make changes. It is a combination of perceived

importance and confidence. People with high perceived importance and high confidence would be able to evoke change. For example, if a person believes that he adopts self-management skills, performs exercise regularly, and/or modifies maladaptive lifestyle are important to manage his pain problem, also if he believes that he is able to adopt these changes, then he is more likely to be ready to make these changes at that moment.

Chronic pain is a complex problem and patients tend to relapsed vulnerably, eventually influence daily functions and leads to many life issues. Patients should recognise that the pain problems itself may not be cured, more importantly is how to maintain their functions as much as they could be coexisting with pain. To avoid further disturbance of daily functions caused by pain, people should learn self-managing skills to remain active despite of the existence of pain. Motivation in this perspective can determine how well a patient learns and maintains these self-management skills (Jensen *et al.*, 2003).

2.2 Motivational Enhancement Therapy

2.2.1 Motivation Interviewing (MI)

Motivational Interviewing is a behavioural intervention initially developed by Miller and Rollnick for problematic drinkers with obstacles to make change (1983; 1991). It follows a directive, client-centered counseling technique that aims at eliciting clients' intrinsic motivation and commitment to particular behavioral changes. The counseling processes in the MI emphasize in exploring and resolving the clients' ambivalences. Ambivalence refers to an individual's mixed feeling about changes, and it is common in human behaviors since changing a maladaptive behavior may be difficult. Such conflicts between change or not change easily make people give up. In working with ambivalence, a counselor tries to facilitate a client's expression in both sides of the ambivalence with a respectful manner,

empowers a client's confidence on his/her capacity of making changes and responsibility to changes in daily activities, and provides the possible solutions, in a way to drive a client to develop his/her own changing strategies (Rollnick and Miller, 1995; Eccles and Wigfield, 2002). Furthermore, a counselor uses sincere affirmation and positive reinforcement to reveal a patient's improvement after receiving treatment, which aims at strengthening the patient's self-efficacy on coping with pain. A counselor does not aim to use Motivational interviewing to change the client's behaviors instantly but putting more emphasis on evoking clients' initiation to make change: "If you wish, I can help you to change". MI is a collaborative approach rather than a prescriptive approach. The counsellor's role is to evoke the client to release a possible process to change, to facilitate the commitment to change, to help clients to work through the ambivalence, and support clients' accomplishments of making changes to their pain and problematic behaviors, and hopefully to enhance treatment effects.

2.2.2 Principles of Motivational Interviewing

Jensen (2002) summarized four MI main principles originally developed by Miller and Rollnick (1991). They were (i) expressing accurate empathy, (ii) developing discrepancy, (iii) avoiding argumentation and rolling with resistance, and (iv) supporting self-efficacy.

(i) *Expressing accurate empathy:* Empathy is defined as an individual's emotional resonance to recognize, perceive and feel another's thought or emotion as if it were his/her own, but without ever losing the "as if" quality. One communicates with empathy for another may often be more able to define another's thought and mood. Empathy is one fundamental counseling style and defining characteristics of MI to build up an environment for changing. Counselors use open-ended questions to evoke clients to express their problems, their concerns and the reasons of receiving treatments. Through the reflective listening skills, counselors show desires and

respects to understand the client's feeling and perspectives. In order to give opportunity to clients for self-exploration and self-determination, the attitude of counselor should be acceptance and positive with regard to whatever the clients tell, and avoid giving judgment, criticism or blame. This style of empathic communication should be employed not only at the beginning but also throughout the process of interviewing sessions (Miller and Rollnick, 2002). While encouraging clients to talk about their current problems/ behaviors and desired goals, counselors should sense the ambivalences between the clients' goals and current behaviors.

(ii) *Developing discrepancy:* Since ambivalence of changing adaptive behaviors is commonly occurs, the principle of MI is neither agree nor prohibit from the client's ambivalence. Instead, MI is a kind of counseling technique directly guides the clients to sense the discrepancies between their perspectives and problematic behaviors. The counselor interprets the pros and cons of carrying out a particular behavioral change. The general skill of this principle is to elicit clients to present what is their expectation and what they can do rather than direct them to a general expectation and what the counselor wants them to do. Clients are usually more persuaded by their own voices than other people's forceful commands. When a behavior is seen as conflicting with important personal goal, change is more likely to happen. When skillfully done, MI is able to lead client toward a direction of making acceptable and positive behavioral changes without creating pressure (Jensen, 2002; Miller and Rollnick, 2002).

(iii) *Avoiding argumentation & rolling with resistance:* People with chronic pain have probably adapted a certain maladaptive beliefs and/or behaviors such as inactivity, bed rest and seek for others' help for a certain period of time. Even though clients may recognize that such beliefs or behaviors are likely to make their pain deteriorate and the changes suggested by clinicians are preferable, however, clients usually feel hard to follow. Client's ambivalence to make change is regarded as a normal part of human experience rather than a pernicious defensiveness (Miller

and Rollnick, 2002). However, such ambivalence easily causes argumentation; especially when clients are hesitate about the feasibility and consequence of the recommended changes. Argumentation responses may actually press the client towards the opposite direction from the desired goal. To evoke clients' changes without direct augmentations, rolling with resistance is a strategy used to respond to clients' disagreement and to reconciliation the tense atmosphere. Counselors can restate, paraphrase or reframe clients' statement, and invite the clients to pinpoint whether the statement has caused their uneasiness. Counselors can again use reflective listening skill to show their understandings on patients' hesitations about making change. Sometimes when counselors reflect back the clients' resistant statement, clients may respond by considering the other side of the argumentation, and change their behaviors (Jensen, 2002).

(iv) *Supporting self-efficacy:* Self-efficacy beliefs is the framework of Bandura's Social Cognitive Theory (1977), which means an individual's belief in his/ her capability of performing a task or a course of behavior, and of coping with obstacles in a given situation (Bandura, 1977). One's self-efficacy belief is not simply a matter of how capable one is, but how capable one believes oneself to be. There are four sources to influence people's self-efficacy belief: self-performance experience, vicarious experience (observational learning), social persuasion, and somatic and emotional states. Self-efficacy belief determines whether one tries to cope with difficulty which is viewed as beyond one's ability, to consider changing detrimental health habits or pursue rehabilitative activities (Bandura, 1977; 1982; Bandura and Ozer, 1990; Bandura, 1997). It also affects one's goal setting, effort expending and persisting against unpleasant or negative situations (Bandura, 1977; 1982; Bandura *et al.*, 1988; Bandura and Ozer, 1990; Bandura, 1997). Patients have stronger self-efficacy is more responsible for deciding and directing their own change, they would also make more efforts and persist in facing up to obstacles (Bandura, 1977; Bandura, 1997; Miller and Rollnick, 2002). Self-efficacy is regarded as a psychosocial

determinant on people's pain perception, pain-related disabilities and pain coping behaviors (Jensen and Karoly, 1991; Jensen *et al.*, 1991; Arnstein *et al.*, 1999; Asghari and Nicholas, 2001; Meredith *et al.*, 2006). Supporting patient's self-efficacy can promote patients' beliefs that changes or improvements made by themselves are possible (Jensen, 2002). It can also increase patients' awareness of personal responsibility for their problematic behavior and change commitments. Lots of previous studies have revealed that self-efficacy is a strong predictor for pain and disability (Bandura, 1977; Jensen *et al.*, 1991; Bandura, 1997; Arnstein *et al.*, 1999; Asghari and Nicholas, 2001; Denison *et al.*, 2004; Turner *et al.*, 2005; Meredith *et al.*, 2006).

Pain Self-Efficacy Questionnaire, PSEQ (Nicholas, 1989) was developed to evaluate the impact of self-efficacy beliefs on how people cope with daily activities and tasks despite of pain. Good psychometric properties results were demonstrated in a previous study (Nicholas, 2007).

2.2.3 Motivational Interviewing Strategies for Pain Management

Jensen (2002) also addressed particular MI strategies for pain management. MI strategies were designed to enhance clients' motivation to consider making change for pain, to make a commitment for change, and to take actual action to produce change. The details of strategies are shown as below:

(i) Enhance motivation for behavior change

- Eliciting self-motivational statement in individual with pain problems:
  - *Problem recognition,*
  - *Concern,*
  - *Intention to change,*

- *Optimism.*

- Listening with empathy
- Questioning
- Presenting personal feedback
- Affirming the patient
- Handling resistance
- Reframing
- Summarizing

(ii) Strength commitment for behavior change

- Developing a plan for change
- Communicating free choice
- Reviewing consequences of change versus no change
- Providing information and advice
- Rolling with resistance
- Using a change plan worksheet
- Recapitulation
- Asking for a commitment

(iii) Maintain those change

- Review the overall progress made during the treatment
- If necessary, renew patients' motivation and commitment to change

2.2.4 Other Motivational Enhancing Factors

Apart from the MI principles and strategies, several psychosocial factors have been revealed as important motivational enhancement factors that potentially enhance behavioural changes and treatment outcomes for chronic pain sufferers (Bandura, 1977; Bordin, 1979; Christensen *et al.*, 1996; Bray *et al.*, 2001; Wampold, 2001a; Wampold, 2001b; Bray and Cowan, 2004):

(i) *Readiness to change:* Prochaska and DiClemente developed a Transtheoretic Model Stages of Change (1983), in which clients' readiness for making behavioral changes is classified into five specific stages: precontemplation stage, contemplation stage, preparation stage, action stage and maintenance stage. The precontemplation stage means a person seems not considering any behavioral change and may show resistance to change. The contemplation stage means a person foresees the need to change and consider seriously about making some change in the near future, but not yet commit to that change. The pros and cons of changing his or her behavior in this stage are weighted. In the preparation stage a person intents to make change and initially make steps towards the direction of change. In the action stage the person makes concrete activities which will lead to the desired change. Lastly, maintenance stage refers to the person who makes efforts to sustain those changes made in the action stage; for those unable to sustain the changes made in the action stage are likely to drop the stage in the relapse stage. Since patients' senses of importance and persistence of behavioral change such as performing self-management or modifying maladaptive habits are different in each stage, they have to overcome different challenges before moving to the next stage. A previous study (Habib *et al.*, 2005) reported that the patients' stages of change may help health care professionals to understand patients' underlying process of adopting self-management approach to chronic pain. Clinicians select different emphasizes and intervention strategies according to patient's stage of change could enhance the effectiveness of positive health behavioral change (Prochaska *et al.*, 1994; Heapy *et al.*, 2006; Levesque *et al.*, 2006).

(ii) *Proxy Efficacy:* Bray et al. (2001; 2004) defined *proxy efficacy* as one's confidence in the abilities of parties to function effectively on his or her behalf. It was found to be highly related to self-efficacy in rehabilitation programs (Bray *et al.*, 2001; Bray and Cowan, 2004). Christensen et al. (1996) suggested that people take part in rehabilitation also develop beliefs in their therapists' capabilities, and it correlates to the adherence of behavioral change. They found that patients with renal dialysis were more likely to adhere to the treatment when they had greater confidence in the expert judgment and actions of their health care providers. Therefore, it is important to examine how to install and enhance patients' proxy efficacies during treatments for achieving better treatment outcomes.

(iii) *Outcome Expectancy*: Expectancy refers to the strength of a person's beliefs about whether a particular outcome is attainable (Vroom, 1964). A person will be motivated to try a task if he or she believes that is worth to be done. Outcome expectancy is defined as a person's belief about whether performing a behavior or receiving a treatment will lead to a desirable outcome (Bandura, 1977). It can be related to patient's previous experiences, rewards, self-efficacy, internal locus of control, and satisfaction with healthcare units (Kirsch, 1985; Jensen *et al.*, 2003). It contributes to one's motivation on whether he/ she exerts efforts to pursue a goal, to make action, and to persist specific performances (Kirsch, 1985; Christensen *et al.*, 1996; Maddux, 1999; Eccles and Wigfield, 2002). Not only one's perceived self-efficacy has influence on choice of behaviors but through expectations of eventual success can also affect motivation of coping effort, then produce certain outcome. Therefore, it plays an important role in motivation enhancement intervention.

(iv) *Working Alliance:* Besides of people's perception on self capacity and treatment outcome, motivation can also be affected by interpersonal relationship (Rollnick and Miller, 1995). Bordin (1979) addressed that if therapists take notice of patients' concerns and establish good therapeutic relationship *(*e.g. set tailored goal based on clients' needs, detect the treatment progress together with the clients) is more likely to let clients acknowledge that the treatment tasks are appropriated

for them, which can achieve more desirable rehabilitation goals. Beattie *et al.* (2002) found that patients' satisfaction with care was strongly correlated with the patient-therapist relationship. It included spending adequate time with patients, using listening and communicating skills and offering clear explanation for treatment. Furthermore, therapists provide feedback to let clients realize their current situations, give autonomy and freedom of choice about change can result in enhancing better self-regulations of finishing the treatment (Miller, 1983; Miller and Rollnick, 1991; Hettema *et al.*, 2005). Wampold (2001a; 2001b) revealed some common communication skills such as empathic listening, warmth and genuineness acquired higher therapeutic effects. We also consider these skills as important motivation enhancing factors, and we would merge them into our Motivational Enhancement Therapy.

2.3 Clinical Application

In clinical practice, therapists usually incorporate Motivational Interviewing with non-Motivational Interviewing techniques while retaining Motivational Interviewing principles as the core of intervention, it is called *Adaptation of Motivational Interviewing* to achieve a larger effect (Burke *et al.*, 2003; Hettema *et al.*, 2005). Miller and Rollnick (2002) suggested that the MI or adaptive MI approach can speed up or facilitate changes in order to sustain normal activity in life even by relatively brief interventions (one to two sessions) under certain conditions. In fact, previous MI studies provide evidence of the beneficial results in different circumstances. The most successful change in problematic behaviour is drinking problems (Miller, 1983; Burke *et al.*, 2003; Hettema *et al.*, 2005). Other successful findings were demonstrated on health problems included diet and exercise (Burke *et al.*, 2003; Brodie and Inoue, 2005; Hettema *et al.*, 2005), drug dependency (Burke *et al.*, 2003; Hettema *et al.*, 2005), leg ulceration (Morris and White, 2007), and treatment adherence (Habib *et al.*, 2005).

- Habib *et al.* (2005) developed a pilot study by using a two-sessions MI intervention to investigate its effects on a self-management workshop engagement. It comprised of two interviews: a semi-structured assessment interview was conducted for gaining pain information and the impact on the patients' life, a feedback interview was performed for increasing patient's motivation to self-manage pain, to increase optimism that effort would be beneficial and providing appropriate information of personal choice and control. The subjects in the control group received a standard pain assessment which did not aim to elicit any motivational statements from the patients, and an attention placebo interview was conducted that did not touch in making any change. Afterwards, patients in both groups were invited to attend multidisciplinary pain management workshop. The result showed that more people in the treatment group attended the workshop, it meant that the MI could increase patients' engagement in a pain self- management program.

- Heapy *et al.* (2006) conducted a case study incorporating tailored Cognitive-Behavioral Therapy with MI strategies for chronic pain. The result showed that the treatment was effective in achieving better physical activity in daily life. The male subject in that study strongly agreed that the treatment had positively impacted his quality of life in terms of increasing the use of exercise as an adaptive coping strategy, and participating in more leisure and social activities. However, the perceived pain intensity had no significant decreased.

- Harland *et al.* (1999) evaluated the effects of an exercise project in promoting physical activity in primary care by a randomized controlled trial. Five hundred and twenty-three adults were assigned to either one of the four intervention groups: (i) one session of MI with vouchers to access leisure facilities, (ii) one session of MI without vouchers to access leisure facilities, (iii) six sessions of MI with vouchers to access leisure facilities, (iv) six sessions of MI without vouchers to access leisure facilities, and one control group. The results showed that all of the intervention groups were

significantly better in promoting physical activity than the control group. The group who received six sessions of MI with voucher demonstrated the highest percentage of participants with an increase in physical activity. However, those effects could not maintain at the one-year follow-up.

The motivational application applied directly on chronic pain management was found in three previous studies:

- Ang *et al.* (2007) conducted a case series to investigate the effects of using exercise-based phone MI counseling in improving exercise adherence and symptoms of fibromyalgia. Nineteen participants with fibromyalgia received two 30-minutes education classes (included information on fibromyalgia) in week 1 and 2. At the end of each class, fifteen minutes aerobic exercise session was given that was supervised by a fitness instructor. Individualized exercise plan was prescribed for the next 30 weeks. From week 3 to 12, six exercise-based MI phone calls with an average duration of 25-minutes were delivered by a postgraduate student major in clinical psychology. Assessments were taken at week 12 and week 30. Participants' pain and physical impairment were assessed by Fibromyalgia Impact Questionnaire. Exercise adherence was calculated by number of days and number of minutes they performed exercise in a week. The results showed significant decrease in pain and physical impairment and significant increase in the number of minutes of performing exercise in week 12 and week 30. It means that the delivered MI technique was effective in promoting exercise adherence associated with an improvement in symptoms and functions in patients with fibromyalgia. The components of MI might explain the success in exercise intervention. However, no control group was included in that study, so their result could not confirm whether the MI has brought real beneficial effects on patients' symptoms or only nonspecific effects of providing attention.

- Friedrich *et al.* (1998; 2005) conducted a randomized controlled trial to examine the effects of combining motivation techniques on exercise program on promoting motivation and relieving LBP symptoms. Patients with chronic LBP (n=93) were recruited and randomly assigned to receive either (i) exercise program or (ii) a combined exercise and motivation program. Patients in both groups received 10 sessions of 25 minutes individualized exercise program, which consisted of trunk and lower limb stretching, strengthening and coordination, as instructed by physiotherapists. They were encouraged to perform exercise at home. For those subjects in the combined motivation and exercise programs received five extensive counseling interventions that emphasized on the importance of exercises and internal locus of control. Physiotherapists offered information and reinforcement techniques within the treatment sessions. Pain intensity, LBP disability, motivation and compliance were measured at the baseline, the 8^{th} treatment session, 4-month and 8-month follow-up. The results demonstrated that subjects in the combined motivation and exercise group had significantly better improvements on pain intensity, disability, and better treatment attendance compared with the subjects in the exercise alone group. However, no significant within- and between-group differences could be found in the motivational outcome measures: the level of distress, internal locus of control and attitude towards exercises. The scores of internal locus of control and attitude towards exercise were dropped at the follow-up assessments. According to the author's interpretation, motivation is a dynamic process which is usually higher at the beginning of attending treatment; however, it may drop over time or when the condition becomes stable. Motivation is also an abstract concept; there is no standardized instrument for measuring motivation. But it can be estimated from various aspects. In that study, the researches detected the change of distress, internal control and attitude to treatment as motivational factors, which might not be sensitive enough in reflecting the effect of the implementing intervention. The non-parametric analyses also weaken the power of the result of that study.

- Leonhardt *et al.* (2008) examined whether motivational counseling sessions would enhance physical activity in patients with acute LBP. Subjects with acute LBP (n=1378) were randomly allocated to receive either LBP guidelines taught by general practitioners, or LBP guidelines taught by general practitioners plus three extra counseling sessions delivered by nurses, and received no treatment. No significant differences in physical improvement were seen between the two intervention groups and the control group. The authors explained that although the nurses had learnt counseling skills, the quality and consistency of their interventions were not known, therefore, they had negative findings in their study.

2.4 Rationale of the Present Thesis

Motivation is considered to determine how well the patients learn to self-manage their pain. Rollnick *et al.* (2008) also suggested that patients explore to motivational treatment approach is more likely to engage and perform behavioral change and produce better treatment outcomes.

Previous studies on Motivation Interviewing have shown positive outcomes, however, the study design in terms of target population, time of interventions and follow-up assessments, the content of MI or adaptive MI, MI provider, outcome measures and the analysis method varied among studies (Hettema *et al.*, 2005). Even though the studies adopted same treatment method on same behavioral problem, there were still big differences in effect size across different population. The effect size was higher in ethnic minority population (Hettema *et al.*, 2005). The duration of the MI effects was also questionable. In general, the effect size was good in short-term (average 0.7 at 0-1 month post-treatment), it tended to drop across a year of follow-ups (0.39 at 1-3 months, 0.31 at 3-6 months, and 0.30 at 6-12 months) (Hettema *et al.*, 2005). For the application of MI on pain management, only three studies can be found (Friedrich *et al.*, 1998; Ang *et al.*, 2007). However, the three studies had differences on selection of type of pain patients, treatment delivery method and data analysis methods. Therefore, to incorporate MI to an effective treatment protocol on pain management would be beneficial on patients with chronic LBP.

Despite tremendous work has been done in the psychology field, very few studies have been done in the rehabilitation specialty. As physiotherapists have more frequent appointments and spent relatively long treatment time with patients, physiotherapists should consider adopting more effective motivation enhancing skills when they provide treatment to patients with pain. By doing so, it can improve patients' active participation in the pain management program. Regarding the outcome measures, some of the previous studies used number of exercise, treatment attendance and some psychosocial factors to assess the treatment effects of MI or adaptive MI (Friedrich *et al.*, 1998; Hettema *et al.*, 2005; Ang *et al.*, 2007), however, no consistent measurement has been developed. It is essential to identify specific factors or instruments that can effectively and consistently evaluate the changes after receiving MI.

The present study adopted the Motivational Enhancement Therapy (MET) that is the most widely used adaptive MI based on the concept of MI; and we have added several motivational enhancing factors that will be explained in the later section. As physiotherapists spend quite a lot of time with patients during treatment, to incorporate MET with physiotherapy is a relatively new biopsychosocial pain approach to elicit patients to explore for their pain and problems. It may enhance their motivation to participate in physiotherapy treatments, perform regular therapeutic exercises or modify pain-related behaviors, which may result in strengthening their awareness on pain self-management, and result in enhancing better treatment effects (Morley *et al.*, 1999; Jensen, 2002; Burke *et al.*, 2003; Jensen *et al.*, 2003). Since MI is a set of skilful counselling technique, it is not easy for rehabilitation professionals to use smoothly within a short period, especially for those without basic training on counselling. Previous studies preliminarily showed the effectiveness of a counseling training program on health professionals, and concluded that the health professionals should learn and practise the counselling techniques more skilfully and systematically when they intended to deliver such kind of treatment (Kerssens *et al.*, 1999; Brodie and Inoue, 2005).

2.5 Objectives of the Present Thesis

The objectives of the present study were three folds:

(i) To evaluate the measurement structure of a motivational-related instrument: a Chinese version of *Pain Self-Efficacy Questionnaire (PSEQ)* on Chinese patients with chronic pain,

(ii) To examine the credibility of the content of our Motivational Enhancement Therapy. A pilot study was firstly conducted. The physiotherapists participated in the present study were given a systemic MET training and practicing period before the randomized controlled study was commenced,

(iii) To examine the effectiveness of this proposed MET+PT treatment package *(MET+PT)* on producing treatment outcomes, in terms of pain intensity, physical functions, psychosocial properties, motivation and exercise compliance, when compared with the conventional physiotherapy (*PT*) on the patients with chronic LBP, and to evaluate the contribution of our suggested motivational enhancing factors to improve the pain and physical outcomes on patients with chronic LBP.

Chapter 3 examines the structure of the Chinese version of *Pain Self-Efficacy Questionnaire*. Chapter 4 shows the implementation of the pilot study and the systematic training for the physiotherapists who participated in our study. Chapter 5 reports a randomized controlled trial that evaluated the effectiveness of the integrating MET and PT treatment program on patients with chronic LBP. Chapter 6 presents the summary and conclusion of the above chapters.

