Development of a preliminary questionnaire to investigate the attitudes of NZ osteopaths regarding the use of exercise in osteopathy

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A research project submitted in partial requirement for the degree of Master of Osteopathy, Unitec Institute of Technology, 2010
DECLARATION

Name of candidate: Rebecca Mckay-Watts

This Thesis/Dissertation/Research Project entitled: Development of a preliminary questionnaire to investigate the attitudes of NZ osteopaths regarding use of exercise in osteopathy is submitted in partial fulfilment for the requirements for the Unitec degree of Master of Osteopathy

Candidate’s declaration:

I declare that:

- This Thesis/Research project represents my own work
- The contribution of supervisors and others to this work was consistent with the Unitec Regulations and Policies.
- Research for this work has been conducted in accordance with the Unitec Research Ethics Committee Policy and Procedures, and has fulfilled any requirements set for this project by the Unitec Research Ethics Committee.
  Research Ethics Committee Approval Number: 2009.692

Candidate.................................................................................................................................

Signature.................................................................................................................................Date.................
ABSTRACT

Development of a preliminary questionnaire to investigate the attitudes of NZ osteopaths regarding the use of exercise in osteopathy

Background: In the healthcare context, exercise may be conveniently considered in two categories: physical activity and therapeutic exercise. Physical activity has demonstrated benefits for the maintenance of physical and psychological health and wellbeing. Therapeutic exercise is typically considered in a preventative or rehabilitation context and is usually associated with clinical management of any of a wide range of target disorders. Therapeutic exercise has been demonstrated to be beneficial for decreasing pain levels and increasing functional capability in chronic pain as well as helping encourage an active coping style. There are two distinct ways of delivering information about physical activity and therapeutic exercise: advice and prescription. Prescription includes providing information regarding four key elements; frequency, intensity, type, and time. Providing advice includes instructions about any less than all four of these elements. To date there is little research available regarding the use of physical activity or therapeutic exercise within osteopathy.

Aims: The study aimed to develop a questionnaire which could be used as a tool to investigate the attitudes of NZ osteopaths regarding the use of exercise within osteopathy.

Objectives: The objectives were to i) Conduct a qualitative research project to identify key issues/themes about the study topic; ii) To draft items based on the themes identified in part i; and iii) Pilot the draft items in the format of a preliminary questionnaire to review face validity, and usability.

Methods: This was a two part study. Part 1 used the method interpretive description using face-to-face interviews to collect data involving five registered osteopaths and one osteopathic student. Data analysis using interpretive description identified four theme clusters. Part 2 used quantitative survey research in order to draft, format and pilot items formatted into a 45 item questionnaire structured into three sections; ‘Demographics’, ‘Physical activity’, and ‘Therapeutic exercise’. Piloting involved two rounds; Round 1 (usability) and Round 2 (expert review).

Results: Four theme clusters were identified from Part 1: ‘Exercise and osteopathy: A perfect match’, ‘Experiences with exercise’, ‘Exercise choice’, and ‘Barriers to providing exercise’. Part 2 resulted in the addition of seventeen items, the deletion of two items, and the further differentiation of the ‘physical activity’ and ‘therapeutic exercise’ sections into ‘advice’, and ‘prescription’ leading to the addition of a further 39 items. The final questionnaire was structured into five sections: ‘demographics’, ‘physical activity advice’, ‘physical activity prescription’, ‘therapeutic activity advice’, and ‘therapeutic exercise prescription’.
Conclusion: The preliminary questionnaire is ready for further development using factor analysis as a means of exploring internal and external validity. The questionnaire can then be used to investigate the attitudes of NZ osteopaths regarding exercise within osteopathy.

Keywords: Attitudes; Osteopathy; Exercise; Qualitative; Quantitative; Questionnaire; Survey; New Zealand
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# TABLE OF CONTENTS:

Declaration ..................................................................................................................................................... ii  
Abstract ...................................................................................................................................................... iii  
Acknowledgements ...................................................................................................................................... v  
Table of Contents: ..................................................................................................................................... vi  
List of abbreviations: ................................................................................................................................. viii  
Chapter One: Introduction to the study topic ......................................................................................... 1  
Chapter Two: Literature Review .............................................................................................................. 4  
  Introduction to Chapter two: .................................................................................................................... 5  
  Defining exercise: ................................................................................................................................... 6  
  Physical activity: ...................................................................................................................................... 8  
  Therapeutic exercise/Exercise therapy: ...................................................................................................... 13  
  The role of healthcare practitioners in encouraging physical activity and providing exercise therapy: ........................................................................................................ 21  
  Summary: ............................................................................................................................................... 34  
Chapter Three: Methodology .................................................................................................................... 36  
  Introduction to Chapter Three: ............................................................................................................... 37  
  Part 1: Qualitative research ....................................................................................................................... 37  
  Part 2: Survey research ............................................................................................................................ 39  
  Summary: ............................................................................................................................................... 46  
Chapter Four: Methods ............................................................................................................................. 47  
  Introduction to Chapter Four: ................................................................................................................. 48  
  Overview of the study design: .................................................................................................................. 49  
  Ethics: ..................................................................................................................................................... 50  
  Part 1: ................................................................................................................................................... 51  
  Part 2: ................................................................................................................................................... 53  
  Summary: ............................................................................................................................................... 55  
Chapter Five: Findings ............................................................................................................................... 56  
  Introduction to Chapter Five: .................................................................................................................. 57  
  Section 1: Part 1 ...................................................................................................................................... 58  
  Section 2: Part 2 ...................................................................................................................................... 81  
Chapter Six: Discussion .............................................................................................................................. 89  
  Introduction to Chapter Six: ..................................................................................................................... 90
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statement of principal findings:</td>
<td>90</td>
</tr>
<tr>
<td>Strengths and weaknesses of the study/internal validity:</td>
<td>92</td>
</tr>
<tr>
<td>Meaning of the study: possible mechanisms and implications for clinicians or policymakers:</td>
<td>99</td>
</tr>
<tr>
<td>Unanswered questions and future research:</td>
<td>102</td>
</tr>
<tr>
<td>Summary:</td>
<td>104</td>
</tr>
<tr>
<td>References:</td>
<td>106</td>
</tr>
<tr>
<td>Appendices:</td>
<td>113</td>
</tr>
<tr>
<td>Appendix A: Participant information sheet (Part 1)</td>
<td>113</td>
</tr>
<tr>
<td>Appendix B: Participant information sheet (Part 2)</td>
<td>115</td>
</tr>
<tr>
<td>Appendix C: Participant consent form</td>
<td>117</td>
</tr>
<tr>
<td>Appendix D: Interview schedule:</td>
<td>118</td>
</tr>
<tr>
<td>Appendix E: Recruitment poster</td>
<td>119</td>
</tr>
<tr>
<td>Appendix F: Contact letter (Part 1)</td>
<td>120</td>
</tr>
<tr>
<td>Appendix G: Typist confidentiality agreement</td>
<td>121</td>
</tr>
<tr>
<td>Appendix H: Further questionnaire development process schema</td>
<td>122</td>
</tr>
<tr>
<td>Appendix I: Table demonstrating item development process</td>
<td>123</td>
</tr>
<tr>
<td>Appendix J: Preliminary questionnaire</td>
<td>133</td>
</tr>
<tr>
<td>Appendix K: Table of positive and negative item phrasing</td>
<td>140</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Full Form</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------</td>
</tr>
<tr>
<td>ACC</td>
<td>Accident Compensation Corporation</td>
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<td>ACSM</td>
<td>American College of Sports Medicine</td>
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<td>FITT</td>
<td>Frequency, intensity, type, and time</td>
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<td>GDP</td>
<td>Gross Domestic Profit</td>
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<td>GP</td>
<td>General Practitioner</td>
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<td>HEHA</td>
<td>Healthy-Eating Healthy-Action</td>
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<td>IASP</td>
<td>International Association for the Study of Pain</td>
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<td>OCNZ</td>
<td>Osteopathic Council of New Zealand</td>
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<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
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<td>OMM</td>
<td>Osteopathic Manual Medicine</td>
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<td>OMT</td>
<td>Osteopathic Manual Therapy</td>
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<td>NZ</td>
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<td>RCT</td>
<td>Randomised Control Trial</td>
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<td>SPARC</td>
<td>Sport And Recreation New Zealand</td>
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<td>United Kingdom</td>
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<td>UREC</td>
<td>Unitec Research Ethics Committee</td>
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<td>WHO</td>
<td>World Health Organisation</td>
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CHAPTER ONE: INTRODUCTION TO THE STUDY TOPIC
Introduction to Chapter One:

This chapter is an overview of the study topic. There is first an introduction to osteopathy, then a discussion of exercise and the relevance for primary healthcare practitioners, including osteopaths. The chapter finishes with a rationale for why this study is important.

Osteopaths are primary health care practitioners who work in a bio-psychosocial manner. This means encompassing the biological, psychological, and social aspects of the person when developing a treatment plan. This treatment approach is predominantly used in the management of chronic pain; which is a vast and growing area of research due to the complexity, cost, and debility it represents.

Exercise is an important part of primary healthcare. Exercise therapy has been shown to decrease pain levels and increase function; and encourages an active coping style which is associated with better health outcomes. Further, exercise has been shown to be effective in decreasing depression associated with chronic pain and encouraging a sense of control over the pain, which is concurrently associated with improved coping mechanisms and acceptance.

Guidelines for physical activity levels are provided in the literature by professional and government agencies, based on demonstrated benefits of remaining physically active for the maintenance of health and wellbeing, recommending thirty minutes of moderate intensity exercise at least five times per week. There is also strong evidence that physical activity is beneficial for improving recovery from conditions such as acute low back pain. Therapeutic exercise can take many forms and can include any combination of strengthening, or stretching exercises. There has been extensive research into the area of therapeutic exercise within the fields of physiotherapy and regarding the management of chronic pain.

Despite the obvious benefits, there is currently a paucity of research investigating exercise in osteopathy. To date one study identified potential reasons specific exercise are not used in osteopathy. This study proposed that this was due to a lack of education in specific exercises resulting in a lack of confidence in prescribing exercises, as well as the idea that specific exercises are the domain of other health care practitioners. An earlier study by the same lead author found that there is very little specific exercise education in the undergraduate osteopathic programme in seven schools in the United Kingdom. Other research within osteopathy identified potential patient characteristics that predict adherence to exercise
programmes provided. Research within other fields similar to the research in osteopathy identified factors that affect patient adherence: health practitioner attitudes and thus behaviours, patient-centred care, exercise prescription and many others are influenced by personal beliefs and attitudes, professional education, societal beliefs, culture and experience.

There are many areas that are unknown on the topic of the use of exercise in osteopathy such as:

- What are the attitudes towards exercise in osteopathy?
- What are the health behaviours of osteopaths regarding exercise in patient management?
- What influences the development of attitudes and health behaviours?
- Are osteopaths aware of the research and best practice of exercise use?
- Do treatment styles influence how osteopaths use exercise?
- Are osteopaths’ attitudes reflective of behaviours?

Due to the paucity of current knowledge about this topic preliminary studies are required prior to large cohort studies. There is evidence that health professionals’ attitudes affect their health behaviours. Therefore a first step in better understanding the place exercise might have in treatment plans for osteopaths is identifying their attitudes to the use of exercise. It is apparent in preliminary studies that exercise is little used in osteopathy, and little specific exercise education is received in the undergraduate osteopathic degree. This study aims to identify whether osteopaths’ attitudes and the various experiences that help shape these provide an explanation for this low utilisation of exercise as a component of osteopathic therapeutic practice.
CHAPTER TWO: LITERATURE REVIEW
Chapter Two: Literature Review

Introduction to Chapter Two:

This chapter aims to discuss and outline the current literature in the field of exercise. The chapter is divided into three separate sections; physical activity, therapeutic exercise; and the role of health care professionals. The three sections cover the different uses of exercise in healthcare, including back pain (both acute and chronic), then finishes with a discussion of the current research that explores exercise within osteopathy.

Exercise is important for maintaining health and an important part in the prevention and rehabilitation of any of a wide variety of target disorders1. Research into exercise can be organized into two main categories: i) literature that focuses on physical activity for the maintenance of systemic and general health; and ii) exercise therapy in preventative and rehabilitative care. There is a role for health care practitioners to give advice regarding appropriate physical activity levels as part of patient health management. Osteopaths are classified as primary health practitioners by the Osteopathic Council of New Zealand, which is the authority appointed by the Minister of Health. Osteopaths are therefore in an important position to provide physical activity advice as part of patient consultations (Zamani, Vogel, Moore, & Lucas, 2007). There are several New Zealand government initiatives that encourage physical activity, particularly amongst populations identified as being of high risk of inactivity (Ministry of Health, 2003; Sport And Recreation New Zealand, 2008). There have been no studies regarding how exercise advice and therapeutic exercise are utilized in New Zealand osteopathic practice.