CHAPTER 3

MEASUREMENT STRUCTURE OF THE PAIN SELF-EFFICACY QUESTIONNAIRE IN A SAMPLE OF CHINESE PATIENTS WITH CHRONIC PAIN

CHAPTER 3 MEASUREMENT STRUCTURE OF THE PAIN SELF-EFFICACY QUESTIONNAIRE IN A SAMPLE OF CHINESE PATIENTS WITH CHRONIC PAIN

ABSTRACT

Objective: To investigate the internal consistency and validity of the Chinese *Pain Self-Efficacy Questionnaire* (PSEQ) in Chinese people with chronic pain.

Setting: Outpatient physiotherapy department in a local hospital and a local rehabilitation clinic.

Subjects: One hundred and twenty patients with chronic pain receiving physiotherapy

Methods: Each subject was asked to complete the Chinese PSEQ, Visual Analog Scale (VAS), modified Roland Morris Disability Questionnaire (RMDQ), and Short Form Health Survey (SF-36). The internal consistency of the instrument was assessed by Cronbach's alpha. The construct-related validity was evaluated by confirmatory factor analysis and item analysis. The correlations between the Chinese PSEQ and other measures were computed using by Pearson correlation coefficient.

Results: Cronbach's α of the Chinese PSEQ was 0.94. Confirmatory factor analysis yielded a one-factor structure with excellent fit, where the chi-square of the refined model (*df* = 33) was 36.79, goodness of fit index = 0.94, cumulative fit index = 0.996, and the root mean square error of approximation = 0.031. The item-total correlations ranged from 0.70 to 0.85. The Chinese PSEQ total scores also correlated significantly with the modified RMDQ and six subscales of SF-36. No significant correlations but a trend of negative correlations were found between the Chinese PSEQ total scores and VAS.

Conclusion: The Chinese PSEQ demonstrated very satisfactory reliability and construct-related validity. A single-factor model further demonstrates the unidimensional structure of the instrument in a sample of Chinese patients with chronic pain. High correlations between the Chinese PSEQ and the physical outcome measures support that its usefulness for measuring pain in rehabilitation.

Key words: Pain Self-Efficacy Questionnaire, chronic pain, confirmatory factor analysis

3.1 Introduction

Self-efficacy beliefs are defined by Bandura (1986) as "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances" (p. 391). Bandura (1986) contended that self-efficacy beliefs provide the foundation for human motivation, well-being, and personal accomplishment, primarily because people's level of motivation, affective states, and actions are based more on what they believe than on what is objectively true. Because psychological factors play such an important role in understanding the pain experience (Gatchel and Turk, 1999), the relationship between pain self-efficacy beliefs and rehabilitation outcomes of people with chronic pain has attracted considerable attention in the pain rehabilitation literature in recent years (Nicholas, 2007). Research indicated that pain self-efficacy beliefs is related to pain intensity, pain thresholds and tolerance, physical functioning, and analgesic use. Research also indicated that confidence in ability to perform typical daily activities is associated with subsequent performance of those activities. Finally, self-efficacy beliefs contribute to patients' motivation to use positive pain coping strategies (e.g. muscle strengthening, relaxation, and pacing, etc) (Council *et al.*, 1988; Jensen *et al.*, 1991; Altmaier *et al.*, 1993; Keefe *et al.*, 1997; Nicholas, 2007). As one of the most important psychosocial determinants that influence people's pain perception, pain-related disabilities, and pain coping behaviors, pain self-efficacy beliefs therefore must be carefully assessed and taken into consideration in planning pain rehabilitation treatments (Jensen *et al.*, 1991; Arnstein *et al.*, 1999; Asghari and Nicholas, 2001; Meredith *et al.*, 2006).

In the study of pain, self-efficacy beliefs in people with chronic pain have been assessed either by reference to confidence in performing generalized constructs like coping with pain or confidence in ability to perform specific tasks (Nicholas, 2007). However, most self-efficacy beliefs measures for chronic pain patients do not explicitly ask the patient to take their pain into account when describing their confidence in performing specific tasks. Many self-efficacy beliefs instruments also assess specific activities that may not be relevant to all individuals or groups of people with chronic pain (e.g., shoveling snow; driving the

car; raking leaves; working on a house repair; riding a bicycle). To address the shortcomings of these instruments, Nicholas (1989; Nicholas, 2007) developed the *Pain Self-Efficacy Questionnaire* that asks respondents to take pain into account when rating their self-efficacy beliefs. The activities referenced in the PSEQ are also more general (e.g., paid/unpaid work; social activities) to make the measure applicable to a broad range of respondents. In a recent study, Nicholas (2007) demonstrated that the PESQ is a uni-dimensional scale using exploratory factor analysis. The internal consistency reliability for the scale is high with Cronbach's alpha computed to be 0.92. In addition, negative correlations were found between PESQ score and total number of medications used, impact of pain on daily life, future pain behavior, and unhelpful coping strategies and beliefs. The correlations between the PESQ and related constructs at the expected direction provide empirical support for the construct validity of the instrument. Importantly, the PESQ has now been validated and used with chronic pain patients in many clinical settings and several countries with encouraging results (Nicholas, 2007).

Chronic pain is highly prevalent in the Chinese population, with rates of occurrence ranging from 40% to 50 % reported in the literature (Ng *et al.*, 2002; Jin *et al.*, 2004). Pain symptoms, functional loss, and disability are major sources of stress causing social, family, employment and financial difficulties. Since the impact and stability of organicity of pain cannot be usefully separated from that of the psychological and social components of chronic pain, physiotherapists in China are beginning to recognize the significant effect of psychosocial factors on pain rehabilitation outcomes, with a movement towards the use of a biopsychosocial model as a conceptual framework to guide pain treatment modalities (Cheing *et al.*, in press). However, there is a lack of pain-related psychosocial measures such as pain self-efficacy beliefs that are validated for use with Chinese patients with chronic pain. The PESQ appears to be a useful tool that can be used to assess pain self-efficacy beliefs. Recently, the PESQ has been translated into the Chinese language by Lim *et al.* (2007). Similar to Nicholas (2007), Lim *et al.* (2007) examined the factorial structure of the PESQ using exploratory factor analysis and found a one-factor model that accounted for 61% of the total variance, with minimal factor loading of 0.69 and a Cronbach's

alpha of 0.93. The results of their study provided preliminary support for the construct validity of PSEQ in a heterogeneous Chinese population with chronic nonmalignant pain.

Both Nicholas (2007) and Lim *et al.* (2007) reported using of exploratory factor analysis as a procedure to confirm the unidimensionality of the PESQ. The purpose of this study is to extend and refine the Lim *et al.*(2007) study using confirmatory factor analysis to confirm the measurement structure of the PESQ in a sample of Chinese patients receiving physiotherapy treatment for musculoskeletal pain.

3.2 Subjects and Methods

3.2.1 Subjects

A total of 120 subjects suffering from various pain conditions were recruited from an out-patient physiotherapy department in a hospital and a rehabilitation clinic in Hong Kong. The selection criteria were: 1) aged between 18 to 80; 2) experiencing musculoskeletal pain with or without previous pain history; 3) currently receiving pain management interventions at an outpatient physiotherapy department or rehabilitation clinic; 4) able to read and speak Chinese. Patients who were not able to comprehend the content of the questionnaire were excluded. Each participant was asked to sign a written informed consent before completing the questionnaire. The study was approved by Research Ethical Committee of a local university. The data was collected from February 2007 to May 2007.

3.2.2 The Pain Self-Efficacy Questionnaire (PSEQ)

The PSEQ comprised of 10 items assessing the patient's self-efficacy beliefs on performing a range of life activities taking pain into consideration (Appendix 1). Each item is rated on a 7-point Likert scale ranging from 0 = not at all confident to 6 = completely confident. The maximum possible score is 60. The higher PSEQ score indicated that patients with higher self-efficacy beliefs on performing life activities despite of pain.

3.2.3 Other Pain Measures

The Visual Analogue Scale (VAS), modified Roland-Morris Disability Questionnaire (RMDQ) and Short-form Health Survey (SF-36) were used to evaluate the correlations with the Chinese PSEQ. VAS involves a 10-cm horizontal line anchored "no pain" at the left end, and "pain as bad as it can be" at the right end. The subject was requested to make a mark along the line corresponding to the level of subject's present pain. It is the most common test for measuring perceived pain intensity (Turk and Melzack, 2001). RMDQ is a 24-item self-report functional status measure for clients with low back pain (see Appendix 2). Each question is given a score of either "1" (agree with statement) or "0" (disagree with statement) and the total score is summed to a scale of 0 (no pain and normal function) to 24 (maximum pain and dysfunction). This instrument has been validated and is widely used for assessing disability level of people suffering from low back pain (Roland and Morris, 1983; Tsang, 2004). In the modified RMDQ, the word "pain" was used to substitute "back pain". It has been used for assessing the current physical disability of a heterogenous group of chronic pain patients (Asghari and Nicholas, 2001). SF-36 is the most common generic instrument in measuring patients' health-related quality of life (Appendix 3). Its reliability and validity have been well established (Resnik and Dobrykowski, 2005).

3.2.4 Statistical Analysis

The Statistical Package for the Social Sciences (SPSS, version 16.0) and the AMOS 4.0 statistical program were used to for data analysis. Descriptive statistics were computed for all study variables. For reliability measures, Cronbach's alpha was computed to evaluate the internal consistency of the Chinese PSEQ items. The construct-related validity of the instrument was assessed through confirmatory factor analysis and item analysis. Pearson product-moment correlation was used to evaluate the bi-variate associations between the total score of Chinese PSEQ, Visual Analog Scale, modified Roland-Morris

Disability Questionnaire, and SF-36. Due to a large number of intercorrelations, a strict significant level was set as correlation coefficient $r > 0.4$ and $p < 0.001$.

3.3 Results

3.3.1 Demographic Data

Subjects' characteristics and Chinese PSEQ data is shown in *Table 1*. The mean age of the 120 subjects (39 male, 81 female) was 41.9 years old. The mean duration of pain was 31 months. The pain location included lower back (38.3 %), neck (9.2 %), shoulder (8.3 %), knee (6.7 %), foot (6.7 %), wrist (2.5 %) and others areas (11.6 %). The mean of total Chinese PSEQ score was 40.1 (SD = 11.0) and mean VAS was 4.4 (SD = 1.9) among the participants.

3.3.2 Psychometric properties of Chinese PSEQ

3.3.2.1 Reliability

The Cronbach's alpha coefficient of Chinese PSEQ was computed to be 0.94, and no significant gender differences was found in the psychometric properties of PSEQ (*Table 2*). This high value indicated that the Chinese version of PSEQ also had excellent internal reliability in that population, as compared to the original English version (Nicholas, 2007) and Lim *et al.* study (2007).

Table 1. Demographic characteristics of the subjects in the study of the Chinese version of Pain Self-efficacy Questionnaire (n=120).

Variables			Mean	SD	Range
Age			41.91	12.21	18-77
Gender	Male	31 (32.5 %)			
	Female	81 (67.5 %)			
Number of pain location	1	83.3 %			
	>1	16.7 %			
Pain duration (month)			31.24	52.91	2-300
Total Chinese PSEQ score			40.13	11.00	9-60
Visual Analog Scale, VAS (cm)			4.38	1.94	0.7-8.7
Modified RMDQ			8.88	5.19	0-21
SF-36 :					
Physical Function			62.71	19.92	10-95
Role Physical			28.84	34.68	0-100
Bodily Pain			39.53	13.95	12-74
General Health			47.56	19.63	10-92
Vitality			44.75	15.46	5-80
Social Function			60.59	21.88	12.5-100
Role Emotional			42.37	43.69	0-100
Mental Health			60.07	18.67	16-100

Chinese PSEQ: Chinese version of Pain Self-Efficacy Questionnaire

Modified RMDQ: Modified Roland-Morris Disability Questionnaire

SF-36: Short-form Health Survey

Table 2. Gender difference of the subject characteristics and psychometric properties of Chinese version of PSEQ.

	Mean (SD)		P value
	Male N=39	Female N=81	
Pain duration (month)	27.08 (38.72)	33.27 (58.62)	0.55
Visual Analog Scale (0-10)	4.37 (1.93)	4.40 (1.95)	0.92
Modified RMDQ (0-24)	8.19 (3.60)	9.30 (5.61)	0.46
SF-36 (0-100)**:**			
Physical Function	70.00 (15.61)	59.07 (21.11)	0.058
Role Physical	30.88 (35.94)	27.91 (34.16)	0.77
Bodily Pain	38.41 (9.12)	40.26 (15.49)	0.65
General Health	50.06 (16.91)	46.56 (20.48)	0.54
Vitality	49.71 (15.96)	42.79 (14.81)	0.12
Social Function	65.44 (19.02)	58.43 (22.61)	0.26
Role Emotional	47.06 (44.19)	40.31 (43.38)	0.59
Mental Health	61.18 (20.77)	59.16 (18.03)	0.71
Chinese PSEQ (0-6)**:**			
Q1: enjoy life	3.59 (1.65)	3.98 (1.17)	0.14
Q2: do household	3.87 (1.47)	4.17 (1.37)	0.27
Q3: maintain social activity	4.08 (1.49)	4.27 (1.36)	0.48
Q4: cope with pain in most	4.23 (1.31)	4.12 (1.21)	0.66
Q5: do most of work	3.87 (1.32)	4.09 (1.19)	0.37
Q6: do leisure activity	3.72 (1.43)	4.02(1.41)	0.27
Q7: cope with pain without	3.85 (1.46)	4.07 (1.38)	0.41
Q8: accomplish life goal	4.15 (1.13)	4.14 (1.36)	0.95
Q9: keep normal lifestyle	4.08 (1.44)	4.33 (1.25)	0.32
Q10: becomes more active	3.36 (1.56)	3.59 (1.47)	0.43
Total Chinese PSEQ score (0-60)	38.59 (11.50)	40.79 (10.76)	0.35
Cronbach's alpha	0.935	0.944	

Modified RMDQ: Modified Roland-Morris Disability Questionnaire

SF-36: Short-form Health Survey

Chinese PSEQ: Chinese version of Pain Self-Efficacy Questionnaire

3.3.2.2 Validity

3.3.2.2.1 Confirmatory Factor Analysis

Following the guidelines suggested by Hoyle and Panter (1995), Browne and Cudeck (1993), and Hu and Bentler (1995), the goodness of fit of the one-factor model for the PSEQ was assessed using the chi-square, chi-square/degree-of-freedom ratio, the goodness of fit index (GFI), the cumulative fit index (CFI), and the root mean square error of approximation (RMSEA). A nonsignificant chi-square, a relative chi-square (χ^2/df) in the range of 3 to 1, and values greater than 0.90 for the GFI and CFI are considered acceptable model fit, with a value of 0.95 or higher for the CFI considered an excellent fit. In addition, the RMSEA with 90% confidence intervals were reported, where a value less than 0.05 indicates close fit and values up to 0.08 indicate reasonable errors of approximation in the population (Byrne, 2001).

Confirmatory factor analysis for the one-factor model yielded the following results: χ^2 (35, N = 120) = 74.11, $p < 0.05$; $\chi^2/ df = 2.12$; GFI = 0.88, CFI = 0. 96, RMSEA = 0.097. Specifically, the chi-square/degree-of-freedom ratio and the CFI indexes are in the excellent fit range while the chi-square, GFI, and the RMSEA indexes do not support a good fit for the model. All factor loadings for the PSEQ factor were significant (critical ratio greater than 1.96 or less than –1.96) at the 0.05 level, with no factor loadings less than 0.67.

To improve the model, we examined the modification indices to determine whether additional paths can be added to the confirmatory factor analysis model (*Table 3*). In examining the modification indices and the expected parameter change values, we found that by correlating error terms e7 *"Cope with pain without medication"* and e4 *"Cope with pain in most situations"*, the chi-square is reduced by 14.72, and the expected parameter change for this correlated path is 0.29. Correlating error terms e8 *"Accomplish goals in life"* and e9 *"Live a normal lifestyle"* will further reduce the chi-square by 19.30, and the expected parameter change for this correlated path is 0.21. As can be observed, each pair represents two similar items. Therefore, there is good substantive and statistical justification that these

pairs of error terms are correlated. After rerunning the analysis by adding two pairs of correlating paths between the two error terms, the overall chi-square value, with 33 degrees of freedom for the refined model, is computed to be 36.79, which is not significant at $p = 0.30$. The χ^2/df value of 1.12 is within the 3 to 1 range of fit and represents an excellent fit. The GFI of 0.94 indicates that the model is a very good fit; the CFI of 0.996 indicates that the model is an excellent fit; and the RMSEA of 0.031 (90% confidence interval [CI]: 0.00–0.08) also indicates that the model is an excellent fit. Because the revised one-factor model fits the empirical data extremely well, the results confirmed that the Chinese version of the PSEQ, like the original PSEQ, should be considered and used as a unidimensional scale. *Figure* 1 depicts the revised confirmatory factor analysis model for the PSEQ.

Table 3. Confirmatory factor analysis: AMOS output for one-factor model of Chinese Pain Self-Efficacy Questionnaire: Regression weights of the initial model and goodness-of-fit Indices.

Item	Standardized Regression Weights			
Q1	0.799			
Q2	0.734			
Q3	0.794			
Q4	0.763			
Q5	0.764			
Q6	0.863			
Q7	0.667			
Q8	0.794			
Q9	0.856			
Q10	0.780			
	Modification Index	**Parameter change**	**Covariance**	**Correlation**
e8 <--> e9	19.304	0.207	0.256	0.470
e4 <--> e7	14.716	0.290	0.308	0.372

	χ^2	χ^2/df	GFI	NFI	CFI	RMSEA
Default model	74.113**	2.118	0.879	0.919	0.955	0.097
Revised model 1: Add e8 and e9 path	52.410*	1.541	0.913	0.942	0.979	0.067
Revised model 2: Add e8 and e9 path, and e4 and e7 path	36.787	1.115	0.937	0.960	0.996	0.031

** $p<0.01$, * $p<0.05$

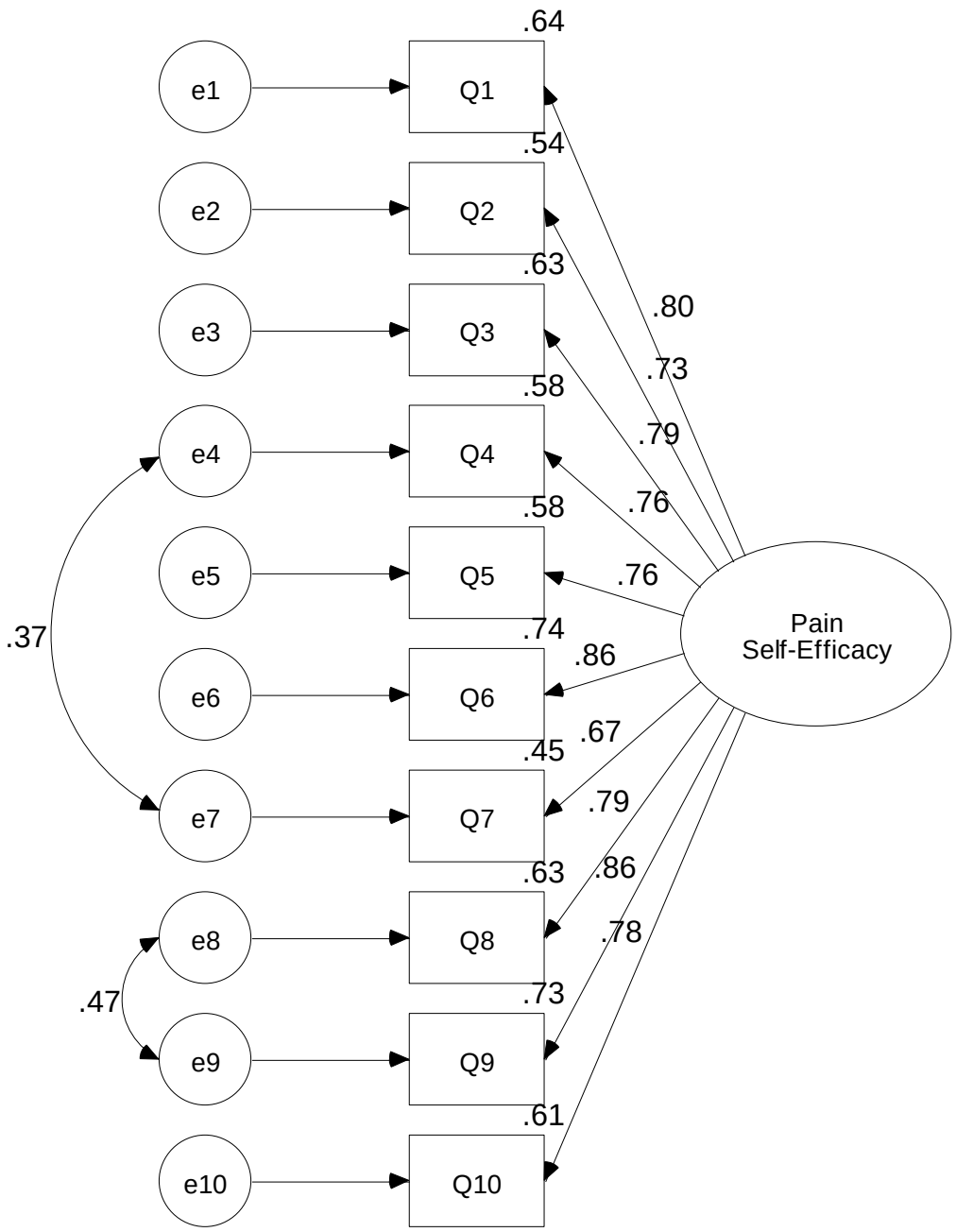

Figure 1. **Confirmatory factor analysis results for the Chinese version of Pain Self-Efficacy Questionnaire.**

3.3.2.2.2 Item Analysis

The results of item analysis showed the means of each item score ranged from 3.52 to 4.24 (SD 1.23-1.50) in the 0-6 scale. The corrected item-total correlations (discriminative indices) ranged from 0.70 to 0.85 (*Table 4*). Whatever item was deleted or retained, the Cronbach's alpha still kept the range from 0.93 to 0.94. These results revealed a satisfactory substantive validity.

Table 4. Corrected item-total correlation, item mean and standard deviation for Chinese PSEQ items (n=120).

Item	Mean	SD	Item-Total Correlation (*r*)	Cronbach's α if Item Deleted
Q1	3.85	1.35	0.76	0.935
Q2	4.08	1.40	0.70	0.937
Q3	4.20	1.40	0.76	0.935
Q4	4.16	1.24	0.76	0.935
Q5	4.03	1.23	0.73	0.936
Q6	3.93	1.42	0.83	0.931
Q7	4.00	1.40	0.67	0.939
Q8	4.14	1.33	0.79	0.933
Q9	4.24	1.31	0.85	0.930
Q10	3.52	1.50	0.75	0.935

3.3.2.3 Correlations between Chinese PSEQ and other instruments

Based on the strict criteria of significance of Pearson product-moment correlation coefficient $r > 0.4$ and $p < 0.001$, significant bi-variate correlations were shown between the Chinese PSEQ and the Modified Roland-Morris Disability Questionnaire, and 6 subscales of SF-36 (*Table 5*). The correlation between the Chinese PSEQ and VAS was not significant but a trend of negative correlation was found ($r=-0.36$, $p<0.001$). The correlation coefficient between the Chinese PSEQ and the two subscales of SF-36 (General Health and Vitality) did not reach significance.

Table 5. Correlations between Chinese PSEQ and other pain measures.

		Correlation with Chinese PSEQ (r)	*p* value
VAS		-0.36	0.001
Modified RMDQ *		**-0.65**	**0.001**
SF-36	**Physical function***	**0.50**	**0.001**
	Role-physical*	**0.46**	**0.001**
	Bodily pain*	**0.56**	**0.001**
	General health	0.29	0.041
	Vitality	0.29	0.036
	Social function*	**0.64**	**0.001**
	Role-emotional*	**0.43**	**0.001**
	Mental health*	**0.46**	**0.001**

*: r >0.4 and p <0.001

3.4 Discussion

A Confirmatory Factor Analysis (CFA) was firstly used to confirm the original Pain Self-Efficacy Questionnaire (PSEQ) exploratory model by a group of Chinese patients suffered from various pain conditions. The results provide an evidence to the existing one-factor structure proposed at the original PSEQ (Nicholas, 2007). Moreover, CFA is a structural equation modeling technique used to determine the goodness of fit between a hypothesized model and sample data, and whether to add paths in a model to increase its goodness-of-fit. In our initial model, the chi-square/ degree of freedom ratio and CFI index showed the model was acceptably fit, however, the chi-square, GFI and RMSEA were in poor fit. According to the indication of Modification Index, two covariance paths (e4 and e7, e8 and e9) were then added. The modified model showed an excellent fit to our data at all goodness-of-fit indices, chi-square (df = 33) = 36.79, p = 0.30, CFI = 0.996, GFI = 0.94, RMSEA = 0.03 (90% CI: 0.00-0.08). It strengthens the credibility of PSEQ construct and can be developed as a standardized psychosocial measure.

The items of the instrument showed a high internal consistency (Cronbach' α =0.94) which also matched with the findings reported in the previous PSEQ versions (Lim *et al.*, 2007; Nicholas, 2007). In comparisons with other instruments for pain-related self-efficacy, the Self-Efficacy Scale (Altmaier *et al.*, 1993) and Chronic Pain Self-Efficacy Scale (Anderson *et al.*, 1995) also had satisfactory psychometric properties, and their reliability and construct validity were similar with that in Chinese PSEQ. However, the items in the Chinese PSEQ are more related to the activities in Hong Kong lifestyle. On the contrary, some items in the Self Efficacy Scale such as shoveling snow, doing a load of laundry, and working in a house repair do not match the lifestyle in Hong Kong.

Our data obtained from a group of Hong Kong pain patients demonstrated the highest mean PSEQ item scores and the total score, followed by the Lim's Hong Kong version, and the lowest scores were found in the original version that conducted from a group of Australian pain sufferers. This indicated an interesting cultural difference. People in Chinese or Hong Kong population tend to be more introvert, also have higher tolerance to their surroundings but seldom share their own suffering to others (Smith, 2002b). Also, the financial and health care support by the Hong Kong government is lower than those provided in Australia or Western countries. Even through people are suffering from pain, they prefer to retain their routine work either in form of paid work or housework. They would also maintain their lifestyles as possible (Smith, 2002a). According to Bandura's Self- efficacy theory, the most powerful source of enhancing or reducing an individual's self-efficacy belief was self-performance. When people can successfully perform their work and activities, they would have higher self-efficacy beliefs that they can perform such behaviors. The history of their pain condition could be another explanation: The mean pain duration among the subjects in this study was relatively shorter (mean=31 months, median=9 months) than that reported in Lim *et al.*'s Hong Kong version (median=34 months, range=6-454 months) and that reported in Nicholas's study (mean=9.9 years). Also, the pain intensity reported in the present study (VAS=4.4/ 10) was lower than did the Lim *et al.*'s (NPRS=5.8/10) and the Nicholas's one (NPRS=6.1/ 10). Brox *et al.*(2005) suggested that there was a stepwise deterioration of impairment and

disability from the subacute stage to the chronic stage. Therefore, we believe that for people who suffer pain at the subacute stage or early chronic stage, or for those suffer from mild to moderate intensity of pain, their self-efficacies in coping with daily activities may not be vastly influenced. This provides an insight that we should manage patients' pain and assess their self-efficacies in early pain stage in order to prevent a reduction of self-efficacy beliefs and motivations on coping with daily activities.

We found that the pain self-efficacy beliefs were significantly correlated with physical disability, which is consistent with previous findings (Altmaier *et al.*, 1993; Arnstein *et al.*, 1999). However, we only found a negative trend between self-efficacy and perceived pain intensity. This finding is also consistent with those revealed in previous studies (Linton *et al.*, 1996; Turk *et al.*, 2003; Denison *et al.*, 2004; McCahon *et al.*, 2005; Gohner and Schlicht, 2006). Since pain is a multi-facet problem, and Chinese PSEQ is not an instrument used for measuring pain intensity. This may explain why PSEQ is no significantly correlated with pain intensity as measured by VAS in this patient population.

In the present study, we recruited participants with musculoskeletal pain who were receiving rehabilitation treatment. It would be interesting to know if our findings can be applied to people who suffer from other types of pain. Further studies should explore if the present findings can be generalized to people suffering from headache, neuropathic pain or cancer pain. Besides, our findings have found a significant correlation between pain self-efficacy beliefs and daily functional activities. Further study may also evaluate a cut-off score of the instrument for identifying patients who are likely to end up with good functional outcomes. This may allow the health care system to run the budgets more efficiently, and provide differential treatment (medication, physiotherapy or self-efficacy enhancing counseling) specifically to tackle the primary problem of each individual. A clinical trial can be done to investigate whether pain self-efficacy in coping with daily activities and/ or socio-demographic factors would predict pain intensity and physical outcomes after a course of treatment by a regression model.

3.5 Conclusions

The present study shows that the Chinese version of Pain Self-Efficacy Questionnaire had very satisfactory reliability and construct-related validity measures. By using confirmatory factor analysis, we obtained a one-factor structure, which further demonstrate the unidimensionality of the PESQ in a sample of Chinese patients receiving physiotherapy treatment for musculoskeletal pain. High correlations between Chinese PSEQ and other pain measures indicate its usefulness in assessing the self-efficacy beliefs of pain patients among Chinese population.

CHAPTER 4

PILOT STUDY AND MOTIVATIONAL ENHANCEMENT THERAPY (MET) TRAINING FOR PHYSIOTHERAPISTS

CHAPTER 4 PILOT STUDY AND MOTIVATIONAL ENHANCEMENT THERAPY (MET) TRAINING FOR PHYSIOTHERAPISTS

This chapter reports the pilot studies run prior to the randomized controlled trial of the integrating Motivational Enhancement Therapy and physiotherapy. The first part of this chapter describes the procedures of developing the content of Motivational Enhancement Therapy (script generation), responses of subjects and expert panel on the scripts, and the pooling criteria of the scripts. The second part of this chapter shows the process of the MET training for physiotherapists, which consists of the training procedure, the physiotherapists' self evaluation results on the training, and the researcher's observation results of the physiotherapists' performances.

4.1 Part I: Development of Motivational Enhancement Therapy (MET)

4.1.1 The Content of MET: Generation of Scripts

In order to verify the reliability and validity of the proposed MET content in patients with pain, a pilot study was done prior to the main study. At the first step, the researchers designed a set of statements and questions (79 items) according to the Motivational Interviewing strategies designed for pain management (Jensen, 2002) and the motivational enhancement factors. Under each specific MET strategy, we produced several script items with three different quality of expression: low (26 items), neutral (26 items) and high (27 items). The neutral quality scripts were produced with the use of general communication skills and expressed in the usual manner by physiotherapists in clinical practice; the low quality scripts referred to the use of general communication skill but deliberately removed the MET spirit and avoided adopting any counseling-related skills; whereas the high quality scripts were prepared with the intention to integrate the MET spirit and incorporated with counseling techniques into the communication during clinical practices. Subsequently, those scripts were scored by the patients and the

expert panel. By calculating all the scorings and summarizing the comments for each item from the script, the researchers refined the item content, i.e. retained or modified the relevant items, and deleted the irrelevant items, and further stratified them and to be used as clinical examples in the two study groups during the training for the physiotherapists.

4.1.2 Pain Subjects and Scoring Process

Thirty pain sufferers receiving physiotherapy treatments in a local rehabilitation clinic (The Hong Kong Polytechnic University Rehabilitation Clinic, HKSAR) were invited to join this pilot study from January to February 2007. They were asked to give ratings on the scripts.

A researcher read out each item from the scripts, and asked the subjects to give the rating on the quality of the item in expressing the meaning of its belonging MET strategy. For example:

MET strategy "Elicit self-motivation statement":

"*How does the following question elicit you to express your concerns for pain?*"

- *"What is your reason for visiting physiotherapy?"*
- *"Where is your pain? How long have you suffered from pain?"*
- *"Before the treatment, I would like to understand your pain situation. Would you mind telling me where your pain is located? How long have you suffered from this pain? And how did it happen"*

MET strategy "Express empathy":

"*If the therapist uses the following statement to respond to your pain problems, how much empathy can he/ she express?"*

- *"Um um"*
- *"So you think that prolonged sitting during office hour causes you pain"*

- *Um um, I understand what your situation is. You mean prolonged sitting during office hour seems to be the reason of your pain, and you feel hard to change. Do I hear correctly?*

A five-point Likert Scale was rated for the item expression quality:

1: the item *does not* apply any of the spirit of the MET strategy,

2: the item *slightly* applies the spirit of the MET strategy,

3: the item *neutrally* applies the spirit of the MET strategy,

4: the item *considerably* applies the spirit of the MET strategy,

5: the item *exactly* applies the spirit of the MET strategy.

The score of each item from the script was calculated. Then it was used as a criterion for retaining or deleting that item from the scripts. If the score of a particular item was lower than that of the average score of the low quality scripts, that item would be deleted, whereas for an item with a score higher than that of the average score of the low quality scripts, that item would be retained. The item score was also used as a criterion of script pooling. For the item with a score higher than the average score of the neutral quality scripts, that item was allocated to a script pool for the experimental group. For the item with a score equal or lower than the average score of the neutral quality scripts, they were allocated to a script pool for the control group.

4.1.3 Expert Panel and Scoring Process

Five physiotherapists and three clinical psychologists were requested to serve as the expert panel to verify the scripts. They received a questionnaire in which the study background, objective, and MET framework were explained on the covering page (see Appendix 4). The instruction of the scoring was also listed. They were asked to give ratings and recommendations on each item from the scripts by answering the following two questions:

(i) The relevance of each item to its related MET strategy for chronic pain patients:

A. Relevant, retain as is *B. Delete*

C. Modify as _____;

(ii) The quality of expression of the item content:

1. Poor *2. Fair* *3. Neutral* *4. Good* *5. Excellent*.

All of the items were shown in the questionnaire. The panel members' ratings on the relevance of the items were used as a criterion for retaining or deleting that item from the script. If four or more expert panel members rated "*Delete*" on a particular item, that item would be removed from the script. The scores of the expression quality of each item were calculated and used as another criterion of item retaining or deleting from the script. If the score of an item was lower than the average score of the low quality scripts, that item would be removed from the script, whereas for those items that scored higher than the average score of the low quality scripts, that item would be retained. The item score was also used as a criterion for pooling the script. For the item that scored higher than the average score of the neutral quality scripts was allocated into the pool for the experimental group. For the item with a score equal or lower than the average score of the neutral quality scripts, that item was allocated into the pool for the control group.

4.1.4 Script Pooling Criteria and Procedure

By combining the scorings of expression quality on each item from the pain subjects and the expert panel, we firstly calculated the raw average scores for the low, neutral and high quality scripts. Secondly, we deleted the item if it fulfilled both of the following deletion criteria: (i) four or more expert panel members suggested deleting that item, and (ii) its item score was lower than the average score of the raw low quality scripts. Afterwards, the average scores of the scripts at three qualities (low, neutral and high) were recalculated. Fourthly, the retained items from the scripts were refined based on the recommendations made by the expert panel and patients. Fifthly, the researcher classified the scripts into

2 pools according to the average scores of the neutral quality scripts: for the items that scored higher than the average score of neutral quality scripts, they were allocated into the script pool prepared for the integrated motivational enhancement therapy and physiotherapy group (i.e. experimental group); for those items scored equal or lower than the average score of neutral quality scripts were allocated to the script pool prepared for the physiotherapy alone group (i.e. control group).

4.1.5 Results

From the scorings made by the expert panel and pain subjects on the quality of script expression, the average score of the raw low quality scripts was 2.30 (SD = 1.03, SE = 0.25, 95% CI = 2.06-2.56), the neutral quality scripts was 3.50 (SD = 0.96, SE = 0.23, 95% CI = 3.27-3.74), and the high quality scripts was 3.79 (SD = 0.93, SE = 0.24, 95% CI = 3.55-4.03). The average score of the scripts with low quality expression seems to be much lower, and can easily differentiated from the other two levels. However, we could not find a clear cut-off point between the neutral and the high quality scripts.

Later, based on the expert panel's rating for the item relevance, and the patients and expert panel's ratings on the quality of the item expression, we determined whether an item should be retained or deleted from the scripts. Following the two deletion criteria, an item would be deleted when it was suggested as irrelevant to MET by four or more panel members and its score was less than 2.30. As a result, 8 out of 26 items from the low quality scripts were deleted. The recalculated average score of the retained 18 items in the low quality scripts was increased to 2.62 (SD = 1.11, SE = 0.27, 95% CI = 2.35-2.89) (see *Table 6*). Then, the researcher modified the retained items based on the pain subjects and panel members' recommendations. Some of the items were retained as is the original content, some of them were suggested to be shortened, and some of them should be rephrased.

Table 6. Mean total scores, standard deviations and standard errors of the three quality scripts (79 scripts), and mean scores, standard deviations and standard errors of the script pools for the two study groups.

	Mean total score	SD	SE
Low quality scripts: (item 1, 4, 8, 9, 13, 15, 20, 23, 26, 29, 32, 33, 37, 41, 44, 45, 47, 52, 56, 60, 64, 68, 69, 71, 74, 79)	2.306	1.026	0.250
Recalculated low quality scripts: (item 1, 4, 8, 13, 15, 20, 23, 26, 32, 33, 37, 41, 44, 56, 60, 64, 68, 74)	2.623	1.108	0.271
Neutral quality scripts: (item 3, 5, 7, 11, 14, 16, 19, 21, 22, 24, 30, 34, 35, 39, 42, 49, 51, 53, 58, 61, 63, 66, 70, 72, 75, 78)	3.501	0.961	0.234
High quality scripts: (item 2, 6, 10, 12, 17, 18, 25, 27, 28, 31, 36, 38, 40, 43, 46, 48, 50, 54, 55, 57, 59, 62, 65, 67, 73, 76, 77)	3.791	0.925	0.237
Scripts allocated into the pool for the experimental group	3.909	0.866	0.216
Scripts allocated into the pool for the control group	2.853	1.106	0.274

We determined to use the average score of 3.50 as a cut-off point. For those items scored higher than 3.50 were allocated into the pool for the experimental group, while for those items scored 3.50 or below were allocated into the pool for the control group. As a result, 17 out of 18 items in the low quality scripts (94.4 %) were allocated into the pool for the controlled group, and the last item was modified and put into the pool for the experimental group. Eleven out of the 26 items from the neutral quality scripts

were put into the controlled pool, while other 15 items from the neutral quality scripts were put into the pool for the experimental group. Twenty out of 27 items from the high quality scripts (74.1%) were grouped under the experimental pool, and the other 7 items were put into the controlled pool. Finally, there were 35 items were pooled for the controlled group and 36 items were pooled for the experimental group.

4.2 Part II: Motivational Enhancement Therapy (MET) Training for Physiotherapists

4.2.1 Subjects

In order to standardize the application of MET among the physiotherapists, a training series was provided to the recruited physiotherapists prior to the main randomized controlled trial study. Six physiotherapists working in an outpatient physiotherapy department of a local hospital (Princess Margaret Hospital, HKSAR) were invited to participate in our study. They had an average of 14.1 years (range = 7-19 years, SD = 3.97 years) of clinical experience.

4.2.2 Training Procedures

The six physiotherapists obtained three parts of trainings: an eight-hour training series and a two-week practice. The 8-hour training series was further divided into two parts. In the initial six hours of the training, all 6 physiotherapists were told about the study rationale and design, and theory of MET and the general principles. Then the six physiotherapists were randomly allocated into the MET+PT group (experimental group) and the PT alone group (control group). The group allocation of the six physiotherapists was matched by the year of their clinical experience. In the second part of the training, the physiotherapists obtained the next two hours of training divided by group. For the physiotherapists in the experimental group (n = 3), specific MET strategies for pain management were explained in detail. The scripts items allocated into the experimental pool were printed out for the physiotherapists' references

and were demonstrated as examples. Verbal and non-verbal counseling skills such as asking open-ended questions, talking with eye-contact, communicating sincerely and graciously, and working on treatment plan worksheet (Appendix 5) were taught. A video demonstration of scripts and the counseling skills was also provided. A group discussion was included at the end of the training session. On the contrary, the physiotherapists in the control group were only told the title and basic concept of MET strategies in the last two-hour training without explaining any detail. The script pool prepared for the control group were given and demonstrated at that training session. The physiotherapists in that group were asked to communicate with patients by using their usual professional manners, but to avoid using MET skills during the study period.

After completing the eight-hour training, all training materials were provided to the physiotherapists. They were required to practice the MET technique or controlled technique on their pain patients for two weeks for controlling the quality and consistency of the intervention protocol. During the practical period, a researcher observed their performances and recorded with a checklist (Appendix 6) to ensure that the physiotherapists were capable to perform the required communication skills during their clinical practice with real patients. Under each MET strategy item, a five-point scale was used to count the frequency of using a particular MET strategy in one practical session:

0= did not use any MET strategy at all in a session (0 %),

1= rarely used MET strategies in a session (25 %),

2= occasionally used MET strategies in a session (50 %),

3= often used MET strategies in a session (75 %),

4=used MET strategies most of the time in a session (>90 %).

The researcher scored the observation result and then discussed with every observed physiotherapist about his or her performance, and whether his or her skills need to be modified. Moreover, each physiotherapist was asked to self-evaluate on the effectiveness of training. Two questions were asked:

(i) How much MET knowledge you have obtained from the training, and

(ii) The frequency of using the MET strategies in your practices.

A self-evaluation sheet with the 5-points grading were given to quantify the result:

0 = not a bit (0 %),

1 = rarely (25 %),

2 = occasionally (50 %),

3 = often (75 %),

4 = most of the time (>90 %) (Appendix 7).

This stage was launched on January 2007 and finished on February 2007.

4.2.3 Results

The average clinical experience for the physiotherapists in the experimental group was 14.3 years (SD = 0.58 years), and those in the control group was 14.0 years (SD = 6.2 years).

4.2.3.1 Self Evaluation Results on the MET Knowledge Acquirement

The self evaluation results among the three physiotherapists in the experimental group rated the score of "3" or "4" for using the MET strategy items. The mode of all item scores were "3", except the item on "give free choice", one physiotherapist rated "2". The mean of all item scores ranged from 2.67 to 3.33. No item scored lower than "2". It implied that the physiotherapists in the experimental group agreed that they have gained substantial information about the MET skills through the training. On the other hand, the three physiotherapists in the control group rated "1" or "2" on most of MET strategy items, and "0" on "write a change/ treatment worksheet" and "proxy efficacy" by one physiotherapist. The mode of the item scores was "1" and the mean item scores ranged from 1.25 to 1.50. No item was rated higher than 2. It implied that they have learnt only little MET knowledge from the training. The self-evaluation scores

showed significant group-difference in most of the MET strategies between the physiotherapists in both groups, i.e. the physiotherapists in the MET+PT group thought they acquired significantly more MET knowledge than did those in the PT alone group (*Table 7*). For the item "writing treatment worksheet", the physiotherapists in the MET+PT group tended to make higher scores than did the physiotherapists in the PT alone group although the difference did not reach significance.

Table 7. The comparisons of the self-evaluation on the MET training between the two study groups.

MET strategy	MET knowledge acquirement *			Frequency of MET skills used in practice #		
	MET+PT	PT alone	*p*	MET+PT	PT alone	*p*
Elicit self-motivation statement	3.00	1.33	**0.038**	3.33	1.00	**0.020**
Listen with empathy	3.33	1.33	**0.013**	3.33	1.00	**0.020**
Provide feedback	3.00	1.33	**0.038**	3.33	1.00	**0.020**
Affirm patients	3.00	1.33	**0.038**	3.33	1.00	**0.020**
Handle resistance	3.00	1.33	**0.038**	3.00	1.00	**0.026**
Summarize	3.00	1.33	**0.038**	3.33	1.00	**0.002**
Develop change plan	3.00	1.33	**0.038**	3.33	1.33	**0.013**
Give free choice	2.67	1.33	**0.047**	3.33	1.33	**0.013**
Provide information and advice	3.33	1.33	**0.013**	3.67	1.33	**0.008**
Review consequence of change vs not change	3.33	1.00	**0.020**	3.33	1.00	**0.002**
Write treatment worksheet	3.00	0.07	0.073	3.00	0.67	0.730
Proxy efficacy	3.00	1.00	**0.026**	2.67	1.00	0.082

**Percentage of MET knowledge acquirement from the MET training:*

0 =0 %, 1 = 25 %, 2 = 50 %, 3 = 75 %, 4 = >90 %

 # Frequency of MET skills used in a practical session:

0 = not a bit (0 %), 1 = rarely (25 %), 2 = occasionally (50 %), 3 = often (75 %), 4 = most of the time (>90 %)

The findings on the MET knowledge acquirement in the two groups matched with our training objective that the physiotherapists in the experimental group would learn good MET technique after the training, so they could adopt this new counseling skills and incorporate with their pain physiotherapy practices for pain patients. In contrast, the physiotherapists in the control group would know only the basic MET strategy and general principles, but not the details of this treatment approach, so that they would just perform their usual physiotherapy approach.

4.2.3.2 Self Evaluation Results on the Practical Performance

The physiotherapists in the experimental group regarded they have used substantial MET skills during the practical period. They rated "3" or "4" on the frequency on using the MET strategy items, except one strategy "write a change/ treatment worksheet". Two physiotherapists scored themselves only "2" on this strategy. The mean of all items scored from 2.67 to 3.33 (*Table 7*). None of the item score was less than 2. They explained that they did not write the worksheet very often because they did not have enough time to implement a written treatment worksheet during the practices. Instead, they have discussed the content of the treatment plan with their patients verbally. In contrast, those physiotherapists in the control group rated that they used "1" or even "0" MET skills during their practical period, except for four MET items (develop treatment plan, give free choices, provide information and show proxy efficacy). One therapist rated "2" on these four items. He explained that those four items were not the skills only for the MET approach but also the communication skills in his routine physiotherapy treatment. The mean of the item scores were 0.67-1.25, and all of them were less than 2. It implied that they thought they have used only basic communication skill during the delivery of physiotherapy to their patients, but have not adopted the MET skills. *Table 7* shows that the physiotherapists in the MET+PT group believed that they used significantly more MET in clinical practice than did the PT alone group except in two MET strategies ("writing treatment worksheet" and "proxy efficacy") that did not reach significance.