Exercise therapy has been found to be effective in the management of chronic pain, helping to decrease pain levels and increase functional capability (Bekkering et al., 2003; Chou & Hoyt Huffman, 2007; Ferreira, Ferreira, Maher, Herbert, & Kathryn Refshauge, 2006; Hayden, Van Tulder, & Tomlinson, 2005; Kerssens, Sluijs, Verhaak, Knibbe, & Hermans, 1999; Smidt, de Vet, Bouter, & Dekker, 2005; van Middelkoop et al., 2010). However, there is little evidence that exercise therapy is beneficial when used in the management of acute back pain (Bekkering et al., 2003; Chou & Hoyt Huffman, 2007; Ferreira et al., 2006; Smidt et al., 2005). This is reflected in the guidelines of eleven countries, including the New Zealand

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1 The term target disorder is described by Sackett et al as: “the anatomic, biochemical, physiologic, or psychologic derangement whose etiology (if known), maladaptive mechanisms, presentation, prognosis, and management we read in medical texts...We shall call this element of a patient's sickness the target disorder when it becomes the objective of the diagnostic process” (Sackett, Haynes, Guyatt, & Tugwell, 1991, p. 3).
Chapter Two: Literature Review

Accident and Compensation Corporation (ACC), for managing back pain which state there is no clinical benefit following the use of specific back exercises (Accident Compensation Corporation, 2004; Penney, 2009). Although, there is strong evidence that physical activity can be beneficial for managing acute pain in general (Bach & Holten, 2009; Penney, 2009).

The use of exercise therapy and physical activity as part of patient management can be problematic due to lack of patient adherence to exercise programmes (Cook & Hassenkamp, 2000; Hillsdon, Thorogood, White, & Foster, 2002; Howard & Gosling, 2008; Kerssens et al., 1999), practitioner education, individual clinical experience (Keller, 2006); and the patient’s pain level (Liddle, Baxter, & Gracey, 2009).

Although there are numerous studies regarding exercise consultations in other manual therapy modalities, there is little research regarding this in osteopathic patient management. The studies that have been conducted to date are not generalizable because of sample limitations (Howard & Gosling, 2008; Zamani et al., 2007; Zamani, Vogel, Moore, & Lucas, 2008).

Over the last decade of patient management there has been an increased focus on patient-centered care. There are different definitions about what constitutes patient-centered care. Mead & Bower (2002) reviewing the literature attempted to clarify the perimeters of patient-centered care by identifying five areas that are considered part of this approach; ‘biopsychosocial nature of pain’, the ‘patient-practitioner relationship’, ‘patient as person’, ‘personal meaning of illness’, and ‘patient-practitioner bond’.

**Defining exercise:**

**Physical activity:**

The American College of Sports Medicine defines *Physical activity* as "bodily movement generated by skeletal muscles resulting in energy expenditure" (American College of Sports Medicine, 2000). Physical activity for improving overall health and fitness can involve any form of physical activity, including activities of daily living such as using stairs, vacuuming, walking. Physical activity can also be divided into spontaneous activities, for example fidgeting and voluntary physical activity. Voluntary physical activity includes activities of daily life that require energy expenditure for improving overall health and fitness (American College of Sports Medicine, 2000). Guidelines recommend levels of physical activity needed
in order to achieve the positive health outcomes. The recommendation by the New Zealand Ministry of Health, the American College of Sports Medicine, and the American Heart Association for healthy adults under sixty-five is thirty minutes of moderate intensity activity at least five days per week, or vigorous physical activity for twenty minutes, three days per week. Moderate intensity exercise is physical activity that increases the heart rate and causes perspiration but does not impair the ability to participate in a conversation (American Heart Association American College of Sports Medicine, 2007; Ministry of Health, 2003).

Therapeutic exercise/exercise therapy:

*Exercise training* is defined by the American College of Sports Medicine (ACSM) as “planned, structured, and repetitive bodily movements that improve or maintain one or more components of physical fitness” (American College of Sports Medicine, 2000). There are two categories that exercise could be grouped into: recreational exercise and therapeutic exercise. Similar to the ACSM definition, therapeutic exercise is defined in the research literature as “the prescription of muscular contraction and bodily movement ultimately to improve the overall function of the individual and to help meet the demands of daily living” (Smidt et al., 2005, p. 71). In 2007, this definition was further developed and refined into “the prescription of a physical activity program that involves the client undertaking voluntary muscle contraction and/or body movement with the aim of relieving symptoms, improving function or improving, retaining, or slowing deterioration of health” (Taylor, Dodd, Shields, & Bruder, 2007, p. 7). Therapeutic exercise is typically considered in a preventative or rehabilitation context and is usually associated with the management of any of a wide range of target disorders. Therapeutic exercise is generally associated with prescription, which is defined by the presence of all of the following elements (sometimes referred to using the acronym “FITT”): frequency, intensity, type or mode of exercise, and time or duration (American College of Sports Medicine, 2000). The osteopathic profession, anecdotally at least, predominantly treats musculoskeletal problems, therefore this review will focus on musculoskeletal complaints and the relevant exercise therapy interventions.
Physical activity:

Benefits of physical activity:

Regular physical activity reduces the risk of many chronic conditions such as stroke, cardiovascular disease and some cancers (American College of Sports Medicine, 2000). Physical activity can help prevent conditions such as osteoporosis, osteoarthritis, falls in the elderly and certain mental health conditions such as anxiety or depression that are costly for the public health system, both in terms of finances and health resources (Ministry of Health, 2003). The Ministry of Health states that regular physical activity reduces the risk of colon cancer by 50% and breast cancer by 30% and halves the risk of depression.

Physical activity is necessary for the musculoskeletal system to maintain structure and function. The mass and composition of skeletal muscle is pivotal to its function and changes in environmental factors, such as inactivity and pathology, can negatively affect skeletal muscles (Cook & Hassenkamp, 2000; Twomey, 1992) and lead to atrophy (Zhang, Chen, & Fan, 2007). Skeletal muscle atrophy is characterised by “decreased muscle fibre cross-sectional area and protein content, reduced force, increased fatigability and insulin resistance” (Zhang et al., 2007, p. 310). Whilst physical inactivity causes muscle atrophy, stimuli to muscle, such as loading exercises, cause muscle adaptations where the fibre composition alters and the muscle fibre type changes to a more fatigue-resistant fibre type with endurance training (Pette, 2002). Alterations in fibre type have been shown in distance runners where higher levels of type I (slow twitch) fibres compared to non-athletes and track sprinters who showed a larger proportion of type II (fast twitch) (American College of Sports Medicine, 2000). High loading exercises cause fibre hypertrophy (Fluck, 2006).

Importance of physical activity in the management of back pain:

Back pain is a significant problem in the Western world. 60-90% percent of people in Western societies will experience back pain at some point in their lives (Hoy et al., 2010). Low back pain is the fifth most common reason for consultation to a physician, as reported by the Michigan Quality Improvement Consortium (Bach & Holten, 2009). Back pain is due to numerous different pathologies (specific low back pain), although it is predominantly not due to any known pathology (non-specific low back pain) (Bekkering et al., 2003; Corbett, Foster, & Ong, 2007; Kolt & McEvoy, 2003; Twomey, 1992; van Middelkoop et al., 2010). Back pain can be either acute (up to 12 weeks duration) or chronic (exceeding 12 weeks) (Corbett...
et al., 2007; Lucas, 2005; Maher et al., 2005). Low back pain has a benign cause in 90% of patients (Bach & Holten, 2009).