4.2.3.3 Observation on Physiotherapists' Practical Performances

The observed physiotherapists' performances during the practical period showed that the three physiotherapists in the experimental group adopted got the score of "2" indicating that the MET strategies and components were adopted in greater than 50% of time in each practical session. It means that the practical performances among the physiotherapists in the experimental group were acceptable. However, the observer was unable to assess the strategy on "handling resistance" since no argumentation occurred during that session. Also another strategy on "write a treatment worksheet" was not used in that session. The physiotherapists explained that they had discussed the treatment plan with the patients verbally instead of carrying out with a written format. The observer provided some suggestions to the physiotherapists to modify their skills on the lower scored MET strategies, reminded them to work on the treatment worksheet, and handle resistance if argumentations occurred when they implemented the main study. As for the physiotherapists in the control group, they usually adopt only the common communication skills in their usual practice. They did not use MET strategies at all, or just rarely (25 % of the practical session) or occasionally (50 % of the practical session) adopted the MET strategies in a treatment session. On the contrary, they tended to use close-ended questions or just using ethical communication during the whole treatment session. However, there are some overlapping areas between MET and physiotherapy practice such as "summarize the treatment" and "develop the treatment plan". These two communication skills are also very commonly used in physiotherapy practice. It implied that they kept on using their usual physiotherapy treatment method, but rarely used MET strategies during their clinical practices. Such performances conformed to the requirement of being the physiotherapists in the control group.

In the present study, an investigator who received training in MET and counseling technique and the detail of the study played the role as an observer, and rated on the performance of the trained

physiotherapists. It would be better if two observers who are independent to the study can be arranged in the future study. This way, the inter-rater reliability between the two observers can be investigated.

CHAPTER 5

WOULD THE INTEGRATION OF MOTIVATIONAL ENHANCEMENT THERAPY TO PHYSIOTHERAPY IMPROVE TREATMENT OUTCOMES IN PEOPLE WITH CHRONIC LOW BACK PAIN? A RANDOMIZED CONTROLLED TRIAL

CHAPTER 5 WOULD THE INTEGRATION OF MOTIVATIONAL ENHANCEMENT THERAPY TO PHYSIOTHERAPY IMPROVE TREATMENT OUTCOMES IN PEOPLE WITH CHRONIC LOW BACK PAIN? A RANDOMIZED CONTROLLED TRIAL

ABSTRACT

Objective: The study aimed to investigate the effectiveness of an integrating Motivational Enhancement Therapy and conventional physiotherapy program (MET+PT) on motivational, pain, physical and psychosocial function, and exercise compliance for patients with chronic LBP, as compared with the conventional PT alone program. The extent to which the proposed motivational enhancing factors would contribute to enhance the pain and physical treatment outcomes was also explored.

Methods: Seventy-six chronic LBP patients were randomly assigned to receive either integrating MET+PT or PT alone treatment. The MET included Motivational Interviewing strategies and motivational enhancing factors. The conventional PT consisted of Interferential therapy and exercises. Assessments were conducted at the baseline, 5^{th} and 10^{th} treatment sessions, and one-month follow-up. Between-group differences and interaction effects were analyzed by repeated measures ANOVA. Multiple regressions were used to explore how the motivational enhancing factors would contribute to the treatment outcomes.

Results: The MET+PT group produced significantly better treatment outcomes than the PT alone group in terms of three motivational enhancing factors (proxy efficacy, working alliance and expectancy to treatment), lifting capacity, SF-36-General health, and exercise compliance. Pain intensity at the treatment end measured by Visual Analog Scale (VAS) was significantly contributed by the baseline VAS score

when the two groups were analyzed together. When analyzing them separately, the higher pain self-efficacy belief, the higher proxy efficacy belief and the higher working alliance contributed to the lower VAS score in the MET+PT group. On the contrary, the higher expectancy to treatment and the higher pain self-efficacy belief associated with the lower VAS in the PT alone group. The higher expectancy to treatment contributed to the higher post-treatment lifting capacity in the MET+PT group but not in the PT alone group. The LBP specific disability measured by Roland-Morris Disability Questionnaire was contributed by pain self-efficacy belief in the MET+PT group and in the PT alone group. Exercise compliance was contributed by pain self-efficacy belief only in the MET+PT group. The baseline performance of outcome variables also significantly influenced patients' performance upon the completion of the treatment.

Conclusions: The addition of MET to PT treatment was more effective in improving patients' motivation to treatment, physical function and exercise compliance for patients with chronic LBP as compared with the PT alone treatment. The higher pain self-efficacy belief and the higher expectancy to treatment significantly contributed to the lower pain intensity and higher physical functions.

Key words: Chronic low back pain, motivational enhancement therapy, physiotherapy, proxy efficacy, working alliance, expectancy to treatment, pain self-efficacy belief

5.1 Introduction

Low back pain (LBP) is the most common reasons for physician visits (Jones and Macfarlane, 2005; Lind *et al.*, 2005). Its life time prevalence in the general population was 70-85% (Furlan *et al.*, 2002). Physiotherapists play an important role in pain rehabilitation. Conventional physiotherapy consists of the application of pain modalities, therapeutic exercise, postural correction and activity modification for daily living. Exercises and activity of daily living modification have been regarded as effective strategies in improving pain treatment outcomes (Hayden *et al.*, 2005). However, if a patient has poor motivation of adopting these strategies, it will weaken the therapeutic effects and increase the opportunity of symptoms relapsing (Kerssens *et al.*, 1999; Friedrich *et al.*, 2005). Those treatments usually aim at relieving pain and improving function. Even some patients may achieve satisfactory results, some may feel little improvement or may relapse over a period of time (Jensen, 2002). Unlike other conditions, management of chronic LBP is difficult if the treatments only focus on tackling the biological problems but neglecting the psychosocial issues. Nowadays, physiotherapists gradually shift away from a traditional biomedical model to a biopsychosocial model (Friedrich *et al.*, 1998; Kerssens *et al.*, 1999), and try to adopt some psychosocial treatment approach as adjunct treatments to enhance the effectiveness of the conventional physiotherapy treatment.

Biopsychosocial approach has been highlighted in the recent fifteen years (Lorig *et al.*, 1999; Turk and Okifuji, 2002; Gatchel, 2004; Gohner and Schlicht, 2006). Unlike the traditional biomedical approach, the biopsychosocial approach aims to “manage pain” rather than “cure pain”. According to the biopsychosocial model, chronic LBP can be influenced by multi-facets such as medical, physical, psychological, and social aspects. Therefore, multidisciplinary treatments is advocated that includes pain medication, physiotherapy, functional training, problem-solving skills and health education (Moore *et al.*, 2000; Lorig and Holman, 2003). Health care professionals help patients to develop self-management behavior, i.e. engage treatments, make changes on maladaptive behaviors, implement pain coping skills in

activity of daily living. Patients are encouraged to be active, and the health care professionals mainly give assistance rather than being authoritative to the patients.

The biopsychosocial approach has shown its success in relieving pain, and improving function and use of coping skills in patients with back pain (Hildebrandt *et al.*, 1997; Gohner and Schlicht, 2006), however, it has not yet been widely adopted in the rehabilitation field settings. Some clinicians acknowledge that this approach is potentially effective but they express that there is a lack of time to learn and implement it to their busy clinical practice. Moreover, most patients prefer to receive passive medical treatment and they are less motivated to attend series of psychosocial treatment sessions. Some other people rely on analgesia and hesitate to actively participating in the treatment. Those reasons eventually undermine both clinicians and patients' motivations to adhere to the biopsychosocial approach (Jensen, 2002; Strong *et al.*, 2002).

Motivation refers to an individual's initiation, intensity and persistence of a behavior (Geen, 1995). It is related to a one's move on doing particular behavioral change, intention to participate in treatment, alliance with others on a task and expectancy to the outcome (Jensen *et al.*, 2003). Patient's motivation plays an important role in determining how much his/her can benefit from chronic pain treatments, in terms of how well they have learnt and maintained self-managing skills and behavioural changes, such as using pain self-coping skills, performing exercise, modifying maladaptive posture and lifestyle to sustain a normal life (Strong *et al.*, 2002 ; Jensen *et al.*, 2003). Patients' motivational issues are known to influence treatment outcomes on pain (Asghari and Nicholas, 2001; Jensen, 2002; Denison *et al.*, 2004; Turner *et al.*, 2005; Meredith *et al.*, 2006).

Motivational Interviewing (MI) is a brief, directive and client-centered counseling technique that aims at eliciting clients' motivation and commitment to particular behavioral changes (Miller, 1983). The overall spirit is collaborative, evocative and honoring of client autonomy (Rollnick *et al.*, 2008). Its follows four main principles: *(i) Expressing accurate empathy*: counselors listen to clients' concerns with emotional reflections; they express clients' concerns as if their own concerns but without losing the "as if"

quality; *(ii) Developing discrepancy*: counselors explore ambivalences between clients' goals and problematic behaviors, ask clients to consider the pros and cons, in a way to elicit clients to develop possible changing strategies and take responsibilities on those changes; *(iii) Avoiding argumentation & rolling with resistance*: counselors restate or reframe patients' disagreements instead of direct challenges, then invite patients to justify the disagreement in such way to let clients recognize their own ambivalences and provide a chance to make any modification; and *(iv) Supporting self-efficacy*: counselors inspire clients' beliefs in their capabilities of performing a behavioral change in order to promote their confidences that they are capable to make changes by themselves (Rollnick and Miller, 1995; Eccles and Wigfield, 2002; Jensen, 2002). Self-efficacy has been proven to play an important role on rehabilitation outcome (Altmaier *et al.*, 1993; Arnstein *et al.*, 1999; Asghari and Nicholas, 2001).

Adaptation of Motivational Interviewing is based on the MI principles as the core of intervention, but integrating with some non-MI techniques, which is getting more commonly used (Burke *et al.*, 2003; Hettema *et al.*, 2005). The adaptation of MI or MI alone are both shown to be beneficial in facilitating behavioral changes in various health related behavioral problems such as drinking, diet and exercise and treatment adherence (Miller, 1983; Burke *et al.*, 2003; Brodie and Inoue, 2005; Hettema *et al.*, 2005; Morris and White, 2007). Ang *et al.* (2007) investigated the effect of phone-delivery MI in improving exercise adherence and symptoms of fibromyalgia. Six MI phone calls were delivered by a clinical psychologist after the completion on exercise program. They showed that the phone delivery MI was significantly promoted exercise adherence, improved pain and physical disability. However, no control group was included in that study. Friedrich *et al*. (1998; 2005) conducted a randomized controlled trial to investigate the effects of a combined motivation and exercise program on motivation and disability for patients with chronic LBP over one-year period. Ten sessions of exercise training was delivered by physiotherapists and adopted in both groups. An extra five sessions of motivation program were adopted in the motivation group by physiotherapists that included counseling strategies. It emphasized on the importance of regular exercise, reinforcement techniques in commending patients' effort, and use of

written treatment contract and exercise diary. Although the combined motivation and exercise group demonstrated significantly greater reduction on pain intensity and disability, and better treatment attendance than did the exercise group, no significant within- and between-group differences were found on the motivation measures, i.e. distress, internal locus of control and attitude towards exercises. The authors interpreted that those factors might not be sensitive enough in reflecting patients' motivation. On the other hand, we assumed that the treatment programs only provided exercises but not included any pain relieving modality may weaken the treatment effects especially for patients whose pain interfered with their motivations of performing exercise. Leonhardt *et al.* (2008) conducted a Transtheoretical Model based motivational counseling approach in promoting physical activity in patients with acute LBP. The general practitioners and practice nurses were involved in that study. The practice nurses received a 20-hour Transtheoretical Model training prior to the study, which consisted of the general counseling skills, stage of change and stage-specific strategies. The general practitioners were trained to use a LBP guideline. All patients received the guidelines from the general practitioners. For the patients in the intervention group, the practice nurse adopted extra three Transtheoretical Model based counseling sessions. The results demonstrated no significant difference between the intervention groups and the control group in physical improvement. The authors explained that although the nurses have learnt the counseling skills, their quality and consistency of interventions were not known.

Motivational approach has been widely adopted by clinical psychologists for pain management. It is effective in increasing patients' motivation of actively participating in treatment. Physiotherapists usually spend much more time with patients in clinical practice than the clinical psychologists. The integration of MET and physiotherapy is a potentially effective biopsychosocial treatment but limited studies have looked into this matter. In the present study we conducted a brief biopsychosocial program integrating Motivational Enhancement Therapy (MET), a kind of adaptation of MI incorporates MI technique and other motivational enhancing factors into conventional physiotherapy (PT) and investigated the treatment effects on chronic LBP patients. The objectives of the present study were two folds:

(i) To examine the effectiveness of a MET+PT treatment program *(MET+PT)* on the patients with chronic LBP as compared to a conventional physiotherapy (*PT alone*); and

(ii) To explore the extent to which the proposed motivational factors would contribute to enhancing the pain and physical outcomes.

5.2 Methodology

5.2.1 Subjects

A randomized controlled trial was conducted in a local outpatient physiotherapy department (Princess Margaret Hospital, Hong Kong). All subjects were recruited consecutively if they agreed to participate and fulfilled the inclusion criteria: aged between 18 to 65 years old, diagnosed with LBP, and suffered from LBP for at least three months at the moment they referred to the physiotherapy department. Exclusion criteria were: pregnancy, wearing cardiac pacemaker, pain due to neurological disorders, consistent sciatica symptom, spondylolisthesis for more than l cm, received physiotherapy for LBP in recent 3 months, or people who were contraindicated to receive interferential therapy (IFT). Besides, each potential participant was invited for an interview. Any participant who showed obvious psychological or psychiatric sign or issuing any work-related compensation was also excluded from the study. All eligible subjects were randomly assigned to either (i) the integrating MET+PT group (the experimental group); (ii) the PT alone group (the control group) by a randomized table generated by a computer program. All subjects and assessor were blinded from the group allocation.

5.2.2 Treatment Procedure

All subjects received a total of ten 30-minute treatment sessions within 8 weeks. The subjects in the experimental group received MET + PT during treatment sessions from trained physiotherapists. The subjects in the control group only received conventional physiotherapy for LBP. The physiotherapists in

the control group did not adopt the MET skills but just communicate with the patients in usual professional manner.

Conventional PT:

All subjects received the same conventional physiotherapy that included 15-minute interferential therapy (Erbogalvan e2, ERBE ELEKTROMEDIZIN GmbH, Tubingen) and tailor-made therapeutic back exercises. Four interferential therapy suction electrodes were placed over the L2 to S1 paraspinal muscles on both sides. The frequency of current was 80-100 Hz, the intensity of stimulation was at moderate tingling sensation level. The therapeutic back exercises comprised stretching and strengthening exercises of trunk and lower limbs muscles, which were taught by their own physiotherapists. A LBP home exercise booklet was also given to all subjects. Various types of back exercises were shown in the booklet, and the therapist prescribed the most suitable exercise regime for each patient.

Motivational Enhancement Therapy (MET):

The MI principles and strategies were adopted as the core component of MET. In addition, some motivational enhancing factors that may enhance behavioural changes and pain-related treatment outcomes on chronic pain patients were also added into the MET program:

(i) *Proxy Efficacy* refers to patients' confidence on their therapists' abilities to function effectively on their behalf (Bray *et al.*, 2001). It correlates to self-efficacy in rehabilitation programs (Bray and Cowan, 2004) and adherence of behavioral change (Christensen *et al.*, 1996).

(ii) *Outcome Expectancy* means a belief about the consequences of performing a behavior or receiving a treatment. It contributes to patients' motivation on whether they exert self-control to pursue a goal, make action, and persist specific behaviors (Christensen *et al.*, 1996; Maddux, 1999).

(iii) Working Alliance refers to a therapeutic relationship between the patient and therapist. Bordin (1979) addressed that if therapists establish good working alliance with patients, such as listen to their concerns, set tailored goals and detect the progress together, patients may be more likely to believe that the treatment is appropriate and able to achieve desired goals.

Ethical approval was obtained from the research committee from a local university and a local hospital. A written consent was obtained from each participant (Appendix 8). The study was undertaken from March 2007 to July 2008.

5.2.3 Outcome Measures

(i) Pain intensity:

Visual Analogue Scale (VAS) was used to evaluate subjects' perceived pain severity. A 10-cm horizontal line labeled "no pain" at the left end, and "pain as bad as it can be" at the right end. Subjects made a mark along the line corresponding to the level of their present pain intensity. It is the most common instrument for recording self perceived pain intensity (Turk and Melzack, 2001).

(ii) Physical functions:

Range of trunk motion (lumbar flexion, extension, side flexion and rotation) was tested. The measuring procedures followed the instructions recommended by Clarkson (2000; Clarkson, 2005). Each direction of movement was tested for two times and the mean of the two trials was recorded.

Muscle strength of trunk muscles was evaluated by a functional *Lifting capacity test* (Clarkson, 2000; Clarkson, 2005). A lifting bar was hung on a board with shackles. A load cell was connected and the lifting force was recorded in kilograms. Patients were instructed to stand on the board with the feet kept at the shoulder width distance. During the lifting, patients kept their trunk

upright and knee slightly flexed. They lifted the bar perpendicularly with maximal pain-free force. The mean of two trials was analyzed.

Roland-Morris Disability Questionnaire (RMDQ) was a widely used self-report LBP specific instrument (Roland and Morris, 1983). Twenty-four items scored of either "1" (agree with statement) or "0" (disagree with statement) are summed up to a total score of 0 (no pain and normal function) to 24 (maximum pain and dysfunction). Its reliability and validity on assessing the disability level on LBP patients have been established (Roland and Morris, 1983; Tsang, 2004).

Physical subscales of *Short-form Health Survey (SF-36)* were used to assess perceived health and function status *(Physical function, Role-physical, Bodily pain and General health*). It is the most common generic instrument used in measuring patients' health-related quality of life. It has been used in populations of LBP and its psychometric properties have been evaluated (Resnik and Dobrykowski, 2005).

(iii) Psychosocial status:

Psychosocial subscales of *SF-36 (Vitality, Social function, Role-emotional and Mental health)* were used to investigate subjects' psychosocial quality of daily living.

(iv) Motivational status:

Patient Rehabilitation Expectancies Scale (PRES) was developed (Cheing *et al.*, *in press*) to assess patients' motivation on pain treatment. The instrument contains 35 items in three subcategories in 4 point Likert scales (1 = strongly disagree to 4 = strongly agree): *Proxy efficacy*, *Working alliance* and *Expectancy of treatment* (Appendix 9). The mean of each subscale score was measured. A preliminary study showed the instrument is reliable to measure patients' expectations about pain rehabilitation treatments.

Pain Self-Efficacy Questionnaire (PSEQ) consists of ten self-reported questions in measuring the pain self-efficacy beliefs on activities and tasks despite of pain on a 7-point Likert scale, where 0

equals to “not at all confident” to 6 equals to “completely confident” (Nicholas, 2007). A total score of PSEQ is calculated by summing up the 10 item scores. A Chinese version of PSEQ was used in the present study (Lim *et al.*, 2007). Good reliability and validity have been investigated (Lim *et al.*, 2007).

(v) Exercise compliance:

It tested the frequency of the subjects performed the therapeutic exercises at home. Subjects recorded time and date that they performed the therapeutic exercises. The number of days per week and the numbers of times per day were computed as the patients’ exercise compliance.

The pain intensity, physical and psychosocial outcome measures were assessed before treatment, in session 5, session 10, and one-month follow-up. The PRES were assessed after receiving treatment in session 1, session 5 and session 10. The exercise compliance was recorded it session 5, session 10 and one-month follow-up.

5.2.4 Data Analysis

All data were analyzed by the SPSS (version 16.0). Repeated measures analysis of variance (ANOVA) was used to analyze the differences between groups (group effect), within each group (time effect), and the group x time interaction effect over the assessment periods. Pair-wise contrast comparisons assessed the within-group changes between the baseline and each post-treatment session. To evaluate the contribution of the motivational enhancing factors to enhance the pain and physical outcomes, hierarchical multiple regression analyses were performed using post-treatment outcomes as dependent variables. Demographic variables (age, gender, Body Mass Index), pain duration, pain recurrence (dummy variable) and baseline score of the outcome variable were entered as independent variables in the first block. The motivational enhancing factors: pain self-efficacy, proxy efficacy, working alliance and expectancy to treatment were entered as the second block. Type of intervention

(dummy variables: the MET+PT group was coded as 0, the PT alone group was coded as 1) was entered as the third block. This sequence enables us to investigate the relative importance of the motivational enhancing factors and the type of intervention on contributing to the treatment outcomes over the baseline performance, demographic and pain-related variables. Stepwise regression method was then performed for separate intervention group to analyze the extent to which the motivational enhancing factors would change the pain and physical outcomes across the treatment period. All analyses were calculated with an intention-to-treat approach. The level of statistical significance was set at the *p* value of 0.05.

5.3 Results

5.3.1 Demographic Data

Through the interview, we identified three patients with LBP who had obvious depression and anxiety symptoms, which might be a confounding factor of our treatment outcomes. Therefore, we excluded them from the present study. Some of the other recruited subjects also had minor emotional distress, such as worrying about pain would interrupt their jobs or would not work anymore caused by pain. However, they said that they were still managed to work or hope to go back to work soon. From the baseline scores of SF-36 psychosocial subscales and PSEQ, the scores in those subjects were not extremity high or low. Therefore, we included them eventually.

Eighty-eight eligible patients were recruited in the present study. Seventy-six of them came to receive the first treatment session but 12 patients refused to participate in our study due to personal reason. We compared the demographic data between those 12 people who refused to participate in this study with those participated in the study, and there was no significant differences of the demographic data (see *Table 8*) except some of the participated subjects had recurrent pain, and all people who refused to participate suffered from the first episode of pain. Usually, it is difficult to differential whether the pain is in a consistent/ first episode or inconsistent/ recurrent condition once it becomes chronic. Fourteen out of 21 subjects had recurrent pain and had received LBP physiotherapy before, while 5 subjects who had

never receive any physiotherapy before, and other 4 subjects received physiotherapy previously but not for LBP. For the current pain intensity, there was no significant difference between the subjects who participated or refused to participate in the present study.

Table 8. Comparison between the demographic characteristics of the subjects participated in or refused to participate in the present study.