Although back pain is common, between 75% and 90% of people recover from their first episode of acute low back pain (Bekkering et al., 2003; Mathew, Norris, Hendry, & Waddell, 1988). However, a large number have at least one recurrence (Bekkering et al., 2003; Cook & Hassenkamp, 2000; Corbett et al., 2007; Kolt & McEvoy, 2003), and as much as 10-20% develop chronic pain (Maher et al., 2005). People with recurrent episodes of back pain and chronic pain have high levels of distress (Cook & Hassenkamp, 2000).

The financial burden of back pain is substantial, involving loss of earnings, indemnity pay, legal fees, medical fees, employee retraining and administration costs (Hoy et al., 2010). In Australia, for example, in 2001 back pain cost $9.17 billion, making it one of the most expensive health complaints that year (Hoy et al., 2010).

There are studies that convincingly show improved clinical outcomes when sufferers of both acute and chronic low back pain remain physically active (Bekkering et al., 2003; Chou & Hoyt Huffman, 2007; Ferreira et al., 2006; Smidt et al., 2005). The guidelines in eleven countries, including New Zealand, conclude that advice to stay physically active is beneficial in acute, non-specific low back pain (Accident Compensation Corporation, 2004; Koes, van Tulder, Ostelo, Burton, & Waddell, 2001; Penney, 2009). Similarly, guidelines published in the Journal of Family Practice convey remaining physically active as having grade A (good quality, patient-oriented evidence) evidence of improved clinical outcome in acute low back pain (Bach & Holten, 2009).

Research has shown that joint and back pain responds favourably to activity and movement as opposed to rest (Bakker et al., 2009; Bekkering et al., 2003; Cook & Hassenkamp, 2000; Kerssens et al., 1999; Twomey, 1992). Extended bed rest for more than two days, with or without traction has been shown to be harmful in the management of acute low back pain (Accident Compensation Corporation, 2004; Bach & Holten, 2009; Koes et al., 2001; Penney, 2009) and increases the duration and severity of pain by causing break down of muscles, collagen and other parts of the musculoskeletal system (Bakker et al., 2009; Bekkering et al., 2003; Cook & Hassenkamp, 2000; Twomey, 1992).

A significant reason people consult an osteopath is because they are experiencing pain. Pain elicits detrimental physiological and psychological effects as the body perceives the input as a
danger to homeostatic mechanisms. Penney (2010) says that the basis for treatment of pain is “that people want advice on how to manage their pain, including pharmacological and non-pharmacological intervention, and how to return to normal activity” (Penney, 2010, p. 46). Providing advice about pain management is in keeping with ‘best practice’ and falls within the scope of practice of any “well-informed clinician” due to the potential damaging effects of pain (Penney, 2010). The physiological detrimental effects relating to all protective systems of the body (endocrine, sympathetic, and motor) is especially important when reviewing chronic pain. There is a whole system sensitization that occurs in chronic pain such that small, un-noxious stimuli create a pain response (Butler & Moseley, 2003). Education about pain physiology is therefore very important in chronic pain and is associated with decreasing the threat value associated with pain and movement, which in turn reduces activation of protective systems (Butler & Moseley, 2003).

The problem of physical inactivity:
A lack of regular physical activity is associated with an increased risk of many chronic health conditions and premature morbidity, and is therefore a major public health concern globally (American College of Sports Medicine, 2000; Horne, Skelton, Speed, & Todd, 2010; Ministry of Health, 2003). It was outlined in the District Health Board Toolkit: Physical activity to increase physical activity (2003) that prevention is better than cure. The New Zealand health strategy strongly encourages the performance of physical activity by New Zealanders to beneficial levels as a priority (Ministry of Health, 2003). The Ministry of Health (2003) reports that one third of New Zealanders are not performing the recommended levels of physical activity. More recent analysis show that in 2007/2008 only 48.2% (44% male, 52% female) of adults were active to the recommended level (Sport And Recreation New Zealand, 2008). Furthermore, an inactive lifestyle is associated with eight percent of all deaths and is directly associated with 2,000 deaths per year in New Zealand (Ministry of Health, 2003). Based on the risk factors of inactivity and the high prevalence of a sedentary lifestyle, there is considerable public health benefits for people becoming physically active (American College of Sports Medicine, 2000).

Chronic conditions, such as those associated with inactive lifestyles, consume a large amount of healthcare resources (Waddell, 1998). Healthcare costs in New Zealand, as at 2007, were
already above the recommended levels when compared to other countries. The total spent on healthcare in New Zealand in 2007 was 9.2% of Gross Domestic Product (GDP), which is above the Organisation for Economic Co-Operation and Development (OECD) average of 8.9%. With the growing rate of inactivity, the financial costs of healthcare will continue to increase.

Physical inactivity is second to smoking as a modifiable risk factor for poor health, many chronic diseases and premature morbidity (American College of Sports Medicine, 2000). Financially the Ministry of Health has estimated that a five percent increase in physical activity levels could result in $25 million savings in health expenditure and decreased incapacity (Ministry of Health, 2003).

i) **Obesity:**
General health, fitness and weight are influenced by physical activity. Obesity has been increasing as a problem in all OECD countries over the past decade, with New Zealand among the highest in developed countries (Organisation for Economic Co-Operation and Development, 2009). The Ministry of Health (2003) estimated that direct costs of obesity to New Zealand are in excess of $100 million per year, with contributing factors being inactivity, socioeconomic, genetics and diet. Associated with obesity and an inactive lifestyle are chronic conditions such as Type II diabetes, various forms of cancer (e.g. colon and breast cancer), cardiovascular disease, cerebro-vascular accidents and hypertension (Hillsdon et al., 2002; Horne et al., 2010). There are many factors that affect health behaviours including diet and exercise, such as health attitudes, personal beliefs, daily habits, and social interactions. To be effective the importance of these factors should be assessed when designing health interventions (Withall, Jago, & Cross, 2009). One study shows that adolescents that demonstrate a positive attitude towards exercise or intrinsic motivation are of normal weight category and high activity levels. Conversely, the study found a negative attitude towards exercise was associated with less active individuals in the higher weight category (Deforche, De Bourdeaudhuij, & Tanghe, 2006).

ii) **Psychological health:**
There are well documented psychological benefits of regular physical activity. The link between exercise and improved mood is primarily due to exercise increasing cerebral blood flow, heart rate, adrenaline and cortisol levels (Donaghy, 2007). Physical activity also causes the release of cortisol, due to activation of the hypothalamic pituitary adrenal (HPA) axis,
which improves the ability to react to stressful situations. There are two determinants of how an individual reacts to a stressful situation; i) how the situation is perceived, and ii) physical health (Penney, 2010). Both of these factors are modifiable with appropriate intervention via diet, exercise, and other lifestyle factors. Regular physical activity also alters pre-set cerebral circuits that modify the response to stress, enhancing more positive reactions. An aspect of response alteration is the cognitive processes that occur in stressful situations. With physical activity, thoughts are changed which subsequently have been causatively linked with improved health attitudes, self-esteem, and other psychological, physiological and biochemical responses (Donaghy, 2007).

A systematic review of physical activity interventions for depression found a positive association between exercise and both reduced risk of developing, and improved recovery from depression. This was the case for young and older adults and was irrespective of type of exercise (Donaghy, 2007). Although there was a positive effect with performing regular exercise on mood alteration, there were no conclusive, consistent findings between the studies that increasing physical activity levels beyond strenuous activity two or three times weekly correlated to more effective improvement on mood alteration. Physical activity was favourably compared as a treatment adjunct with cognitive behavioural therapy, psychotherapy and anti-depressant medication.
Therapeutic exercise/Exercise therapy:

Overview of the literature:

Exercise therapy is the most widely used type of conservative treatment for low back pain and is commonly provided by physiotherapists or specifically trained exercise therapists (van Middelkoop et al., 2010). There are many different exercise interventions investigated in many different health research fields therefore a comparative literature review is somewhat difficult. The research literature available is of variable quality, which also makes comparisons unfavourable. Many of the studies have poor methodologies, poor response bias, and the presentation of some of the studies is unclear, poorly written and not-transparent.

Efficacy of therapeutic exercise in acute and chronic pain:

Systematic literature reviews of exercise intervention studies have concluded that there are benefits of using therapeutic exercise for improving clinical outcomes in the management of a number of musculoskeletal problems (Hayden et al., 2005; Keller, 2006; Smidt et al., 2005; Taylor et al., 2007). However, some random controlled trials, showed no beneficial results with the use of exercise therapy (Keller, 2006; Taylor et al., 2007).

Taylor et al. (2007) reviewed research from 2002 to 2005, finding that as the therapeutic exercise regimes become more specific and individualised the clinical results become more positive. These findings were supported by a systematic review including studies investigating the use of specific stabilizing exercises, which showed modest beneficial results with people suffering from back and pelvic pain (Ferreira et al., 2006).

There are a number of reviews on exercise therapy interventions as preventative care to avoid low back pain in the workplace. Most conclude that exercise therapy is effective in preventing lower back pain in the workplace. However, the evidence is neither consistent nor convincing (van Middelkoop et al., 2010). One recent review concluded there was strong evidence that exercise was effective in reducing loss of activity from and the severity of low back pain. However, the authors note that only 2 of the 15 studies reviewed had robust methodologies. Therefore there is only poor quality evidence that exercise is beneficial in preventing LBP episodes in the workplace (Bell & Burnett, 2009).
Acute pain:
According to some studies, exercise therapy interventions have not demonstrated positive benefits in people with acute pain when compared to no intervention, or general physical activity groups (Bekkering et al., 2003; Chou & Hoyt Huffman, 2007; Ferreira et al., 2006; Smidt et al., 2005). Several guidelines state that there is insufficient evidence that specific exercise therapy is beneficial in the management of acute pain (Accident Compensation Corporation, 2004; Penney, 2009; van Middelkoop et al., 2010). Keller (2006) contradicts this, claiming that when studies base the interventions on the functional characteristics and not on the chronicity of pain, the outcomes of exercise interventions are positive in both acute and chronic pain, with lasting benefit for up to 3 years (Keller, 2006). Whilst there is conflicting evidence about the efficacy of therapeutic exercise in acute pain, studies have shown that some forms of exercise therapy reduce the incidence of recurrence after an acute period of low back pain even if there is no symptomatic or functional improvement during the initial acute episode of pain (Cook & Hassenkamp, 2000). Preventing a recurrence of back pain and the possibility of chronic pain is one of the important goals of management of low back pain (Bakker et al., 2009).

Chronic pain:
A number of systematic reviews conclude that there is evidence that exercise therapy is effective in the management of chronic pain, but there are various views about the strength of the evidence (Bekkering et al., 2003; Chou & Hoyt Huffman, 2007; Ferreira et al., 2006; Hayden et al., 2005; Keller, 2006; Smidt et al., 2005; Taylor et al., 2007; van Middelkoop et al., 2010). Presented in this section are different studies, including a number of systematic reviews that discuss this topic.

Cook et al. (2000) found that after a four week back rehabilitation programme for low back pain only one person out of seven reported a decrease in pain levels. The other participants reported improvements in well-being and physical fitness.

Hayden et al. (2005) reviewed literature on exercise interventions to identify exercise characteristics which decrease pain and increase function in adults with non-specific chronic low back pain. Forty three trials were reviewed, with interventions grouped to include; dose or intensity, exercise programme design, delivery type (home based, supervised home based,
group supervised or individually supervised), inclusion of additional interventions and types of exercise. The results of this meta-analysis showed that substantial improvements in pain levels are possible when certain exercise characteristics are included in an exercise programme. These characteristics include individually designed programmes delivered in a supervised environment alongside encouragement for adherence to high dose exercise programmes. Stretching exercises were found to be most effective for improving pain levels and muscle-strengthening exercises were found to be most useful for increasing functional capability. However, only 6 of the 43 trials were concluded to be of good quality based on the author’s 4 internal validity items.

Smidt et al. (2005) included 104 systematic reviews of the efficacy of exercise therapy for a number of disorders of the musculoskeletal, neurological, cardiovascular, and respiratory systems. The reviewing process was extensive and included thirteen independent reviewers. The criterion developed by Assendelft et al. (1995) was also used in this review. Forty five of the reviews were analyzed to be of reasonable to good quality. Exercise therapy (aerobic and strengthening exercises) was shown to be more effective than no intervention, and continued care (strengthening exercises). Exercise therapy was as effective as normal physiotherapy, which included techniques such as massage, traction, hot and cold packs, ultrasound and mobilization exercises.

Keller et al. (2006) included 23 randomized control trials and 5 literature reviews. There is no indication of inclusion/exclusion criteria of the included studies. There was also no identification or assessment of the quality of the literature. The authors concluded that the evidence is not strong that non-functional exercise programmes are beneficial for chronic low back pain. They state that any improvements were not present at twelve month follow ups, unless a home based exercise programme was included. The authors state that more recent reviews targeting functional muscle groups have better clinical outcomes up to three years.

Ferreira et al. (2006) conducted a review to evaluate the efficacy of specific stabilization exercise for spinal and pelvic pain. The inclusion/exclusion criterion in this review was broad; with articles from a wide range of participants, interventions, and comparisons included. They did, however, calculate the literature quality using the PEDro scale, which assesses the presence or absence of ten methodological criteria. Effect size was calculated and when trials were considered to be sufficiently homogenous, results were pooled based on site of pain,
outcome measure, duration of symptoms, and treatment comparisons. The result was twelve trials with quality scores from 4-8 (out of 10). Two of the twelve trials investigated the effects of specific stabilizing exercises compared to usual care in chronic low back pain participants. Stabilization exercise was found to be more effective than usual care for reducing pain in both the short and medium term, although in this review paper there was no indication of what usual care entailed. There was no improvement in disability in the short term, but was more effective than usual care in the medium term. Specific stabilizing exercises were also shown to be comparable to spinal manipulation in two trials. Physiotherapy that included specific stabilizing exercises was shown in two trials to be more effective either than medical management or education, in reducing pain and disability in the short and medium term. In the long term, physiotherapy that included specific stabilizing exercises was more effective than medical intervention for both pain and disability. It was also more effective on decreasing pain than education, however, education was more effective in decreasing disability. There was also improved quality of life with this intervention compared to education in the medium but not long term.