	Participated subjects (n=76)	**Refused subjects (n=12)**	***p* value / [a]*chi-square***
Age (yr)	44.82 ± 10.91	42.33 ± 9.98	0.46
Body Mass Index	24.05 ± 3.95	23.36 ± 2.57	0.61
Pain duration (months)	46.32 ± 64.31 (range: 3-300)	37.50 ± 57.42 (range: 3-180)	0.66
Gender	Male: 28 (36.8 %) Female: 48 (63.2 %)	Male: 5 (41.7 %) Female: 7 (58.3 %)	[a] *0.49*
Regular analgesia	23 (30.26 %)	4 (33.33 %)	*0.54*
Previous PT treatment	17 (22.37 %)	0 (0 %)	*0.06*
Recurrent pain	21 (27.63 %)	0 (0 %)	*0.03*
Prolonged posture	no: 22.4 % Sitting: 31.6 % Standing: 13.2 % Lifting : 9.2 % Other: 1.3 % More than 1 posture: 22.4 %	no: 33.3 % Sitting: 16.7 % Standing : 16.7 % Lifting : 25 % More than 1 posture: 8.3 %	*0.44*
Pain intensity	5.25 ± 2.04	4.99 ± 2.21	0.76

The mean ages of the subjects' was 44.8 years old (SD = 10.9), pain duration was 46.3 months (SD = 64.3), the pre-treatment VAS was 5.25 (SD = 2.04) (see *Table 9).* Demographic variables and baseline measurements showed no significant differences between the two groups except the *lifting capacity* and the *SF-36 General health* score. For the lifting capacity, the MET+PT group demonstrated 10.3 kg higher than did the PT alone group ($p = 0.029$) at the baseline. Also the MET+PT group had 8.8 lower SF-36 *General health* subscale score than did the PT alone group ($p = 0.047$). When performing the

repeated measures ANOVA, the baseline value of the lifting capacity and SF-36 General Health were treated as the covariates of that of the post-treatment outcomes. The lifting capacity was also found to have significant gender difference in each group. The lifting capacity in male subjects was 23.82 kg (p=0.003) and 12.85 kg (p=0.034) greater than those in the female subjects in the MET+PT group and the PT alone group respectively. Moreover, gender is likely to be a confounding factor for the lifting capacity, thus, the gender was also entered as a covariate of lifting capacity.

Table 9. Demographic characteristics of the subjects in the study of the integration of Motivational Enhancement Therapy and Physiotherapy.

	MET+PT group (n=38)	**PT group (n=38)**	***p* value**
Age (yr)	44.6 (11.2)	45.1 (10.7)	0.85
Gender: Female	22	26	0.48 [a]
Male	16	12	
Body Mass Index (kg/m^2)	24.3 (4.67)	23.8 (3.2)	0.58
LBP duration (mo)	41.6 (56.8)	51.0 (71.5)	0.53
Subjects had recurrent LBP	8	13	0.31 [a]
Subjects had previous physiotherapy	6	11	0.27 [a]
Subjects had regular analgesic use	12	11	1.00 [a]
Pain intensity (VAS, 0-10)	5.3 (2.4)	5.3 (2.0)	0.99

[a]: Chi-square test for Gender, Recurrent LBP, Previous physiotherapy and regular analgesic use.

5.3.2 Treatment Effects: Between-group Differences, Within-group Differences and Interaction Effects across Treatment Sessions and One-month Follow-up

(i) Pain intensity

The repeated measures ANOVA showed significant pain reduction in both groups ($F = 29.12$, $p < 0.001$). Pair-wise contrast comparisons showed that the VAS recorded at each post-treatment session was significant lower than that at the pre-treatment (all $p < 0.001$). However, the between-group difference was not significant ($p = 0.49$). The MET+PT group demonstrated a continuous pain reduction trend from pre-treatment to one-month follow-up, which VAS scored from 5.3 to 3.1. In contrast, the PT alone group showed an increase in VAS at the one-month follow-up (*Table 10*). However, there was no significant group x time interaction effect ($F=1.43$, $p=0.24$).

(ii) Physical Functions

After entering the baseline lifting capacity and gender as covariate, the adjusted lifting capacity showed significant within-group effect ($p < 0.001$) and group x time interaction effect ($p=0.006$); the lifting capacity increased dramatically in session 5, session 10 and one-month follow-up as compared with the pre-treatment ($p < 0.01$). It also showed a significant group effect: the subjects in the MET+PT group performed significantly greater lifting strength than the PT alone group ($F = 6.19$, $p = 0.015$). After adjusting the baseline lifting capacity and gender, the MET+PT group demonstrated 9.13 kg and 9.75 kg higher lifting strength than the control group in session 10 and at one-month follow-up respectively (*Figure 2* and *Table 10*). Both groups showed the score of RMDQ had significantly reduced over time ($p < 0.001$); the reduction level tends to be larger in the MET+PT group (see *Table 10*) but no significant between-group effect or group x time interaction effect ($p=0.221$) was found. No significant within-group, between-group and group x time interaction effect was found in most measurements of range of trunk motion except rotation and side flexion, in which only the MET+PT group demonstrated significant

within-group improvement in rotation over time ($p < 0.01$), and the MET+PT group had significantly greater improvement than did the PT alone group on performing side flexion to right after receiving treatment (F=5.497, p=0.007) (*Figure 3*). However, the between-group differences on all range of trunk motions were not significant. All four physical subscales of SF-36 showed significant improvements in both groups but no significant group x time interaction effect; by entering the baseline General Health subscale score as covariate, The adjusted General Health subscale score was significantly higher in the MET+PT group than the PT alone group over time (F = 6.21, $p = 0.015$) (see *Figure 4* and *Table 10*).

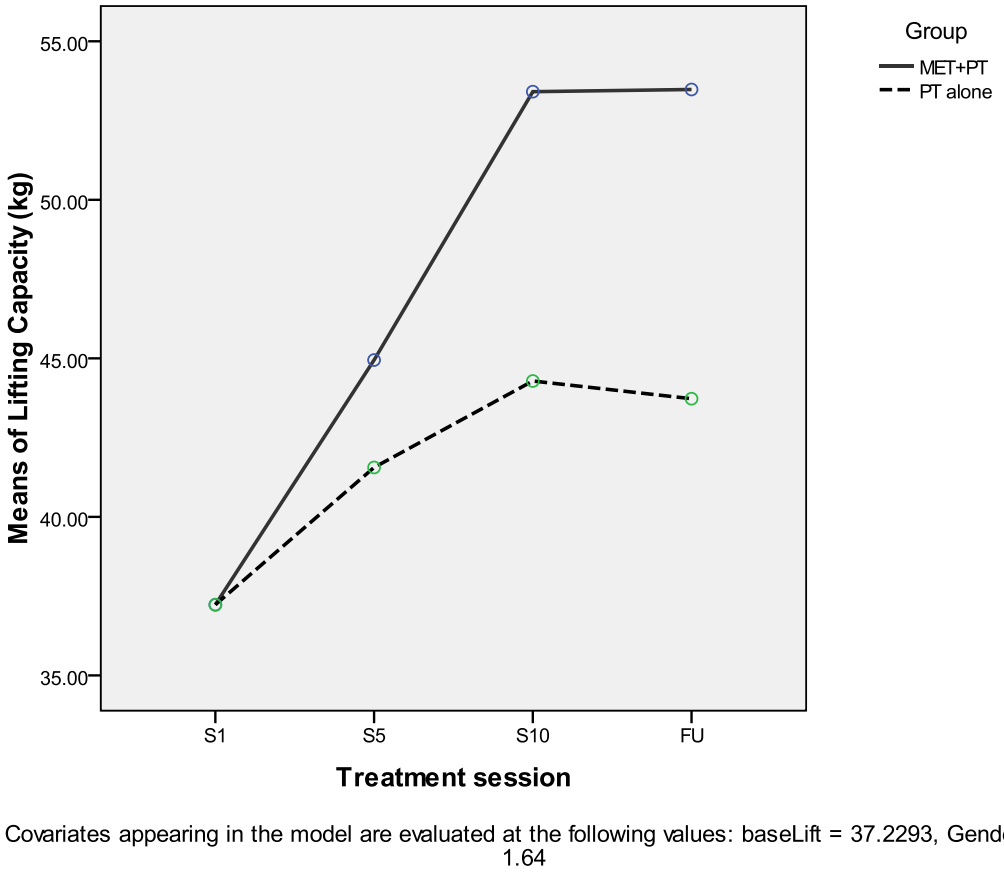

Figure 2. The adjusted lifting capacity of the two study groups (baseline lifting capacity and gender were set as covariate).

Within-group difference: $p<0.001$, group x time interaction effect: $p=0.006$, between-group difference: $p=0.015$.

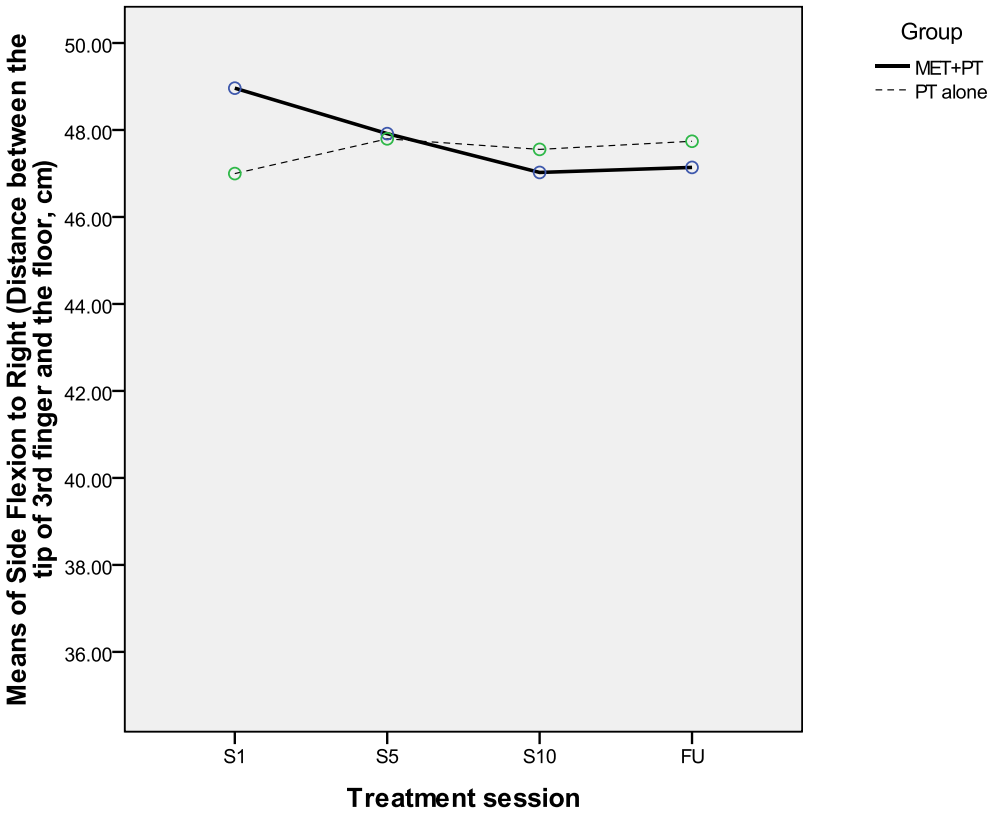

Figure 3. Range of motion in side flexion to the right for the two study groups.

Group x time interaction effect: p=0.007

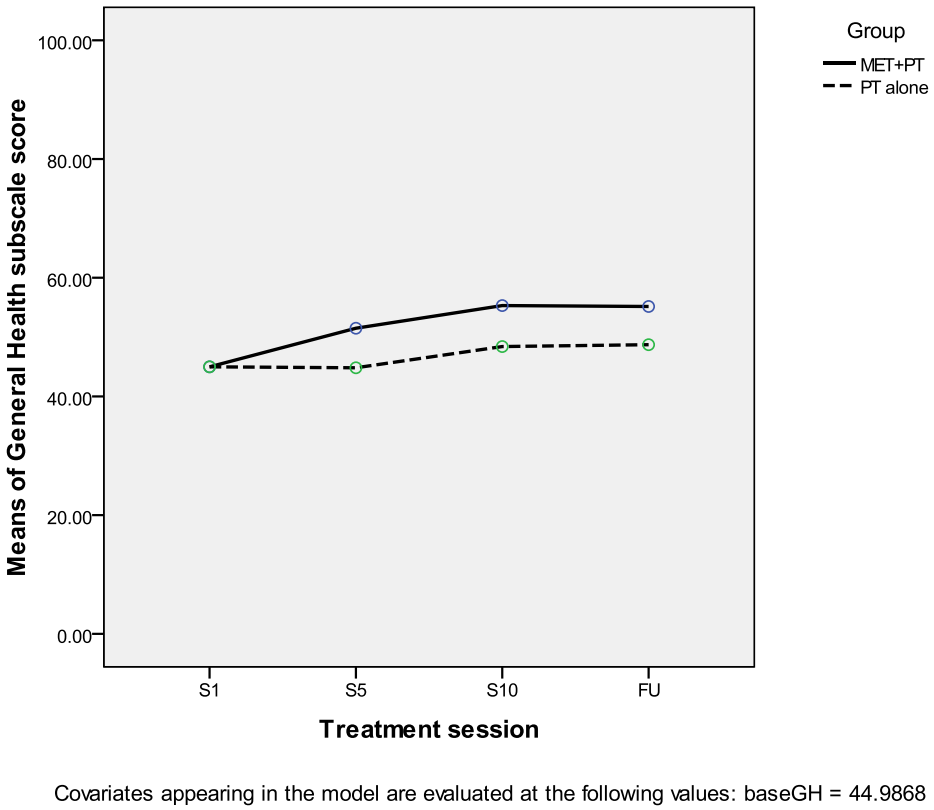

Figure 4. The adjusted SF-36 General Health subscale scores for the two study groups (baseline General Health subscale score was set as covariate).

Within-group difference: $p<0.001$, group x time interaction effect: $p=0.078$, between-group difference: $p=0.015$.

(iii) Psychosocial status

The four psychosocial subscales of SF-36 showed significant increases after treatments (all $p < 0.001$), but the between-group differences and group x time interaction effect did not reach significance (*Table 10*).

(iv) Motivational status

The three PRES subscale mean scores demonstrated significant between-group effect (all $p < 0.01$, F values were shown on *Table 10*). By the end of session 10, the MET+PT group demonstrated 0.29

higher mean score of proxy efficacy subscale, 0.24 larger mean score in working alliance subscale, and 0.2 larger mean score of expectancy subscale than did the control group (all $p < 0.05$). There was no significant group x time interaction effects in these 3 subscales. The PSEQ score increased significantly in both groups ($p < 0.001$) but no significant between-group difference or group x time interaction effect was found (F=0.318, p=0.755) (*Table 10*).

(v) Exercise compliance

Exercise compliance demonstrated significant between-group difference (F = 12.11, $p = 0.002$). The subjects in the MET+PT group performed an average of 7.7 extra times/ week as reported in session 10, and an average of 7.2 times/ week as reported in the 1-month follow-up as compared with the PT alone group ($p < 0.01$). No significant within-group effect (F=0.767, p=0.469) or group x time interaction effect (F=0.614, p=0.501) was found.

Table 10. Outcome of the integration of Motivational Enhancement Therapy and Physiotherapy: mean, standard deviation, and Repeated Measures ANOVA among baseline (S1), session 5 (S5), session 10 (S10) and one-month follow-up (FU)

Outcome measures	Mean, SD																Within-group Contrasts			Between-group Difference	
	S1				S5				S10				FU				*p*			F	*p*
	MET+PT		PT		MET+PT		PT		MET+PT		PT		MET+PT		PT		S5-S1	S10-S1	FU-S1		
VAS	5.3	2.2	5.3	2.0	4.3	2.0	4.2	1.8	3.3	2.1	3.6	2.4	3.1	2.1	3.9	2.5	**<0.001**	**<0.001**	**<0.001**	0.47	0.50
Lifting capacity	42.5	22.4	32.1	17.5	50.3	26.6	36.4	21.2	58.6	29.6	39.3	20.9	58.5	29.0	38.9	21.3	**0.11**	**0.01**	**0.003**	**5.01**	**0.03**
Adjusted Lifting capacity	37.23	SE= 0.0	37.23	SE= 0.0	44.95	SE= 1.98	41.56	SE= 1.96	53.41	SE= 2.37	44.29	SE= 2.34	53.48	SE= 2.56	43.73	SE= 2.52	**0.005**	**<0.001**	**<0.001**	6.19	**0.015**
RMDQ	10.0	4.3	10.1	5.5	7.9	4.2	8.4	5.4	6.3	4.8	7.2	5.6	5.6	4.5	7.6	6.4	**<0.001**	**<0.001**	**<0.001**	0.42	0.52
Flexion	18.9	1.3	18.6	1.1	18.9	1.4	18.7	0.9	18.9	1.4	18.6	1.0	18.8	1.3	18.6	1.1	0.65	0.84	0.40	1.27	0.26
Extension	13.4	0.8	13.2	0.8	13.2	0.8	13.2	0.7	13.2	0.6	13.2	0.7	13.3	0.6	13.3	0.6	0.38	0.48	0.96	0.17	0.68
Side flexion (L)	49.3	6.0	47.9	5.9	48.4	5.6	48.2	4.2	47.4	5.1	47.8	4.5	47.9	5.1	47.9	4.5	0.47	**0.01**	0.10	0.08	0.78
Side flexion (R)	49.0	5.5	47.0	5.5	47.9	5.1	47.8	4.3	47.0	4.4	47.6	4.2	47.1	4.7	47.7	4.6	0.78	0.11	0.26	0.06	0.82
Rotation (L)	59.4	19.1	62.4	19.8	64.2	19.3	66.1	17.1	71.5	20.5	69.8	16.6	72.8	18.9	68.7	16.3	**0.01**	**<0.001**	**<0.001**	0.00	0.96
Rotation (R)	62.5	22.0	61.7	19.4	69.2	21.9	66.4	13.9	75.0	22.3	67.1	16.1	75.4	22.5	68.2	15.4	**0.002**	**<0.001**	**<0.001**	1.41	0.24
SF36-PF	67.4	16.8	63.3	18.4	69.6	15.8	66.5	17.0	71.7	16.8	70.8	16.4	76.3	15.1	68.2	18.4	0.13	**0.01**	**0.00**	1.60	0.21
SF36-RP	22.4	26.5	29.6	36.2	36.8	36.2	31.6	33.7	44.1	38.3	40.1	37.9	52.0	42.1	50.7	37.9	**0.03**	**0.00**	**<0.001**	0.02	0.90
SF36-BP	33.3	15.4	33.2	16.1	43.2	14.9	41.7	12.6	49.8	16.3	46.7	15.9	52.0	17.2	49.3	20.3	**<0.001**	**<0.001**	**<0.001**	0.43	0.51
SF36-GH	40.6	17.4	49.4	20.3	48.2	20.1	48.1	17.5	51.8	22.6	51.9	17.5	52.1	20.4	51.8	18.8	**<0.001**	**<0.001**	**<0.001**	**6.21**	**0.02**
Adjusted SF36-GH	44.99	SE= 0.0	44.99	SE= 0.0	51.49	SE= 2.06	44.83	SE= 2.06	55.31	SE= 2.24	48.40	SE= 2.24	55.15	SE= 2.38	48.72	SE= 2.38	**<0.001**	**<0.001**	**<0.001**	6.21	**0.015**
PSEQ	39.5	9.7	40.5	10.2	41.6	8.7	43.9	8.7	44.4	9.9	45.5	8.7	45.4	8.8	45.6	10.2	**0.03**	**<0.001**	**<0.001**	0.48	0.49
SF36-VT	44.1	19.2	48.8	20.1	47.2	16.7	52.6	15.3	55.9	18.7	58.0	15.5	55.3	19.4	57.5	19.6	**0.02**	**<0.001**	**<0.001**	0.96	0.33
SF36-SF	60.2	22.7	58.2	20.4	65.5	20.8	63.6	17.3	68.8	19.9	68.8	16.1	75.0	21.4	74.3	18.4	**0.01**	**<0.001**	**<0.001**	0.09	0.77
SF36-RE	39.5	39.4	50.9	44.3	46.5	39.2	49.1	43.0	59.7	41.1	59.7	40.4	68.4	40.2	66.7	40.3	0.50	**0.00**	**<0.001**	0.17	0.69
SF36-MH	59.8	18.3	61.5	20.4	61.0	18.7	62.3	15.8	66.0	17.8	66.8	13.8	66.5	18.9	67.9	14.7	0.40	**<0.001**	**<0.001**	0.15	0.70
Proxy efficacy	3.2	.36	2.9	.44	3.3	0.38	3.0	.41	3.4	.38	3.1	.47	-	-	-	-	**0.004**	**<0.001**	-	**13.82**	**<0.001**
Working alliance	3.5	.38	3.2	.37	3.5	.39	3.1	.4.0	3.5	.40	3.3	.47	-	-	-	-	0.89	**0.04**	-	**14.34**	**<0.001**

Expectancy to treatment	3.4	.32	3.2	.32	3.4	.32	3.2	.26	3.4	.34	3.2	.28	-	-	-	-	0.27	0.72	-	**6.80**	**0.01**
Exercise compliance	-	-	-	-	12.8	8.1	6.8	3.7	13.9	8.1	6.2	3.6	12.9	7.2	5.8	4.1	-	0.225 [a]	0.722 [a]	**12.11**	**0.002**

a: *p* value of within-subjects contrast of Exercise compliance was calculated between the S10 and S5, and between FU and S5.

Significant level: $p < 0.05$

5.3.3 Prediction for Pain and Physical Outcomes at the End of Treatment (S10)

Table 11 shows the hierarchical multiple regression results for the pain and physical outcomes at post-treatment as the dependent variables. For the pain intensity (VAS), the lower baseline score of VAS was predicted significantly on the lower post-treatment VAS score. The adjusted R^2 of Step 1 = 0.20, F (6, 65) = 3.90, p = 0.002. None of the motivational enhancing factor was additionally contributed to lower the VAS score after controlling for the Step 1 variables. For the lifting capacity, the gender (male: β=0.24, p = 0.003) and the baseline value of lifting capacity (β=0.68, p < 0.001) being entered into the first block were significantly predicted the higher post-treatment lifting capacity, adjusted R^2 = 0.70, F (6, 65) = 28.57, p < 0.001. Furthermore, the higher expectancy to treatment score (β=0.27, p = 0.002) additionally contributed significantly to the higher lifting capacity after the above demographic, the pain-related variables and the baseline measures had been accounted for. At this second step in the regression, ΔR^2 = 0.07, F change was 5.35, and significance of F change was 0.001. In the self-report LBP disability (RMDQ) model, the baseline RMDQ score showed significantly associated with the post-treatment score, adjusted R^2 of block 1 = 0.44, F (6, 64) = 10.01, p < 0.001. Moreover, the higher pain self-efficacy belief (PSEQ) (β = -0.26, p = 0.005) contributed to lower RMDQ score when the baseline RMDQ score had been accounted for, ΔR^2 = 0.14, F change = 5.77, significance of F change = 0.001. For the SF-36-General Health (GH), baseline GH score showed significantly associated with the post-treatment score, adjusted R^2 of Step 1 = 0.53, F (6, 65) = 14.33, p < 0.001. None of the motivational enhancing factor was additionally contributed to higher the GH score after

controlling for the Step 1 variables. Regarding the exercise compliance, the model was significantly predicted by age (β = 0.40, p = 0.022) and pain duration (β = 0.57, p = 0.006). The adjusted R^2 of Step 1 = 0.39, F (5, 22) = 4.42, p = 0.006. None of the motivational enhancing factor was additionally contributed to the higher exercise compliance, ΔR^2 at Step 2 = 0.09, F change = 1.00, significance of F change = 0.43. The type of intervention (the MET+PT group, β = 0.49, p = 0.006) further contributed to the higher exercise compliance. ΔR^2 at this step = 0.15, F change = 10.05, significance of F change = 0.006.