Different forms of exercise therapy:

Part of exercise prescription is the ‘FITT’ protocol which includes prescribing the frequency, intensity, type and time (duration) of exercise (American College of Sports Medicine, 2000). Within the third element there are many different types of exercise interventions that are used in exercise therapy research. Exercise interventions by health practitioners range from advice to ‘get active’ to specifically designed exercise programmes based on the case presentation (Hayden et al., 2005; Taylor et al., 2007; Zamani et al., 2007). Research regarding exercise therapy reflects these diverse elements in exercise therapy and includes many outcome measures, types of exercise, mode of deliverance, and amount of supervision.

Types of exercise:

There are no definitive results identifying which forms of exercise are more successful for improving clinical outcomes. Rather than using a specific exercise programme, exercises aimed to return the patient to their normal daily activities have been shown to have the best outcomes for non-specific low back pain (Bekkering et al., 2003; Keller, 2006). One literature review concludes that stretching and muscle-strengthening exercises lessened pain and improved function the most (Hayden et al., 2005). Similarly strengthening exercises were
found to be the most commonly used intervention by Irish physiotherapists, followed by flexibility and aerobic exercises (Liddle et al., 2009). There is evidence that exercise therapy interventions that use a combination of cognition and motor control exercises as well as pain physiology education is effective in decreasing pain and disability in patients with chronic pain. Using outcome measure Roland Morris Disability Questionnaire (RMQD), an effect size of 6.1 points in the individual education (IE) versus control group and 5.1 points in the group education (GE) versus control group was demonstrated and on the Numerical Rating Scale (NRS) for pain levels showed a change by 3.1 points for the IE versus control group and 2.7 in the GE versus control group (Moseley, 2003a). This RCT however had a significant limitation. The pain physiology education ranged from one on one education programmes for one hour. This was repeated four times. The group education consisted of one four hour seminar. Although evidence was found that individual education was more successful than group education it cannot be ignored that one seminar of four hours requires longer periods of concentration and memory than incremental one hour slots over four weeks. This inconsistency indicates that this conclusion is not justifiable.

Factors such as professional orientation, practitioner education background, and individual clinical experience influence which exercise programmes will be used by health care practitioners when managing, for example, low back pain. (Keller, 2006). According to Liddle et al. (2009) the exercise programme chosen by practitioners was influenced by the patient’s pain level and cognitive factors rather than clinical guidelines. Zamani et al. (2008) found that low-level pre-graduate education regarding specific exercises resulted in osteopathic practitioners being more comfortable prescribing general physical activity exercises than specific exercise programmes. However this was a pilot study with fifteen participants who were interviewed in a qualitative research and as such is not generalizable.

**Supervision level:**
There are different levels of practitioner involvement and supervision interventions investigated within exercise therapy research, such as the difference between supervised exercise therapy or home-based exercise therapy (Keller, 2006). The amount of follow-up and type of supervision can differ (Keller, 2006; Liddle et al., 2009; Smidt et al., 2005). Smidt et al. (2005) in a summary of 104 systematic reviews, only 45 of which were considered good quality, states that there is a lack of evidence to indicate whether home-based exercise programmes are sufficient, or if supervision is necessary for beneficial results. Another author
concludes that supervision of exercise programmes by a health care practitioner increases the adherence to home based exercise therapy (Hayden et al., 2005).

There is a correlation between supervisor feedback and adherence to exercise prescription (Hayden et al., 2005; Howard & Gosling, 2008). Hillsdon et al. (2002) found that a group that had two follow up sessions with an exercise specialist increased their physical activity when compared to a control group at a one year follow up. Similarly, Friedrich et al. (1998) found that participants in a motivation and exercise programme were more likely to increase exercise therapy appointments and reported less disability and decreased pain levels four and twelve months after the study ended. However, there was no significant increase in adherence to long term prescribed home exercise regimes between the exercise group and the combined exercise and motivation group (Friedrich, Gittler, Halberstadt, Cermak, & I, 1998). Further, a positive health attitude has been found in participants who comply to exercise prescription when compared to those who did not comply (Howard & Gosling, 2008).

Supervised programmes require patient attendance and a large commitment by the health practitioner. Home based programmes require a large commitment by the patient. Some authors state that for therapeutic exercise to be effective there must be a high level of patient adherence to the programme (Howard & Gosling, 2008; Kolt & McEvoy, 2003). Conversely, another study found no differences in terms of improvement in pain levels or functional capacity between participants that reported adhering to an exercise programme and those that did not (Linton, Hellsing, & Bergstrom, 1996). There are major differences in these studies. For example, Linton's et al. (1996) intervention group chose their exercises, as the intended hypothesis was improving adherence, whereas the exercise provided by the student osteopaths in the study by Howard & Gosling were determined by the osteopath.

**Mode of exercise provision:**

There are different modes for the deliverance of exercise instructions; whether it is general advice for patients to become more physically active or therapeutic exercise programmes. Some areas of research have focused on finding the mode that is most effective in creating a high level of participant adherence to home based exercise regimes. It was demonstrated that merely giving advice to patients, encouraging them to pursue some form of physical activity had a low success rate in increasing the level of physical activity (Hillsdon et al., 2002; Howard & Gosling, 2008; Zamani et al., 2007). Written and illustrated material combined
with verbal instructions increase adherence to an exercise programme when compared to verbal instructions alone (Schneiders, Zusman, & Singer, 1998). Positive reinforcement and feedback also increased adherence to exercise prescription, as did knowing the patient’s lifestyle factors and personality (Howard & Gosling, 2008).

Barriers to utilizing therapeutic exercise in healthcare:
A number of barriers have been identified in the research literature that prevent healthcare practitioners advising increased physical activity levels, encouraging home based exercise programmes and providing supervised exercise programmes. The major barrier identified is the lack of patient adherence to exercise programmes provided (Cook & Hassenkamp, 2000; Hillsdon et al., 2002; Howard & Gosling, 2008; Kerssens et al., 1999). Practitioner related barriers are mostly surrounding specific exercise choice and this barrier correlates with practitioner education, professional orientation and other factors (Keller, 2006; Liddle et al., 2009).