Table 11. Summary of the Hierarchical Multiple Regression Analysis for predicting pain intensity and physical outcomes at the end of treatments (S10) by motivational enhancing factors, demographic factors, baseline and intervention variables

Dependent variables	Block	Predictors	β	t	Adjusted R^2	R^2 change	F change
Visual Analog Scale	1	Age	-0.16	-1.35	0.20 **	0.27	3.90**
		Gender	0.11	0.90			
		Body Mass Index	-0.01	-0.05			
		LBP duration	-0.06	-0.44			
		LPB Recurrence	0.23	1.69			
		Baseline VAS	**0.40**	**3.44** **			
	2	PSEQ	-0.17	-1.53	0.26 **	0.10	2.45
		Proxy Efficacy	-0.17	-1.05			
		Working Alliance	0.13	0.70			
		Expectancy	-0.26	-1.45			
	3	Intervention	0.03	0.22	0.25	0.001	0.05
Lifting capacity	1	Age	0.06	0.84	0.70 **	0.73	28.57**
		Gender	**-0.24**	**-3.13****			
		Body Mass Index	0.07	0.96			
		LBP duration	0.06	0.83			
		LPB Recurrence	-0.05	-0.61			
		Baseline lifting capacity	**0.68**	**9.00****			
	2	PSEQ	0.06	0.88	0.76**	0.07	5.35 **
		Proxy Efficacy	0.13	1.32			
		Working Alliance	-0.13	-1.28			
		Expectancy	**0.27**	**3.27****			
	3	Intervention	-0.11	-1.69*	0.77	0.009	2.87
RMDQ	1	Age	-0.13	-1.30	0.44 **	0.48	10.01**
		Gender	-0.05	-0.45			
		Body Mass Index	-0.04	-0.40			
		LBP duration	<0.01	0.03			
		LPB Recurrence	0.10	0.84			
		Baseline RMDQ	**0.67**	**7.06****			
	2	PSEQ	**-0.26**	**-2.93****	0.57 **	0.14	5.77**
		Proxy Efficacy	-0.23	-1.75			
		Working Alliance	0.22	1.51			
		Expectancy	-0.20	-1.80			
	3	Intervention	-0.01	-0.06	0.56 **	<0.001	0.003
SF-36-General Health	1	Age	0.06	0.66	0.53 **	0.57	14.33**
		Gender	-0.05	-0.51			
		Body Mass Index	0.09	1.01			
		LBP duration	0.01	0.14			
		LPB Recurrence	-0.20	-1.94			
		Baseline GH	**0.73**	**8.52****			
	2	PSEQ	0.16	1.71	0.54 **	0.03	1.19
		Proxy Efficacy	0.01	0.09			
		Working Alliance	-0.02	-0.13			
		Expectancy	0.07	0.63			
	3	Intervention	-0.16	-1.74	0.55 **	0.02	3.01

Exercise compliance	1	Age	**0.40**	**2.47***	0.39 **	0.50	4.42**
		Gender	0.26	1.59			
		Body Mass Index	0.18	1.02			
		LBP duration	**0.57**	**3.05****			
		LPB Recurrence	-0.34	-1.81			
	2	PSEQ	-0.29	-1.71	0.39 *	0.09	1.01
		Proxy Efficacy	0.17	0.77			
		Working Alliance	0.03	0.11			
		Expectancy	-0.05	-0.23			
	3	Intervention	**-0.49**	**-3.17****	0.59 **	0.15	10.05 **

* $p < 0.05$
** $p < 0.01$

5.3.4 Contribution of Motivational Enhancing Factors to Improve Pain and Physical Outcomes across the Treatment Sessions in Separate Intervention Group

In the MET+PT group, the higher score of proxy efficacy in session 5 associated with the lower VAS score in session 5. The higher PSEQ score in session 10 associated with the lower VAS score in session 10. The higher score of working alliance in session 5 and the PSEQ score in one-month follow-up contributed to the lower VAS score in one-month follow-up. In the PT alone group, no motivational enhancing factor was found to significantly contribute to the pain intensity in session 5. In session 10, the lower VAS score was contributed to the higher expectancy to treatment score in session 10. The higher PSEQ score in one-month follow-up associated with the lower VAS score in one-month follow-up (see *Table 12*).

For the physical functions, the MET+PT group showed that the higher expectancy to treatment score in session 10 contributed to the higher lifting capacity in session 10 and also one-month follow-up. In the PT alone group, the higher baseline PSEQ score contributed to the larger lifting capacity at baseline and in session 10. Regarding on the

RMDQ, the MET+PT group showed that the higher PSEQ score in session 10 and 1-month follow-up associated respectively with the lower RMDQ score in session 10 and 1-month follow-up. For the PT alone group, the lower RMDQ score in session 5 was associated with the higher PSEQ score and lower working alliance score in session 5, and the lower RMDQ in session 10 and one-month follow-up were contributed to the lower PSEQ score in session 10 and 1-month follow-up. No motivational enhancing factor significantly contributed to the SF-36 General Health in the MET+PT group. For the PT alone group, the higher PSEQ score in session 10 and in 1 month follow-up associated with the higher SF-36 GH score in session 10 and 1-month follow-up respectively. The higher exercise compliance in session 10 was associated significantly with the lower PSEQ score in session 10 in the MET+PT group, and was not significant in the PT alone group.

Table 12. Summary of the Regression Analysis (Stepwise) for predicting pain intensity and physical outcomes across treatment sessions by motivational factors in separate intervention group

Dependent variables	Group	Session	F	Adjusted R^2	Predictors	B	SE	β	t
Visual Analog Scale	MET+PT	S5	5.14	0.10*	**Constant**	10.33	2.70		3.83
					Proxy Efficacy: S5	-1.82	0.80	-0.35	-2.27*
		S10	9.65	0.19**	**Constant**	7.68	1.46		5.28
					PSEQ: S10	-0.10	0.03	-0.46	-3.11**
		FU	2.65	0.31*	**Constant**	15.62	3.59		4.35
					PSEQ: FU	-0.10	0.04	-0.39	-2.42*
					Working alliance: S5	-3.65	1.57	-0.67	-2.32*
	PT alone	S10	6.50	0.13*	**Constant**	14.14	4.14		3.41
					Expectancy: S10	-3.29	1.29	-0.39	-2.55*
		FU	20.32	0.34**	**Constant**	10.60	1.53		6.95
					PSEQ: FU	-0.15	0.03	-0.60	-4.51**
Lifting capacity	MET+PT	S10	10.78	0.21**	**Constant**	-56.52	35.32		-1.60
					Expectancy: S10	2.49	0.76	0.49	3.28**
		FU	9.05	0.18**	**Constant**	-46.64	35.21		-1.33
					Expectancy: S10	2.27	0.76	0.45	3.01**
	PT alone	S1	8.64	0.17**	**Constant**	1.64	10.69		0.15
					PSEQ: S1	0.75	0.26	0.44	2.94**
		S10	4.52	0.09*	**Constant**	11.63	13.38		0.87
					PSEQ: S1	0.68	0.32	0.33	2.13*
RMDQ	MET+PT	S10	13.68	0.26**	**Constant**	17.48	3.10		5.64
					PSEQ: S10	-0.25	0.07	-0.53	-3.70**
		FU	12.53	0.24**	**Constant**	17.31	3.37		5.14
					PSEQ: FU	-0.26	0.07	-0.51	-3.54**
	PT alone	S5	5.23	0.19*	**Constant**	3.57	7.40		0.48
					PSEQ: S5	-0.22	0.09	-0.35	-2.35*
					Working alliance: S5	4.55	1.99	0.34	2.28*
		S10	6.70	0.13*	**Constant**	18.81	4.56		4.12
					PSEQ: S10	-0.26	0.10	-0.40	-2.59*
		FU	24.34	0.39**	**Constant**	25.79	3.79		6.81
					PSEQ: FU	-0.40	0.08	-0.64	-4.93**
SF-36-General Health	PT alone	S10	6.99	0.14*	**Constant**	35.10	4.15		8.47
					PSEQ: S10	0.20	0.08	0.40	2.65*
		FU	17.17	0.30**	**Constant**	3.88	11.85		0.33
					PSEQ: FU	1.05	0.25	0.57	4.14**
Exercise compliance	MET+PT	S10	5.77	0.29*	**Constant**	38.24	10.30		3.71
					PSEQ: S10	-0.54	0.22	-0.59	-2.40*

* $p < 0.05$

** $p < 0.01$

5.4 Discussions

The present study is the first randomized controlled trial to examine if the addition of Motivational Enhancement Treatment (MI and other motivational enhancing factors) to conventional physiotherapy produces better treatment outcomes than physiotherapy alone on patients with chronic LBP. We found the MET+PT group demonstrated significant better results in terms of lifting capacity, SF-36-general health and exercise compliance, and better improvement trends in VAS, RMDQ than did the PT alone group. Previous studies have shown that the use of motivational approach is effective in relieving pain and improving physical function in patients with other kinds of pain symptoms. Ang *et al.* (2007) conducted a case series adopted Motivational Interviewing phone calls on patients with fibromyalgia showed significant reduction on pain intensity and physical impairment, and patients performed more exercises after treatments. Another study also demonstrated significantly improvements on physical activity on patients with chronic heart failure (Brodie and Inoue, 2005). Friedrich *et al.* (1998) combined a motivational approach and an exercise program on the patients with chronic LBP and they found significant improvement in pain and physical outcomes. However, no psychosocial variables were measured and non-sensitive motivational measures were used in that study. In the present study we demonstrated significant group effect not only on the physical functions, but also on the motivational factors. Apart from that, most of those previous studies adopted exercise program as a controlled or the combined intervention, but none of them used pain physiotherapy as a controlled or integrative treatment. Our present study provides new evidence on the additional effects of motivational enhancing approach on conventional PT treatment on chronic LBP, which

may contribute to the future management approach for the physiotherapists and other professionals in pain rehabilitation. It means that the motivational enhancing approach is effective in enhancing the treatment effects upon the conventional PT. The MET aims at eliciting patients' motivations to change maladaptive behaviors and perform self-management skills to maintain daily functions (Rollnick *et al.*, 2008), it may influence on patients' active physical performances (i.e. lifting capacity and exercise compliance) and perceptions of well-beings (i.e. general health). Patients can witness the effectiveness of adopting self-management skills in improving their back functions.

The findings of repeated measures ANOVA demonstrated that three of the four motivational enhancing factors in terms of the proxy efficacy, expectancy to treatment and working alliance were significantly higher in the experimental group than the control group. This indicates that these variables can be regarded as important motivational factors in assessing subjects' confidences on their therapists' capacities, advancing their beliefs to the treatment outcomes and improving their trust with the therapists. Moreover, these variables seem to be more sensitive in detecting patient's motivational differences between two active treatments than did the distress, locus of control and attitude which proposed in Friedrich's study (1998). The PSEQ score in the present study showed significant improvement within both experimental and control group, but no significant group difference was found. It was not surprising to find non-significant difference between groups because the items of PSEQ only ask about people's self-efficacy of coping with the daily activities despite of pain. Subjects in the control group also experienced on improvement in coping with daily activities because they did received conventional PT during the treatment period, which is the intervention undertaken in the

control group is also a kind of active and powerful treatment. Bandura (1977) indicated that the most powerful source to enhance one's self-efficacy belief in performing a particular task is to self-perform that task.

The multiple regression analysis results showed that expectancy to treatment was significant in contributing to the lifting capacity at the end of treatment in a combination of both intervention groups and in the MET+PT group, but not significant in the PT alone group. That indicates that the higher expectation to the treatment contributes to a higher functional lifting capacity in the patients, especially for those received the integrating MET and PT intervention. In the regression model of RMDQ, we identified pain self-efficacy belief was a significant contributor in both intervention groups, i.e. the higher PSEQ score contributes to the lower RMDQ score. Such result provides evidence that the self-efficacy belief is essential in improving the LBP specific disabilities. In the regression model of pain intensity, only the baseline VAS showed to be a significant predictor. It indicates that the underlying pain condition has greater influence on the patients' perceived pain severity than did the treatment-related motivational factors. The biopsychosocial management for musculoskeletal pain tends to be more effective in improving physical performances and psychosocial functions, but unable to significantly change the nature of pain and reduce the pain intensity (Linton *et al.*, 1996; Gohner and Schlicht, 2006). To investigate the influence on two intervention groups separately, we found that in the MET+PT group demonstrated a higher proxy efficacy belief established in the first five treatment sessions also contributed to lower pain intensity in session 5. The greater therapeutic relationship built up at the initial five treatment sessions and the higher patients' self-efficacy belief in the one-month follow-up also contributed to the

lower pain intensity recorded in this group in the one-month follow-up. On the contrary, the higher expectancy to treatment contributed lower pain intensity in session 10 in the PT alone group. Similar to the MET+PT group, the patients in the PT alone group have higher self-efficacy belief in the one-month follow-up contributed to lower pain intensity in one-month follow-up. We could not identify any motivational variable has significant contribution to the exercise compliance when analyzing two intervention groups together. However, the type of intervention was a significant contributor. It indicates that the higher exercise compliance was associated with the overall motivational enhancing therapy and physiotherapy treatment rather than one particular motivational enhancing factor. Our findings supports the suggestion made by Rollnick and colleagues' (2008) that clinicians should integrate the motivational skills together in the health care practice to guide patients toward behavior changes. By separating the two groups, we found that only the MET+PT group showed that the higher pain self-efficacy at the end of treatment contributed to the higher exercise compliance. In general, we found that patients' self-efficacy belief on pain contributed to the most significance, followed by the expectancy to treatment than the proxy efficacy and working alliance in the pain the physical treatment outcomes. It reflects the fact that patients' perception of ability and their willingness to the treatment are critical motivation components which can highly influence the treatment effects (Miller and Rollnick, 2002; Jensen, 2003). Since the PSEQ score had significantly improved in both groups, which may provide an explanation why we found no significant difference in the pain reduction and LBP abilities (RMDQ) between the MET+PT group and the PT alone group.

Our present findings suggest that physiotherapists should be more aware of the patients' motivation in active participation in treatment. If therapist can improve the motivation of patients, it can enhance the treatment outcomes. In particular, they should take the essential motivational enhancing factors into account on their interventions. Providing trainings of motivational enhancing and counseling technique to physiotherapists are likely to enhance conventional rehabilitation outcomes. The content of the treatments could be flexibly refined so it can be apply in varieties of pain problems in the clinical settings.

There are limitations in the present study. First, we only performed one-month follow-up. It would be nice if future study can perform a long-term follow-up. We are performing a six-month follow-up on patients' functional activities, exercise maintenance and perceived pain intensity to investigate the long-term effects of the MET techniques. Second, we acknowledge that an 8-hr motivational training for the physiotherapists was too short as compared to a formal MI course (Motivational Interviewing Network of Trainers (Miller and Rollnick). However, our results demonstrated that the experimental group had significantly greater improvements in motivational factors and the clinical outcomes on than did the control group. Our training design and findings were comparable to those performed in another study (Leonhardt *et al.*, 2008). Our study tried to standardize the intervention extent and physiotherapists' performances. The physiotherapists were required to practice for two weeks after the eight-hour training lessons to ensure that the key components for each group were delivered correspondingly. The observations results recorded during the practical period showed that the physiotherapists understood the MET technique from training, and used or controlled

them in practice. In order to refine the quality of training procedure, two MI specific coding systems, *Manual for the Motivational Interviewing Skill Code (MISC)* and *The Motivational Interviewing Treatment Integrity code (MITI)* may be adopted.

We did not assess patients' stages of change at the baseline of treatment. But we presumed that patients suffered from pain for a long time but still willing to wait for receiving physiotherapy treatment in public hospitals are likely to either in the precontemplation stage, contemplation stage or preparation stage at the beginning of treatment. That is the reason why we determined to apply the first two phases MI strategies in our study. We also acknowledge that depression is an important factor contributes to chronic pain. However, if patients had severe depression problems that required psychotherapy, the doctor would have referred them to visit clinical psychologist, this would be a confounding factor to our study. Therefore, we screened each subject by a formal interview. If a subject complained that he/ she suffered from depression, or the investigator spotted out that the subject had depression symptoms, he/ she was excluded from the present study. Instead of measuring depression, we assessed subjects' baseline physical, psychosocial and motivational status by using RMDQ, SF-36, and PSEQ, and no extremely low or high scores were obtained, which presumed that subjects' daily function were quite satisfactory, and the recruited subjects did not seem to suffer from several depression. The present study also lacked of measurement of the usual exercise habit of our subjects, which may influence on the exercise compliance documented in the present study. However, we were interested in evaluating the subjects' compliance on the specific therapeutic exercise, which is tailor-made for their back problems, rather than the general exercises, such as jogging, swimming, or going to gymnasium. On the other hand,

the randomization of group allocation took care of the probability that some subjects in each group may have exercise habit that cancelled out the effect on the group difference.

5.5 Conclusion

The effectiveness of the integration of motivational enhancement therapy in physiotherapy treatment is successfully demonstrated by the present study in patients with chronic low back pain. The patients in the integrating MET+PT treatments group demonstrated significant improvement on patients' motivation to treatment, physical functions and exercise compliance than the patients only received physiotherapy treatment. The findings also showed significant reduction on pain intensity, although no significant difference was found between the two groups. The motivational enhancing factors, especially the self-efficacy belief on pain significantly contributed to the pain and physical treatment outcomes**.** Patients' expectancy to treatment also contributed to the lifting capacity especially for those received the integrating MET+PT treatment.

CHAPTER 6

SUMMARY AND CONCLUSION

CHAPTER 6 SUMMARY AND CONCLUSION

Low back pain (LBP) is the most prevalent chronic pain condition. Certain behaviors such as prolonged sitting, overuse of trunk muscles and prolonged working in poor postures are predisposing factors cause LBP. Subsequent behaviors for responding to the pain, such as prolonged resting, dependence on analgesia, avoiding performing daily activities, and even quitting from work, can be easily adapted. Patients' intention to receive pain rehabilitation are usually high, however, their motivations to actively participate and complete a course of treatments may be low, especially when they feel their pain symptoms begin to improve. At the same time, their motivations on performing therapeutic exercise and changing the mal-adaptive behaviors may be low. Pain is therefore easily recurrent, forming a vicious cycle in showing deterioration in the patients' biological, physical, psychological and social functions.

Motivation determines how a person learns self-management and performs behavioral changes and for his or her pain. Motivation Interviewing focuses on eliciting people to make behavioral changes demonstrates positive outcomes in people with different health-related behavioral problems. Some previous studies have demonstrated that Motivational Interviewing can significantly reduce pain and improve physical function. However, very few of them were conducted in patients with chronic LBP which is a condition that is heavily influenced by both biological and psychosocial factors. We wondered whether MI would produce additional beneficial effects on the patients with chronic LBP, when incorporate to conventional physiotherapy practice.

Motivational Enhancement Therapy (MET) proposed in the present study is an adaptive Motivational Interviewing. We have added important motivational enhancing

factors into the MET. In this study, we examined the effectiveness of MET on patients' motivations, compliance on the therapeutic exercise, pain intensity, and physical and psychosocial abilities over time. Since the protocol of MET in terms of the content and delivery frequency and duration varied among the previous motivation studies, and it should be condition specific, the present thesis has developed our own content of MET to be used in patients with chronic LBP. Then training and practical series were adopted and standardized intervention protocol was taught to the involved physiotherapists. Then, a randomized controlled trial was conducted to examine the effectiveness of the MET approach on patients with chronic LBP. Moreover, the measurement structure of the Chinese version Pain Self-Efficacy Questionnaire (PSEQ) was further confirmed in the present thesis.

Therefore, the objectives of the three main sections in the present thesis were:

1. To investigate the psychometric properties of a Chinese version of Pain Self-Efficacy Questionnaire in a sample of Chinese patients receiving physiotherapy treatment for pain. Specifically, we measured:
   (i) The internal consistency of the Chinese PSEQ items;
   (ii) The instrument construct through confirmatory factor analysis and item analysis; and
   (iii) The correlations between the Chinese PSEQ and other pain and physical outcome measures.
2. To develop the content of the Motivational Enhancement Therapy for patients with chronic LBP, and provided a formal MET training for the physiotherapists participated in the present study. We reported:

(i) The relevance of the content of Motivational Enhancement Therapy to the patients with pain;

(ii) Observation result on the physiotherapists' performances during the practical period; and

(iii) The physiotherapists' self evaluations on their understandings of MET and their performances during the practical period.

3. A randomized controlled trial was conducted to evaluate whether the addition of Motivational Enhancement Therapy on the conventional physiotherapy would produce better treatment outcomes as compared to the conventional physiotherapy alone. In this part of study, we measured:

(i) Pain intensity by Visual Analog Scale;

(ii) Physical abilities by range of trunk motion, lifting capacity, Roland-Morris Disability Questionnaire, and SF-36-physical subscales;

(iii) Psychosocial functions by SF-36-psychosocial subscales;

(iv) Exercise compliance,

(v) Motivation by Patent Rehabilitation Expectancy Scale and Pain Self-Efficacy Questionnaire.

The contribution of the motivational enhancing factors (pain self-efficacy, and three subscales of Patent Rehabilitation Expectancy Scale: proxy efficacy, working alliance and expectancy) to the pain and physical outcomes were also investigated.

Study 1. Measurement Structure of the Pain Self-Efficacy Questionnaire in a Sample of Chinese Patients with Chronic Pain

The first study in this thesis demonstrated that the Pain Self-Efficacy Questionnaire is a well-constructed instrument. We found that the Chinese version of PSEQ is a reliable instrument in assessing the self-efficacy beliefs on a group of Chinese pain patients. The main findings showed:

(i) The internal consistency presented by Cronbach's alpha was 0.94.

(ii) A single-factor model was yielded by the confirmatory factor analysis with a non-significant chi-square = 36.79, degree of freedom = 33, and excellent model fit indices: Goodness of fit index = 0.94, Cumulative Fit index = 0.996, and the Root Mean Square Error of Approximation = 0.031. The means of the 10 items ranged from 3.52 to 4.24 (SD = 1.23-1.50) based on a 0 to 6 Likert-scale, the item-total correlations ranged from 0.70 to 0.85.

(iii) Significant bi-variate correlations between the Chinese PSEQ total scores and the modified RMDQ and six subscales of SF-36. No significant correlations but a trend of negative correlations were found between the Chinese PSEQ total scores and VAS.

Our results indicate that the Chinese version of Pain Self-Efficacy Questionnaire is a reliable assessment tool for assessing patients with chronic pain. It can be used in our

main study and also the clinical settings in the Chinese populations to assess patients' self-efficacy beliefs on pain.

Study 2: Pilot study of Motivational Enhancement Therapy and the Training for the Involved Physiotherapists

In the second part of the thesis the content of MET was developed. We firstly drafted MET scripts that were commented by the pain subjects, physiotherapists and clinical psychologists. Then the scripts were refined and then allocated to be used in the two study groups. The main results were:

(i) Eight out of 79 items from the scripts were deleted because they were regarded to be poorly expressed and irrelevant to patients suffer from pain, while the rest of the items from the scripts were retained and modified.

(ii) Thirty-six items from the scripts scored higher expression quality were put into the pool of scripts used by the experimental group, and 35 items scored with lower expression quality were assigned to the pool used by the control group.

Afterwards, we provided training and practice period to the involved physiotherapists. For those physiotherapists in the experimental group, the MET techniques and counseling skills were taught in details, and the therapists were required to implement the communication skills into their practices. For the control group, general MET principles were provided to the physiotherapists but they were advised to avoid using MET techniques during the practices. The results showed that:

(i) For self evaluation on the MET knowledge, the physiotherapists in the experimental group agreed that they had acquired substantiate information about the MET techniques and counseling skills through the training. On the contrary, the physiotherapists in the control group thought that they only learned minimal MET techniques.

(ii) During the practical session, an observer found that the three physiotherapists in the experimental group often used the MET strategies, except one strategy "write a treatment worksheet" was not used by two physiotherapists. Instead, they verbally explained the treatment plan to the patients. The physiotherapists in the control group rarely expressed the MET skills during the practical session. Instead, they used more close-ended questions and retained only professional communication manner with their patients.

The above results showed that the majority of the items from the scripts developed in the pilot study are relevant to pain patients. With different expression and counseling skills, the scripts can be used as clinical examples for the two groups of physiotherapists. On the other hand, we found that the physiotherapists in the two groups have gained different extent of the MET and counseling techniques through the training. They performed the respective communication quality for his/ her group during the practical session. Their performances reached our expectation.

Study 3: Would the Integration of Motivational Enhancement Therapy to Physiotherapy Improve Treatment Outcomes in People with Chronic LBP? A Randomized Controlled Trial

In the last part of the thesis, we examined the effectiveness of the integrating Motivational Enhancement Therapy and conventional LBP physiotherapy in improving patients' motivation to treatment, pain intensity, physical abilities, psychosocial functions and exercise compliance in comparison of the conventional LBP physiotherapy for patients with chronic LBP. The Repeated measures ANOVA revealed the following between-group differences over the treatment sessions:

(i) The patients in the experimental group demonstrated significantly higher scores in the motivational enhancing factors: proxy efficacy, working alliance and expectancy to treatment than the patients in the control group over the several post-treatment assessments. At the end of the last treatment session, the experimental group showed 0.29 higher proxy efficacy subscale score, 0.24 higher working alliance subscale score, and 0.2 larger expectancy to treatment subscale score than did the control group (all $p < 0.05$).

(ii) The patients in the experimental group demonstrated significantly higher lifting capacity than the patients in the control group ($p = 0.015$). The SF-36-General Health subscale of the experimental group also showed significantly higher score than did the control group ($p = 0.015$).

(iii) The patients in the experimental group performed significantly more frequent therapeutic exercises than those in the control group over time ($p = 0.002$). At the last treatment session, the exercise compliance in the experimental group was 7.7 times/ week more than the control group. At the one-month follow-up, the group difference was 7.2 times/ week (both $p < 0.01$).

The subjects in the experimental group showed significant pain reduction over time. It showed the greatest pain reduction at the one-month follow-up with the mean VAS at 3.1 as compared to the baseline VAS at 5.3. However, there was no significant between-group difference or group x time interaction effect.

We also examined which motivational enhancing factors contributes the pain and physical outcomes. Hierarchical Multiple Regression is used to investigate the contribution of the motivational enhancing factors and the type of intervention to the pain intensity and physical outcomes at the end of treatment for the whole set of data including both groups. Demographic variables (age, gender, Body Mass Index), pain-related variables (pain duration, pain recurrence) and baseline score of the outcome variable were entered as independent variables in the first block. The motivational enhancing factors: pain self-efficacy, proxy efficacy, working alliance and expectancy to treatment were entered as the second block. Type of intervention (the MET+PT group was coded as 0, the PT alone group was coded as 1) was entered as the third block. Then we examined the difference between the two groups in predicting the motivational enhancing factors by using stepwise regression. The regression analysis results showed that:

(i) The lower pain intensity as measured by VAS at treatment ended was significantly predicted by the lower baseline VAS in the total groups. The adjusted R^2 of step 1 = 0.20, F (6, 65) = 3.90, p = 0.002. No motivational enhancing factor was additionally contributed to the VAS after controlling the baseline variables. In the MET+PT group, the higher scores of proxy efficacy, working alliance and PSEQ contributed to the lower VAS at different time period from session 5 to one-month follow-up. For the PT alone group, the higher scores of expectancy and PSEQ contributed to the lower VAS in session 10 and in one-month follow-up respectively.

(ii) The larger lifting capacity at the end of treatment was significantly predicted by the baseline lifting capability and gender. The adjusted R^2 of step 1 = 0.70, F (6, 65) = 28.57, $p < 0.001$. After controlling these variables, the higher expectancy to treatment score at the end of treatment additionally contributed to the higher lifting capacity, $\triangle R^2$ of step 2 = 0.07, F change = 5.35, significance of F change = 0.001. For the MET+PT group, the higher lifting capacity was associated with the higher expectancy to treatment. For the PT alone group, the higher lifting capacity was predicted by higher baseline PSEQ.

(iii) The lower treatment-ended Roland-Morris Disability Questionnaire was significantly predicted by the pre-treatment RMDQ score. The adjusted R^2 of step 1 = 0.44, F (6, 64) = 10.01, $p < 0.001$. After controlling the variables, the higher PSEQ score further contributed to the lower RMDQ score, $\triangle R^2$ of step 2 = 0.14, F change = 5.77, significance of F change =

0.001. Also the PSEQ score significantly associated with the RMDQ score for either the MET+PT group or the PT alone group.

(iv) The SF-36-General Health at the end of treatment was significantly associated with the baseline GH score. The adjusted R^2 of step 1 = 0.53, F (6, 65) = 14.33, $p < 0.001$. No motivational enhancing factor was additionally contributed to GH score.

(v) The higher exercise compliance at treatment ended was significantly predicted by the older age and the longer pain duration. The adjusted R^2 of step 1 = 0.39, F (5, 22) = 4.42, $p = 0.006$. The type of intervention (the MET+PT treatment) additionally contributed to the higher exercise compliance which increased the R^2 to 0.59, F change = 10.05, significance of F change = 0.006. For the MET+PT group, the higher PSEQ score contributed to the higher exercise compliance.

Such results indicate that the motivational enhancing factors successfully contribute to patients' post-treatment pain intensity and their physical abilities. The score of PSEQ and expectancy to treatment seem to provide more contributions showed in the regression results when compared with other two motivational enhancing factors. It may indicate that patients' self-efficacy belief on pain and their expectancy on treatment influence in a relatively more extent on their pain perception and the physical abilities among the four motivational enhancing factors.

There are several limitations in the present studies. This is a clinical trial in which the intervention was delivered by the physiotherapists working in a busy public hospital. The physiotherapists participated in this study spent much shorter time in the MET

training as compared with a formal MET counseling training received by clinical psychologists. Also their performances on MET technique or control technique were observed by only one observer. It would be better if two observers can be arranged. However, physiotherapists usually spend more time with patients, and they see patients more frequently than did the clinical psychologists. Our results showed that the MET delivered by those trained physiotherapists in their clinical practice is effective even the duration of training was relatively short. In the present study, we did not assess patients' baseline level of stages of change and depression. Patients suffered from pain for a long time who are still waiting for receiving physiotherapy only in public hospital are likely to be in the precontemplation stage, contemplation stage and preparation stage, and might have no obvious depression problem. It would be better to measure the baseline level of those variables in future study to confirm the subjects' baseline characteristics.

Our findings demonstrated the short-term results in applying Motivational Enhancement Therapy to traditional physiotherapy among people with chronic LBP. It illustrates the importance of considering the motivational enhancing skills on pain rehabilitation. Further study can perform a long-term follow-up in assessing patients' physical and psychosocial functions, compliance on therapeutic exercises and pain intensity. The present study recruited chronic LBP patients only from one outpatient department in a local public hospital. By recruiting more patients from different physiotherapy settings, or from the private sector may allow the generalization of the present findings to a larger patient population. Motivational Enhancement Therapy is a flexible model; a refined MET model should be designed in different kinds of pain so as to widen the clinical implications of MET in diversity of pain patients.

Conclusion

In summary, the three sections of the present thesis have demonstrated that the MET knowledge can be successfully conveyed to a group to physiotherapists through a well-prepared MET training. Their performances in using the MET techniques are at an acceptable level. The additional Motivational Enhancement Therapy delivered by these trained physiotherapists can be more effectively in enhancing patients' motivations to treatment. Moreover, the integration of the Motivational Enhancement Therapy and conventional physiotherapy provides better treatment outcomes, especially in improving patients' physical abilities and exercise compliance as compared to the conventional physiotherapy. The motivational enhancing factors significantly contributed the pain intensity and physical treatment outcomes. Besides, the Chinese version of Pain Self-efficacy Questionnaire is a well-contracted and reliable instrument to assess patients' self-efficacy beliefs on pain situation among patients with chronic LBP.

Appendix 1. Chinese version of Pain Self-Efficacy Questionnaire (PSEQ)

疼痛自我功效問卷

姓名：_____ 日期：_____

年齡：_____ 性別：_____

疼痛部位：_____ 病史：_____

請根據您**現時**的狀況，**在儘管有痛的情況下**，評定您對於完成以下事情的**信心**程度。

請在每項的量度尺上，圈出最適當的一個數字作答，0 分表示完全沒有信心，而 6 分則表示充滿信心。

例： **0 1 2 3 4 5 6**

完全沒有信心 充滿信心

請注意，本問卷並**不是**詢問閣下是否正在從事以下事情，而是想了解**現時閣下於儘管有痛之情況下，對於完成以下事情有多大的信心。**

---

1. 儘管有痛，我能享受不同的事情。

0 1 2 3 4 5 6

完全沒有信心 充滿信心

2. 儘管有痛，我能夠完成大部份的家務 (例如打掃，洗碗等)。

0 1 2 3 4 5 6

完全沒有信心 充滿信心

3. 儘管有痛，我能如常維持與家人或朋友的社交活動。

0 1 2 3 4 5 6

完全沒有信心 充滿信心

4. 在大部份情況下，我能夠應付自己的痛楚。

0 1 2 3 4 5 6

完全沒有信心 充滿信心

5. 儘管有痛，我能夠做某些形式的工作（「工作」包括家務、受薪及非受薪之工作）。

0 1 2 3 4 5 6

完全沒有信心　　充滿信心

6. 儘管有痛，我仍能夠享受很多活動，例如嗜好或休閒活動。

0 1 2 3 4 5 6

完全沒有信心　　充滿信心

7. 在沒有藥物的幫助下，我仍能應付自己的痛楚。

0 1 2 3 4 5 6

完全沒有信心　　充滿信心

8. 儘管有痛，我仍能達成我的大部份人生目標。

0 1 2 3 4 5 6

完全沒有信心　　充滿信心

9. 儘管有痛，我能維持正常的生活方式。

0 1 2 3 4 5 6

完全沒有信心　　充滿信心

10. 儘管有痛，我能逐漸變得更活躍。

0 1 2 3 4 5 6

完全沒有信心　　充滿信心

Appendix 2. Chinese version of Roland-Morris Disability Questionnaire (RMDQ)

盧倫摩哩氏量度問卷

當背部痛楚或不適時，你或會發覺自己未能像以往般工作。下例句子是一些患有背痛的人用來形容自己的，當你看到這些句子，你會發現其中一些適合形容你今日的情況，當你發現句子恰當地形容你今日的情況，請加上√ 號，如句子不適用，則繼續下一句子。請緊記，只需要√上那些確切符合形容你今日情況的句子。

☐ 1. 因為背痛，我經常留在家中。
☐ 2. 我經常轉換姿勢，保持背部舒適。
☐ 3. 因為背部，我走得比平常慢。
☐ 4. 因為背部，我已停止做日常負責的家務。
☐ 5. 因為背部影響，我上樓梯時要利用扶手。
☐ 6. 因為背部影響，我比平常較多時間躺下休息。
☐ 7. 因為背部影響，我需要扶着東西才能從梳化站起來。
☐ 8. 因為背部影響，我嘗試請別人替我完成一些事情。
☐ 9. 因為背部影響，我穿衣比平常緩慢。
☐ 10. 因為背部影響，我只可站立一段短時間。
☐ 11. 因為背部影響，我避免彎腰或跪下。
☐ 12. 因為背部影響，我坐在椅子上很難才能站起。
☐ 13. 我的背部差不多每時每刻都痛楚。
☐ 14. 因為背部影響，睡在床上，很難轉身。
☐ 15. 因為背部影響，我的胃口不佳。
☐ 16. 因為背部影響，穿襪子或襪褲時會有困難。
☐ 17. 因為背痛，我只能走一段短距離。
☐ 18. 因為背部影響，我睡得不好。
☐ 19. 因為背痛，我需要別人協助穿衣服。
☐ 20. 因為背部影響，我每天大部份時間都是坐着。
☐ 21. 因為背部影響，我避免做家中粗重的工作。
☐ 22. 因為背痛，我的脾氣比平常差。
☐ 23. 因為背部影響，我上樓梯比平常緩慢。
☐ 24. 因為背部影響，我大部份時間睡在床上。

總分:_____

Appendix 3. Short-Form 36 (SF-36) and Visual Analog Scale (VAS)

簡明健康狀況調查表（SF-36）

說明：這項調查是詢問您對自己健康狀況的了解。此項資料記錄您的自我感覺和日常生活的情況。請您按照說明回答下列問題。如果您對某一個問題不能做出肯定的回答，請按照您的理解選擇最合適的答案。

1. 總括來說，您認為您的健康狀況是：

（只圈出一個答案）

極好	----------	1
很好	----------	2
好	----------	3
一般	----------	4
差	----------	5

2. 和一年前相比較，您認為您目前全面的健康狀況如何？

（只圈出一個答案）

比一年前好多了	----------	1
比一年前好一些	----------	2
和一年前差不多	----------	3
比一年前差一些	----------	4
比一年前差多了	----------	5

下列各項是您日常生活中可能進行的活動。以您目前的健康狀況，您在進行這些活動時，有沒有受到限制？如果有的話，程度如何？（每項只圈出一個答案）

活動	有很大限制	有一點限制	沒有任何限制
3. 劇烈活動，比如跑步，搬重物，或參加劇烈的體育活動	1	2	3
4. 中等強度的活動，比如搬桌子，使用吸塵器清潔地面，玩保齡球或打太極拳	1	2	3
5. 提起或攜帶蔬菜，食品或雜貨	1	2	3
6. 上幾層樓梯	1	2	3
7. 上一層樓梯	1	2	3
8. 彎腰，跪下，或俯身	1	2	3
9. 步行十條街以上（一公里）	1	2	3
10. 步行幾條街（幾百米）	1	2	3
11. 步行一條街（一百米）	1	2	3
12. 自己洗澡或穿衣服	1	2	3

在過去四個星期裏，您在工作或其它日常活動中，會不會因為身體健康的原因而遇到下列的問題？
（每項只圈出一個答案）

	會	不會
13. 減少了工作或其它活動的時間	1	2
14. 實際做完的比想做的要少	1	2
15. 工作或其它活動的種類受到限制	1	2
16. 進行工作或其它活動時有困難（比如覺得更為吃力）	1	2

在過去的四個星期裏，您在工作或其它日常活動中，會不會由於情緒方面的原因（比如感到沮喪或焦慮）遇到下列的問題？ （每項只圈出一個答案）

	會	不會
17. 減少了工作或其它日常活動的時間	1	2
18. 實際做完的比想做的要少	1	2
19. 工作時或從事其它活動時不如往常細心了	1	2

20. 在過去四個星期裏，您的身體健康或情緒問題在多大程度上妨礙了您與家人、朋友、鄰居或社團的日常社交活動？

（只圈出一個答案）

毫無妨礙	1
有很少妨礙	2
有一些妨礙	3
有較大妨礙	4
有極大妨礙	5

21. 在過去四個星期裏，您的身體有沒有疼痛？如果有的話，疼痛到什麼程度？

（只圈出一個答案）

完全沒有	1
很輕微	2
輕微	3
有一些	4
劇烈	5
非常劇烈	6

22. 在過去四個星期裏，您身體上的疼痛對您的日常工作（包括上班和家務）有多大影響？

（只圈出一個答案）

毫無影響	1
有很少影響	2
有一些影響	3
有較大影響	4
有極大影響	5

下列問題是有關您在過去四個星期裏您覺得怎樣和您其它的情況。針對每一個問題，請選擇一個最接近您的感覺的答案。

在過去四個星期裏有多少時間：

（每項只圈出一個答案）

	常常如此	大部分時間	相當多時間	有時	偶爾	從來沒有
23．您覺得充滿活力？	1	2	3	4	5	6
24．您覺得精神非常緊張？	1	2	3	4	5	6
25．您覺得情緒低落，以致於沒有任何事能使您高興起來？	1	2	3	4	5	6
26．您感到心平氣和？	1	2	3	4	5	6
27．您感到精力充足？	1	2	3	4	5	6
28．您覺得心情不好，悶悶不樂？	1	2	3	4	5	6
29．您感到筋疲力盡？	1	2	3	4	5	6
30．您是個快樂的人？	1	2	3	4	5	6
31．您覺得疲倦？	1	2	3	4	5	6

32．在過去四個星期裏，有多少時間由於您的身體健康或情緒問題妨礙了您的社交活動（比如探親、訪友等）？

（只圈出一個答案）

常常有妨礙 ---------- 1
大部分時間有妨礙 ---------- 2
有時有妨礙 ---------- 3
偶爾有妨礙 ---------- 4
完全沒有妨礙 ---------- 5

如果用下列的句子來形容您，您認為有多正確？

（每項只圈出一個答案）

	肯定對	大致對	不知道	大致不對	肯定不對
33．您好像比別人更容易生病	1	2	3	4	5
34．您好像所有您認識的人一樣健康	1	2	3	4	5
35．您覺得自己的身體狀況會變壞	1	2	3	4	5
36．您的健康極好	1	2	3	4	5

疼痛程度

請在以下直線刻上現在您的疼痛程度:

完全不痛　　最難以忍受的疼痛

Appendix 4. Panel review questionnaire for validating the Motivational Enhancement Therapy scripts

Name of Expert: _____

Current job position:

Clinical or research experience (years): _____

Motivational Enhancement Therapy

Background: Physiotherapy is moving rapidly from a biological/medical model to a biopsychosoical framework of assessment and treatment. Three psychosocial factors were summarized as important motivational enhancement factors with potential for increasing physiotherapy outcomes. These factors include proxy efficacy, working alliance, and outcome expectancies. The purpose of this study is to occupy these motivational Enhancement Factors in physiotherapy treatment of patients with low back pain (LBP) and to examine the addictive effect of these motivational factors on enhancing treatment outcomes.

Proxy Efficacy is an emerging feature of Bandura's self-efficacy theory. Patients partake in treatment also develop beliefs or confidence in their therapists' capabilities. It is important to strengthen patients' proxy efficacy in achieving desired outcomes.

Working Alliance includes goal setting, empathic expressing, allegiance, and therapeutic alliance. If working alliance operates smoothly, its members must perceive the tasks as pertinent to achieving desired rehabilitation outcomes.

Expectations of Physiotherapy were found to be related to symptom condition, locus of control, previous experience and satisfaction with previous healthcare experiences. Pre-treatment expectations of benefit of physiotherapy could affect the treatment outcome.

Theoretical framework of Motivational Enhancement Therapy (MET)

Motivational Interviewing (MI) has been widely used in psychotherapy. It is a directive, client-centered counseling style for eliciting client's motivation for behavior change and consolidating a personal decision in plan for change. The therapeutic relationship is more like a partnership than expert/recipient roles. Jensen (2002) summarized the four basic principles of MI: *Express empathy, Develop discrepancy, Roll with resistance and Support self-efficacy.* These principles have been applied to a variety of health behavior, including pain.

Express Accurate Empathy It involves the capacities of the therapists put themselves in the place of the client, express a desire to understand the patient's picture, and to reflect that understanding back to the patient. This two-phase process of understanding and explaining deepens empathic understanding of clients.

Develop Discrepancy Therapist should make effort to encourage the patient to talk about the problem and the importance of change, in order to create and amplify the differences between the client goals and their present problematic behaviors, result in revolving the ambivalence about change.

Roll with Resistance Argumentation often gives a chance for client to list reasons to avoid change. There are several responses to deal with clients' resistance other than direct disagreement or arguing. For example, therapist reflects back patient's statement or hesitation about change, patient may respond by taking on the other side of the argument.

Support Self-Efficacy All the above efforts may prove ineffective if patients do not believe their own capacity and optimism about in behavior change. Thus to make statements and ask questions that promote the patient's hope that changes is possible.

The following are the particular MI strategies and preliminary scripts used for LBP intervention. Please review each MI strategy and script, ***CIRCLE*** *the most appropriate rating and give comments you feel are*

pertinent to making the content of the scripts more valid. (The contents in some scripts may be similar, but they are presented in a different manner.)

i) Relevance of the script to its MI strategy for chronic low back pain patients

A. relevant, retain as is ***B. delete*** ***C. modify***

ii) ***Quality of expressive way of the script content***

A. Poor (1) **B. Fair (2)** **C. Neutral (3)** **D. Good (4)** **E. Excellent (5)**

I. MI strategy: Eliciting Self-Motivational statements

Ask questions to elicit patient's self-motivational statement to acknowledge their pain problem in order to build up patients' motivations to alter pain-related behaviors. Clinician can either simply ask for self-motivational statements or ask patients to express the positive aspects of some maladaptive behavior.

A. Problem recognition:

Can the following scripts motivate patient to express his/ her recognition about the LBP?

Script1: "咩事黎睇物理治療呀."

i) Is it relevant to motivate patient to express his/ her recognition about the pain?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script2: "開始治療之前, 我想了解你今次腰痛的情況,你介唔介意講一下邊度痛，痛左幾耐，因咩事而起呢…"

i) Is it relevant to motivate patient to express his/ her recognition about the pain?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script3: "有冇留意做過咩之後就會腰痛?"

i) Is it relevant to motivate patient to express his/ her recognition about the pain?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script4: “咩時候痛多 d? 咩時候冇咁痛呀?”

i) Is it relevant to motivate patient to express his/ her recognition about the pain?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script5: “你邊度痛, 痛左幾耐呢?”

i) Is it relevant to motivate patient to express his/ her recognition about the pain?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

B. Concern

Can the following scripts motivate patient to express his/ her concern(s) about LBP?

Script6: “腰痛影響到你 d 咩呢，例如日常生活有咩影響。如果繼續唔理，你估計之後影響會否更大呢?”

i) Is it relevant to motivate patient to express his/ her concern about the pain?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script7: “腰痛對你的生活有咩影響呢？”

i) Is it relevant to motivate patient to express his/ her concern about the pain?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script8: “你的生活有冇影響呀”

i) Is it relevant to motivate patient to express his/ her concern about the pain?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

C. Intention to change

Can the following scripts motivate patient to make some change for coping with his/her own LBP?

Script9: “對於腰痛，你諗住做 d 咩呀?”

i) Is it relevant to motivate patient to make a change?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script10: “我諗你來做物理治療都係想處理腰痛架。你願意做 d 咩，如(做運動,改變習慣/姿勢)去醫好你的痛呢?”

i) Is it relevant to motivate patient to make a change?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script11: “為左醫好個痛, 你願意做 d 咩呢?”

i) Is it relevant to motivate patient to make a change?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

D. Optimism for change

Can the following scripts motivate patient to recall his/ her past successful experience in managing LBP?