Adherence has been defined as “the extent to which a person’s behaviour – taking medication, following a diet, and/or executing lifestyle changes, corresponds with agreed recommendations from a health care provider” (World Health Organisation, 2003). A lack of patient adherence has been identified as a significant barrier for health care professionals prescribing exercise (Cook & Hassenkamp, 2000; Hillsdon et al., 2002; Howard & Gosling, 2008; Kerssens et al., 1999). One article reported that twenty-five percent of patients failed to continue an exercise programme that had been recommended (Turk 1993).

Identifying barriers can be important in order to highlight patients at risk of non-adherence. Once identified, steps can be taken by the health practitioner to improve adherence (Jack, McLean, Moffet, & Gardiner, 2010). There are a number of studies that have investigated what factors influence adherence to exercise programmes, such as patient personality traits, weight, education about exercise, the media form that exercise prescription takes, and different forms of patient monitoring (amount of supervision) (Deforche et al., 2006; Howard & Gosling, 2008; Kerssens et al., 1999; Quinn, Doody, & O’Shea, 2008; Rhodes, Courneya, & Jones, 2004; Schoo, Morris, & Bui, 2005). Patients’ attitudes to health, education, and past experiences with sports and exercise have been shown to affect adherence to prescribed exercises in one Australian osteopathic teaching clinic. This study demonstrated that positive
attitudes, past experiences, and higher education are associated with improved adherence to a prescribed exercise programme (Howard & Gosling, 2008). Patient’s beliefs, expectations and preferences regarding the treatment for back pain influence their adherence and engagement in treatment plans and thus treatment outcomes (Main, Foster, & Buchbinder, 2010).

One of the potential influences on adherence rates is education for both practitioners and patients. Lack of adherence is associated with a lack of education in health care and a lack of skills that enhance educational effectiveness (Kerssens et al., 1999; Kuchera, 2007). However this claim was derailed after an educational intervention resulted in no significant increase in the way that physiotherapists participated in educating their patient’s, other than less instructional overload (Kerssens et al., 1999).

Motivation is an important indicator of adherence to physical activity and exercise therapy. People who are already involved in some form of recreational activity, but performing less than 2.5 hours per week, are more likely to increase their activity levels than those people who are inactive (Ministry of Health, 2003). One way of increasing activity levels is to promote exercises, both physical activity and therapeutic exercises that can be incorporated into daily activities. It was demonstrated that those with positive health attitudes, positive past experiences with exercise, and higher education adhered more often with prescribed exercise. Those without these aspects are likely to require exercise programmes designed that are easy to perform within daily activities (Howard & Gosling, 2008). Given the study was specific to one university osteopathic student clinic in Australia further research into wider patient adherence and exercise prescription attitudes within osteopathy would be useful.
The role of healthcare practitioners in encouraging physical activity and providing exercise therapy:

Primary healthcare:

Government initiatives:
The government spends substantial resources addressing the issue of physical inactivity among New Zealanders. Consequently there have been a number of government campaigns and initiatives that have been developed like the Physical Activity Toolkit for District Health Boards in 2003 (Ministry of Health, 2000). Sport and Recreation New Zealand (SPARC), a government agency formed in 2002, also provides information about physical activity and exercise for both the public and healthcare professionals on their website. Healthy-Eating Healthy-Action (HEHA) which is New Zealand’s nutrition, physical activity and healthy weight strategy developed in 2008 highlights key locations for where advice on physical activity levels can be provided to best advantage. These locations are schools, workplaces, communities and health care facilities (Ministry of Health, 2008).

Further initiatives include the ‘Push Play’ campaign, designed and implemented by SPARC (SPARC 2006/7), which encourages the public to be aware of, and maintain, the recommended levels of physical activity. In 2008 the ‘Feel Greatness’ campaign was developed (SPARC 2008), based on ‘Push Play’, which focuses more on promoting recreational sport. This campaign encourages setting goals and time aside for recreational sport. The slogan for this initiative is “Feel greatness if you push play” (SPARC 2008). Both campaigns (‘Push Play’ and ‘Feel Greatness’) are promoted on the SPARC website, although the former was more widely promoted through the media.

Maori, Pacific people, older people, children, adolescents, pregnant women, women with children, and those suffering from specific non-communicable diseases and conditions are the groups of New Zealanders that are associated with low physical activity (Ministry of Health, 2003). These groups are among those that osteopaths consult with. As previously described, attitudes, beliefs, habits, and social interactions affect health behaviours (Withall et al., 2009). With social interactions being so important to health attitudes, incorporating cultural and social factors that may influence a person’s activity levels into primary health care consultations is important.
The role of Primary healthcare practitioners:

Primary health care practitioners are in an excellent position to identify people who are not sufficiently active and to advise them on the importance of increasing their physical activity levels (Horne et al., 2010; Ministry of Health, 2003; Zamani et al., 2007). Barriers to GPs providing patient education, according to Hoving et al. (2010) include lack of time and concern about endangering the doctor-patient relationship. New Zealand has fewer physicians per population than most other countries in the Organisation for Economic Co-Operation and Development (Organisation for Economic Co-Operation and Development, 2009).

Addressing patient education, including physical activity, has long been the domain of primary health practitioners, such as general medical practitioners (GPs). In a review of the history of patient education by health professionals in Europe and South America; Hoving et al. (2010) identified that some of these tasks of patient education can now be delegated to other health professionals who have been appropriately educated (Hoving, Visser, Mullen, & van den Borne, 2010). Particularly with the low ratio of physicians in New Zealand, there is the potential for allied health practitioners, such as osteopaths, to be part of addressing the issue of activity levels during patient consultation.

Patients who are better informed about their health care are in a better position to take an active role in their own healthcare (Johanssona et al., 2003; Lucas, 2005). One of the roles of primary health practitioners is therefore the education of patients regarding lifestyle factors that could be impacting on their health. Education is critical, particularly in chronic pain, as it helps defuse the situation and re-educate the person on all aspects of their lifestyle (Butler & Moseley, 2003). Education includes explanation of symptoms and pathology (if present); information regarding lifestyle modification and background information about anatomy and physiology (Twomey, 1992). There are different models of pain management and these are reflected in patient education. One model considers pain as being due to tissue dysfunction or pathology and so ignores the cognitive-emotional aspect of pain. Another model focuses on the psychological aspects of pain and so targets behaviour and lifestyle modifications, thus ignoring pain neurophysiology and, in turn, nociceptive mechanisms (Moseley, 2003b).

Education usually is a combination of counseling and behaviour modification techniques.

Many factors influence how therapists approach interactions and patient education; Choice of assessment models, treatment approach and the health-care process, including treatment outcomes, can have many influences. These factors include practitioner education, their
professional status, previous clinical and personal experience, what their personal treatment style consists of, their communication style, the confidence they have in different treatment modalities, and their beliefs about the patient’s problem (Keller, 2006; Main et al., 2010). Even within the same profession there are discrepancies, and the amount and type of instruction depends on the experiences mentioned above (Kerssens et al., 1999).