Script 12: "你未做治療之前, 平時痛果陣會用咩方法舒緩痛架?"

i) Is it relevant to motivate patient to recall his/ her past successful experience in managing LBP?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script13: "點樣做可以冇咁痛?"

i) Is it relevant to motivate patient to recall his/ her past successful experience in managing LBP?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script14: "你慣常用來止痛的方法有冇效呢?"

i) Is it relevant to motivate patient to recall his/ her past successful experience in managing LBP?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script15: "你用過的方法駛唔駛得?"

i) Is it relevant to motivate patient to recall his/ her past successful experience in managing LBP?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script16: “你試過咩方法止到痛呢?”

i) Is it relevant to motivate patient to recall his/ her past successful experience in managing LBP?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script17: “你身邊有冇人曾經有過腰痛，依家好番架，佢地的方法對你有效嗎?”

i) Is it relevant to motivate patient to recall his/ her past successful experience in managing LBP?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

II. MI strategy: Listen with Empathy

Listen carefully to the patient then reflect accurately what the patient has stated. It is the kind of communication with acceptance without judgment, but it does not mean agreement or approval.

Can the following scripts express empathic listening to LBP patients?

Script18: “所以你一向 (彎腰做野) /(長時間坐住做野唔動)都冇事，但最近幾個月開始痛,你唔清楚係咪因為依 d 姿勢而起，唔知有咩方法舒緩。繼續痛的話擔心(生活更加受影響)(返工更辛苦)…”

i) Is it relevant to express empathic listening?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Sccript19: “啊, 因為(做野)導致腰痛，唔知再咁落去會點，所以黎做物理治療！”

i) Is it relevant to express empathic listening?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script20: “點解痛左咁耐依家先黎睇呀？”

i) Is it relevant to express empathic listening?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script21: “o 下 o 下，聽你咁講，係因為痛左幾個月都唔好，所以黎睇物理治療”

i) Is it relevant to express empathic listening?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script22: “所以你都知道咩原因造成(腰)痛既 (平日彎條腰搬貨方便 d,但好似因為咁開始腰痛)/ (平日做野一坐就幾個鐘, 到中午食飯或者放工先離開張凳，慢慢就開始痛)”

i) Is it relevant to express empathic listening?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script23: “o 下 o 下 (冇表情).”

i) Is it relevant to express empathic listening?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script24: “嗯, 所以當你痛果陣, 都有 d 方法, 例如(搽藥膏,按摩)令自己冇咁痛,不過未必次次有效”

i) Is it relevant to express empathic listening?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script25: “o 下 o 下, 我都理解, 好似你一向身體都幾好, (仲做開運動) 唔知咩原因腰痛, 試左幾種方法, 例如 (藥膏/食藥)都冇咩改善, 唔知點算好.聽閒物理治療對腰痛好好,所以黎試試 係咪咁樣呀.”

i) Is it relevant to express empathic listening?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script26: “你一向都係咁做，諗唔到會有事”

i) Is it relevant to express empathic listening?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script27: “我都體諒到你的情況, 痛左一排, 試過一 d 方法都冇效.日常生活都受到影響,所以黎試做物理治療, 希望醫得好.”

i) Is it relevant to express empathic listening?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script28: “搵出你痛的原因依一點好重要架，我希望你可以具體講 d 例子，等我更清楚你的狀況”

i) Is it relevant to express empathic listening?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script29: “你都痛開啦，點解突然間覺得需要睇物理治療呀”

i) Is it relevant to express empathic listening?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

III. MI strategy: Presenting personal feedback

The goal of providing feedback is to help the patient better focusing on the discrepancy between his/her own habit (or daily activities) and his/ her goals (and core values) in managing the pain (e.g. desired level of physical functioning, social role function). Feedback may include:

- ❖ level of physical function related to the same-age, same level of pain peer,
- ❖ results of maladaptive behavior (e.g. bad posture, sedentary) over time,

Can the following scripts present therapist’s personal feedback to LBP patients?

Script30: “其實腰痛好普遍,成因好多(不良姿勢/平日一些不自覺的習慣),都會加重腰的負擔”

i) Is it relevant for therapist to provide personal feedback to patients?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script31: “依你剛才所講,你都知道(姿勢唔 o 岩)/(坐得耐)會令你腰痛增加，只係你又慣左…聽起上來好似有 d 矛盾喎！你諗下習慣同條腰, 邊樣重要 d 呢”

i) Is it relevant for therapist to provide personal feedback to patients?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script32: "(咁 o 既姿勢搬野/ 坐咁耐) 梗係痛啦"

i) Is it relevant for therapist to provide personal feedback to patients?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script33: "你冇意思改變習慣, 好難好得番架喎"

i) Is it relevant for therapist to provide personal feedback to patients?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script34: "至於 (搽藥膏, 休息…) 都係一個方法, (可以舒緩痛),不過我建議你應該多 d(注意正確姿勢), 同埋(做 d 運動練腰力)/ (適當時候做拉筋等肌肉放鬆)."

i) Is it relevant for therapist to provide personal feedback to patients?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script35: "咁表示 (你的肌肉唔夠力),久而久之就會痛, 你要好好訓練番腰部肌肉喎"

i) Is it relevant for therapist to provide personal feedback to patients?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script36: “我都知 (咁樣搬野係方便快捷)/(一做開就唔想起身), 但長期係咁好傷條腰架.再講, 你都話就係咁樣而腰痛.”

i) Is it relevant for therapist to provide personal feedback to patients?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script37: “你自己都唔緊, 我好難幫到你喎”

i) Is it relevant for therapist to provide personal feedback to patients?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script38: “我不肯定有冇聽錯, 你係咪(唔想做運動),但唔想講出來呢. 不過為長遠著想,你起碼要(注意正確姿勢),同定時做番(特別的運動練腰力)/(拉筋)/(放鬆),先係治本的方法”

i) Is it relevant for therapist to provide personal feedback to patients?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

IV. MI strategy: Affirming the patient

Sincere expression, direct praise for any positive change made for pain management enhances patient’s self-esteem and responsibility for the pain management.

Can the following scripts affirm the LBP patient?

Script39: “做得幾好丫, 照住咁做就 o 岩啦”

i) Is it relevant to affirm patient?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script40: “嗯! 做得幾好喎, 你 (做野果陣/ 返去)都照住依個方法做,進步可能更快!”

i) Is it relevant to affirm patient?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script41: “ok 啦”

i) Is it relevant to affirm patient?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script42: “今次做到 (10)下, 幾好喎”

i) Is it relevant to affirm patient?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script43: “你記得嗎, 一開始做治療時, 做(2 下)就頂唔順,今次已經做到(10 下)進步好多喎”

i) Is it relevant to affirm patient?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script44: “你都做到丫”

i) Is it relevant to affirm patient?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

V. MI strategy: Handling resistance

We should take notice on what the patient does and how he or she thinks about the pain problem, including maladaptive coping strategies and thoughts concerning the pain. Patient may reluctant to try new changes because of fear of pain aggravation, or have misinformation about what may or may not work. Therapist needs to avoid criticizing or warning the patient. On the contrary, reflection, shifting focus, rolling with resistance may be some way in dealing with resistance

Can the following scripts handle the resistance from patients with LBP?

Script45: “你中意啦”

i) Is it relevant to handle patient’s resistance?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script46: “你係咪覺得做完治療仲係痛，冇咩效呀? 或者你都諗一諗，因為你痛左一段時間啦，未必一兩次治療就有明顯的效果架”

i) Is it relevant to handle patient’s resistance?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script47: “你唔聽我意見都冇辦法”

i) Is it relevant to handle patient’s resistance?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script48: “會唔會係因為你眼見其他人都係咁樣 (搬), 你覺得咁做應該都冇問題”

i) Is it relevant to handle patient’s resistance?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script49: “唔好咁勞氣, 有事慢慢講, 你覺得有咩問題呢?”

i) Is it relevant to handle patient’s resistance?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script50: “你可以放心, 我地一開始由最簡單的運動學起, 幫你 (放鬆番 d 肌肉)先, 如果你都係覺得做唔到我再教你其他. 最緊要大家有商有量.”

i) Is it relevant to handle patient’s resistance?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script51: “你的意思係唔想 (做運動), 定係有咩苦衷呀?”

i) Is it relevant to handle patient’s resistance?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script52: “隨便你啦”

i) Is it relevant to handle patient’s resistance?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script53: “我諗你先放鬆先, 你想我點幫你呢?”

i) Is it relevant to handle patient’s resistance?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script54: “你係咪覺得 (下下蹲低搬貨)/(定時定候休息)好麻煩,(少少野點搬)/(做完再休息)都唔會有事既”

i) Is it relevant to handle patient’s resistance?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script55: “先唔好諗得咁恐怖, 最重要你放鬆自己, 有咩你依一刻做到的. 我地一齊合作, 一步一步黎”

i) Is it relevant to handle patient’s resistance?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script56: “睇黎你已經決定左咁樣做喎”

i) Is it relevant to handle patient’s resistance?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script57: “之前好多病人都同你一樣, 一開始唔覺得 (運動)/(注意姿勢)/(定時做伸展運動)重要. 其實物理治療運動唔同一般運動, 我所教你係針對你腰痛的治療性運動.) (你個痛就係因為長期肌肉緊張引起勞損, 住意姿勢正確, 定時休息, 做伸展正正幫你放鬆這組肌肉)”

i) Is it relevant to handle patient’s resistance?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script58: “你覺得要改變 (自己的習慣) 好難, 擔心自己改唔到?”

i) Is it relevant to handle patient’s resistance?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script59: “其實唔好諗得做運動太麻煩啦, 一開始可以先做 5 下,(或者睇緊電視,得閒果陣做),最緊要養成好習慣先,有恆心, 持續做”

i) Is it relevant to handle patient’s resistance?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

VI. MI strategy: Developing a plan for change

Therapist should elicit patient's commitment in developing a specific plan in behavior change or pain relieving. When advising a patient, it is the best to ask permission first, advice in terms of freedom of choice and then offer several ideas that the patient can choose from.

Can the following scripts motivate patient to develop a treatment plan for coping pain?

Script60: "返去試下做囉"

i) Is it relevant to motivate patient to develop a behavior change/ pain relieving plan?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script61: "教左你運動返去做啦, 同埋要改一改唔好姿勢/習慣啦"

i) Is it relevant to motivate patient to develop a behavior change/ pain relieving plan?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script62: "係依度我就教你(做運動/正確姿勢),返去就要你幫自己啦喎.我地共同合作先有成效,否則就浪費個治療. 可唔可以答應我返去抽時間練習呢"

i) Is it relevant to motivate patient to develop a behavior change/ pain relieving plan?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

VII. MI strategy: Communicating free choice

To maximize and facilitate the attribution of control, therapist should remind the patient that he or she has free choices in all aspects of the treatment plan.

Can the following scripts express free choice to patients during the treatment?

Script63: "都係一 d 建議咋, 我諗你都想做 d 對腰痛有幫助的事"

i) Is it relevant to express free choices?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script64: “我教你 o 既你要做喎 (命令)”

i) Is it relevant to express free choices?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script65: “我教你這幾個運動係幫你 (放鬆肌肉),少少唔舒服係正常,但真係痛多左就休息一下再練,避免用錯力而受傷”

i) Is it relevant to express free choices?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script66: “我教你這幾個動作你要做喎, 不過痛就唔好做”

i) Is it relevant to express free choices?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script67: “我都係你 d 建議，或者你諗到對你更切身的問題。不如你下次話番俾我知，今日做完治療之後有冇好轉，有咩你覺得可以再改善”

i) Is it relevant to express free choices?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script68: "有冇問題呀"

i) Is it relevant to express free choices?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

VIII. MI strategy: Reviewing consequences of changes and no change

Most likely the patients should realize that not making any change means their pain and the lives influenced by pain will remain the same as before. Such a life is unsatisfactory for the patient, which strengthen the patient's commitment to make a change for pain.

Can the following scripts review consequences of changes and no change for LBP patients?

Script69: "你唔改就算啦"

i) Is it relevant to review consequences of adopting changes or not?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script70: "你試諗下, 假設你照舊咁樣 (搬野法), 有咩好處同唔好處先"

i) Is it relevant to review consequences of adopting changes or not?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script71: "改唔改隨便你啦"

i) Is it relevant to review consequences of adopting changes or not?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script72: "我就教左你方法幫你啦, 都要自己積極 d, 咁先有成效架"

i) Is it relevant to review consequences of adopting changes or not?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script73: "我有 d 病人話… (工作忙/冇時間做運動), 療效一般啦, 做左一排都係痛；相反有 d 病人…(好勤力做運動)/(注意姿勢) 康復得好快, 黎左幾次就唔痛。你想幾快好得番, 就睇下你幾勤力, 注唔注意姿勢, 改左唔好的習慣啦"

i) Is it relevant to review consequences of adopting changes or not?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script new: "你唔改只會同治療前差不多, 繼續痛囉"

i) Is it relevant to review consequences of adopting changes or not?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

***IX. MI strategy: Providing information and advice* based on personal experience or research**

When patient attempts to manage difficulties with a change plan, they may ask for specific information and advice concerning how to proceed. One way to respond is to provide information based on personal

experience or research. Therapists should better offer a number of possible suggestions from which patient can choose and take responsibility to make decision eventually.

Can the following statements provide information and advice to LBP patients based on personal experience or research?

e.g. Patient's Q1: 我係咪做 10 次就好得番?

Script74: "因人而異啦, 平均都係做 10 次"

i) Is it relevant to provide information and advice to patients?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script75: "可以老實咁講, 要幾耐時間好番係因人而異既, 依我的經驗, 平均做 10 次都處理到痛的問題, 越照治療計劃, 效果越好囉"

i) Is it relevant to provide information and advice to patients?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script76: "我或者分享下自己經驗啦, 腰痛的原因好多, 要做幾多次好番真係因人而異. 平均來說做 10 次治療都處理到痛的問題. 越照治療計劃效果越好.當然啦, 都要靠你的努力. 我都想知道你的打算"

i) Is it relevant to provide information and advice to patients?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

e.g. Patient's Q2. 點解我返到屋企做運動就會痛架?

Script77: “你意思係返到屋企做我教你的動作就痛嗎? 你可唔可以做一次等我睇下,有幾個可能性,(做的姿勢冇岩,做得太多,腰唔夠力都會痛架).我建議你下次做果個動作時留意一下係一開始做就痛, 定係做幾次之後先越來越痛, 維時幾耐”

i) Is it relevant to provide information and advice to patients?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script78: “你做番一次我睇下先, 或者有 d 地方做得唔好”

i) Is it relevant to provide information and advice to patients?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Script79: “唔會卦, 你點做呀”

i) Is it relevant to provide information and advice to patients?

A. relevant, retain as is B. delete. Justify _____

C. modify as _____

ii) How is the quality of its expressive way?

A. Poor(1) B. Fair(2) C. Neutral(3) D. Good(4) E. Excellent(5)

Additional Comments _____

Appendix 5. Change plan worksheet

腰背痛患者物理治療計劃表

姓名:_____ **性別:**_____ **年齡:**_____

腰背痛時間:_____年/月

我來做物理治療的目的：_____

我希望達成此目的的最主要原因：_____

我的治療計劃的步驟：_____

協助我的人：_____

協助我的方法：_____

自己幫自己的方法:_____

我知道我的治療計劃會有成效, 如果:_____

會阻礙治療計劃的事:_____

簽名: _____

日期: _____

Appendix 6. Observation sheet of Motivational Enhancement Therapy practice

Physiotherapist Name: Group: Experimental/ Control Observation Date:

Grading:

0= did not use any MET strategy at all in a session (0 %),

1= rarely used MET strategies in a session (25 %),

2= occasionally used MET strategies in a session (50 %),

3= often used MET strategies in a session (75 %),

4= used MET strategy most of the time in a session (>90 %).

Phase I

Elicit self-motivational statements

___ ask open-ended question,
___ get patient's concern, reason of coming, intention of change
___ Yes/No question, just collect basic information

Listen with empathy

___ put yourself in place of patient
___ express desire to understand patient's picture
___ reflect understanding back
___ be honest, congruence
___ accept, no judgment/ blame
___ use appropriate body motion, eye contact
___ without empathy, cool response

Present feedback

___ respond/ reflect to patient's problem
___ show discrepancy between patient's habit & goal/ focus on patient's job nature and treatment aim
___ just ethical

Affirm patient

___ express "you have what you need"
___ show the improvement at present contrasts with that before treatment
___ just ethical/ reduce interaction

Handle resistance

___ roll with resistance
___ use double-sided reflection to highlight ambivalence
___ just ethical

Summary

___ summarize patient's problem, concern and goal, and the treatment

Phase II

Develop a plan for change (ask commitment of treatment plan)

___ develop and consolidate change plan
___ use Treatment plan worksheet
___ recapitulate the worksheet
___ sign the worksheet
___ no commitment
___ ask patient to follow order

Free choice

___ give patients right to express and discuss their wants/ feedbacks to the treatment

Review consequence of change v.s. no change

___ review to patient about the consequence of following the treatment v.s. not following

Provide information and advice

___ offer professional suggestions/ further assistance
___ home program/ pamphlet…
___ reduce interaction/ just ethical

Proxy efficacy

___ introduce the purpose of having physiotherapy in treating pain
___ explain treatment items, e.g. IFT, exercise, posture correction, ADL modification…
___ show working experience, professional training & credentials…

Appendix 7. Self evaluation form for the Motivational Enhancement Therapy training

Physiotherapist Name: **Group: Experimental/ Control** **Date:**

Self evaluate questions:

1. How much MET knowledge you have obtained from the training?

2. The frequency of using the MET strategies in your practices?

Grading:

0= not a bit (0 %)

1= rarely (25 %)

2= occasionally (50 %)

3= often (75 %)

4= most of the time (>90 %)

Phase I (for patients without thinking of change or still hesitate)

-- Elicit self-motivational statements (e.g. ask patients with open-ended questions, get information of patient's concern, reason of coming, intention of change)

1. ____ 2. ____ Comments:_____

-- Listen with empathy (put yourself in place of patient; express desire to understand patient's picture; reflect understanding back; be honest, congruence)

1. ____ 2. ____ Comments:_____

-- Present feedback

1. ____ 2. ____ Comments:_____

-- Affirm patient (e.g. express "you have what you need"; describe the improvement/ change after treatment)

1. ____ 2. _____ Comments:_____

-- Handle resistance

1. ____ 2. ____ Comments:_____

-- Summary (e.g. summarize patient's problem, concern goal, and treatment delivered)

1. ____ 2. ____ Comments:_____

Phase II (for patients who have already thought of change and prepare to take action for pain)

-- Develop a plan for managing pain (ask commitment of treatment plan)

1. ____ 2. ____ Comments:_____

-- Give free choice

1. ____ 2. ____ Comments:_____

-- Review consequence of change vs no change

1. ____ 2. ____ Comments:_____

-- Provide information and advice (e.g. offer professional suggestions/ further assistance; educate home program/ give pamphlet…

1. ____ 2. ____ Comments:_____

-- Treatment worksheet

1. ____ 2. _____ Comments:_____

Others:

-- Proxy efficacy, (e.g. introduce yourself show working experience, professional training; explain the purpose of treatment and treatment items

1. ____ 2. ____ Comments:_____

Appendix 8. Written inform consent for the study of the integration of Motivational Enhancement Therapy and physiotherapy

香港理工大學康復治療科學系科研同意書

科研題目：物理治療對腰背痛之效用研究

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王君仙小姐，香港理工大學康復治療科學系碩士研究生

科研內容：

是次研究主要測試物理治療腰背痛的臨床效用。每位參與者將在香港瑪嘉烈醫院的物理治療門診部接受為期約十次(約五週) 之腰背痛物理治療，每次項目包括：電療（干擾波電療）及腰背痛運動療法。因配合幾項測試，故第一、第五及第十次之療程時間可能會延長約十五分鐘。在一個月後，參與者會接受一次跟進測試，確定療程的持久效用。

對項目參與人士和社會的益處：

此研究為腰背痛患者提供更有效的治療方法，研究結果將對今後慢性腰背痛物理治療的發展提供寶貴資料。

潛在危險性：

整個治療及測試都十分安全，並經由香港理工大學安全審批。倘若參與者在治療前後或途中感到身體不適，請馬上告知科研人員。

同意書：

本人_____已瞭解此次研究的具體情況。本人願意參加此次研究， 本人有權在任何時候、無任何原因放棄參與此次研究，而此舉不會導致我受到任何懲罰或不公平對待。本人明白參加此研究課題的潛在危險性以及本人的資料將不會洩露給與此研究無關的人員，我的名字或相片不會出現在任何出版物上。

若本人對此研究有何疑問，可致電研究負責人鄭荔英博士 (電話：2766　　)或蘇明來先生 (電話：2990　　)查詢。若本人對此研究人員有任何投訴，可以聯繫梁女士（部門科研委員會秘書），電話：2766　　。本人亦明白，參與此研究課題需要本人簽署一份同意書。

參與者簽名：_____　姓名：_____　日期：_____

見證人簽名：_____　姓名：_____　日期：_____

Appendix 9. Patients Rehabilitation Expectancy Scale (PRES)

治療及工作適應性量表

請在以下各題圈出 1 至 4 評分，代表你對下列句子的同意或不同意程度。
評分: *1=極不同意, 2=不同意, 3=同意, 4=極同意*

1.	我的治療師態度積極，給我鼓勵。	1	2	3	4
2.	完成復康計劃之後，我將能夠重返工作崗位。	1	2	3	4
3.	我需要認識痛症的處理方法。	1	2	3	4
4.	我的治療師聆聽我的顧慮和問題。	1	2	3	4
5.	服用建議的藥物會紓緩我的痛楚。	1	2	3	4
6.	我過往對於醫護制度的經驗是正面的。	1	2	3	4
7.	我的治療師很樂觀。	1	2	3	4
8.	我的治療師聆聽我的話。	1	2	3	4
9.	如果我積極參與治療，我會學懂處理自己的痛楚。	1	2	3	4
10.	我有信心在這診所接受（這位治療師）的治療會有幫助。	1	2	3	4
11.	我的工作薪酬理想。	1	2	3	4
12.	我的治療師告訴我治療的預期效果（包括可能出現的副作用）。	1	2	3	4
13.	我的治療師在向我解釋治療方面做得很好。	1	2	3	4
14.	我正在努力參與治療的過程。	1	2	3	4
15.	這診所(我的治療師)在本社區的口碑甚佳。	1	2	3	4
16.	我的治療師認真地處理我的顧慮。	1	2	3	4
17.	應付痛楚會改善我和家人的關係。	1	2	3	4
18.	我的治療師積極回應我的需要。	1	2	3	4
19.	治療人員名聲甚佳。	1	2	3	4
20.	我的親友都極力推薦這診所或醫療服務者。	1	2	3	4
21.	我的治療師友善又親切。	1	2	3	4
22.	我的治療師以客觀的態度嘗試了解我的問題。	1	2	3	4
23.	痛症問題影響我的社交生活。	1	2	3	4
24.	我會努力完成作業和復康活動。	1	2	3	4
25.	我的治療師擅於與我溝通。	1	2	3	4
26.	我的治療師具備令人信服的良好資歷。	1	2	3	4
27.	如果我能控制痛楚，我將能夠重返工作(進行正常活動)。	1	2	3	4
28.	這診所(我的治療師)備受稱許。	1	2	3	4
29.	該機構的治療設施在社會上評價甚佳。	1	2	3	4
30.	我的治療師受過優良訓練，經驗豐富。	1	2	3	4
31.	痛症問題影響我的工作能力。	1	2	3	4
32.	我想重返工作崗位。	1	2	3	4
33.	我的治療師很專業。	1	2	3	4
34.	如果我更懂得應付痛楚，我和我至親的人的關係會有所改善。	1	2	3	4
35.	認識痛症的處理方法會有助我更快康復。	1	2	3	4

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