**Practitioner response to guidelines:**

Although there are clear guidelines for recommending physical activity, and the management of various conditions, including acute low back pain (Accident Compensation Corporation, 2004; American College of Sports Medicine, 2000; American Heart Association American College of Sports Medicine, 2007; Ministry of Health, 2003; Penney, 2009), health professionals are not necessarily following guidelines in clinical practice. For example, Strand et al. (2005) found only 50% of physiotherapists in Norway prescribed physical activity for patients presenting with acute low back pain. It has been demonstrated that physiotherapist within the Irish physiotherapy system provided active exercises to patients as 51.1% of treatment time for people presenting with chronic low back pain. 98% of respondents frequently used exercise to manage chronic low back pain (Liddle et al., 2009). Although the results of these two studies are similar, it’s difficult to directly compare due to methodological differences. One investigated chronic pain, the other acute back pain. Both studies investigated physiotherapists; although Strand et al. (2005) investigated ‘manual therapists’ in Norway, while Liddle et al. (2009) investigated physiotherapists who are members of the Irish Society of Chartered Physiotherapists. Methodologies also varied: Liddle et al. (2009) reported on data procured via a mailed survey, which relies on self-reporting to gather information and as such only provides information on reported attitudes, and behaviours; Strand et al. (2005) used observation and face-to-face interviewing.

Similarly to the two studies discussed above; another study found that contrasting the clinical guidelines, only 50% of cases presenting with acute low back pain were advised to remain physically active (Strand, Kvale, Raheim, & Ljunggren, 2005). This study took place in Norway, where there are no specific guidelines for managing acute low back pain. Guidelines for management of acute low back pain are available in many countries and are not geographically specific. The limitation of this study lies in the method of data collection. Manual therapy students collected observational data from observing manual therapists during
Chapter Two: Literature Review

their clinical consultations in clinics throughout Norway. There is no indication of the education providers for the students and whether they were all at the same stage in their manual therapy education. There is also an issue of comparability with these results. Although the students were provided with an instruction sheet about what to observe, the study used 22 students, 14 men and 8 women, with age differences between 30-46 years; introducing many variables that were not reported as having been considered in this study. Other data was also collected using interviews conducted by the students involving the manual therapist and reflecting on what had been observed. Interviewing is an art in itself and there was no indication of the level of skill the students possessed, nor their experience in interviewing. The lack of consistency throughout the data collection process could call into question the results and conclusions of this study.

Practitioner approach to healthcare:

Patient-centered model of healthcare:
With the complex multi-factoral nature of conditions such as chronic pain, there is an increasing focus on patient-centred care. To be effective in healthcare and negate the low rates of patient adherence to therapist interventions, understanding the patients beliefs, expectations, and preferences is essential (Main et al., 2010). Patient beliefs contribute to the outcome of treatment (Butler & Moseley, 2003). The most influential types of beliefs relate to the nature of pain, fears of re-injury or worsening an existing condition, and self-efficacy beliefs (Main et al., 2010).

Research into modifiable factors of chronic pain is extensive but largely inconclusive, potentially due to the complex nature of chronic pain (Lucas, 2005). Patient beliefs about the extent to which pain can be controlled may be a significant factor in predicting how well the person adjusts to pain or the development of incapacity (Main et al., 2010). Self-care techniques, such as exercise therapy, encourage independence of the patient from the health care practitioner. One reason for why self-care techniques work in chronic pain might be the sense of control over individual health care which is associated with an active coping strategy (Bekkering et al., 2003). Conversely, Cook et al. (2000) found that when performing a supervised exercise programme there was an improvement in physical fitness, but the cognitive aspects about the participant’s experience of pain was not altered. Comparatively, Corbett el al. (2007) found the pursuit of self-care and a sense that the patient is controlling the pain is paramount for improving psychological well-being and is associated with people
suffering chronic pain becoming more hopeful rather than despairing. Both of these qualitative studies used purposive sampling to recruit participants who had previously participated in back pain research. This is a serious limitation for both of these studies based on previous studies into back pain, but they do describe some experiences from a patient perspective.

In order to discuss more fully the different aspects of a patient-centred approach to healthcare, the following section will use the description provided by Mead & Bower (2002). Mead & Bower (2002) outlines five dimensions that comprise a patient-centred approach to healthcare, with these being: (i) biopsychosocial (biologic, social, and psychological aspects) and the impact these have on the pain experience (Butler & Moseley, 2003; Mead & Bower, 2002; N. H. Williams, 2007), (ii) patient-as-person, (iii) sharing power and responsibility, (iv) patient-centred care is the therapeutic alliance, and (v) health care practitioner as a person, with self awareness of the practitioner influential on clinical practice (Mead & Bower, 2002). The following section on chronic pain uses the patient specific differentiations as a guide whilst including other aspects from the literature.

i) Biopsychosocial nature of pain:

There is a biopsychosocial aspect of both acute and chronic pain (Lucas, 2005), although the focus for a biopsychosocial approach to healthcare is more commonly associated with chronic pain. Social and cultural interactions are the founders of beliefs and expectations (Corbett et al., 2007). The biopsychosocial model is associated with ‘yellow flags’ that have been included in the New Zealand guidelines for acute low back pain management. ‘Yellow flags’ indicate an increased risk of developing chronic pain (Accident Compensation Corporation, 2004; Lucas, 2005; Strand et al., 2005). Although important, biopsychosocial factors are not fully responsible for chronic pain. Only 30% of the transition from sub-acute to chronic pain is attributed to psychosocial factors and the remaining 70% is unexplained when using a biomedical approach (Lucas, 2005). Therefore although it is important to be aware of the biomedical approach, it does not fully explain why some people develop chronic pain and others do not.

Psychologically, in chronic pain there must be an alteration of the image of ‘self’ and the daily lives and social interactions of each individual (Corbett et al., 2007). This process of
alteration in self-identity, which is associated with demoralisation and loss of self worth alongside altered beliefs, has been described as ‘enmeshment’ (Morley, 2005). Some people with chronic pain experience the feeling that they cannot express their pain within the socially accepted framework leading to isolation and an emotional swing between despair and hope about recovery (Corbett et al., 2007).

ii) Patient as person:

Beliefs and attitudes:
Patient’s attitudes and beliefs influence how they will use health care in the future and attitudes of the patient can alter therapeutic outcomes, both positively and negatively (Penney, 2009). Within the mechanism of pain processing patients’ beliefs, memories, and emotions alter the cerebral processing of a pain signal. Cognitive processes are said to “translate the pain signal into pain perceptions and offer mechanisms whereby the signal is interpreted in terms of its meaning, potential ‘threat value’ and potential significance for action” (Main et al., 2010, p. 206). This reflects the International Association for the Study of Pain definition of pain which defines pain as “An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage” (International Association for the Study of Pain). In chronic pain the body systems are highly sensitised, which means that non-noxious stimuli can be judged by the higher functioning centres to be dangerous and can result in a pain response (Butler & Moseley, 2003).

Coping styles:
There are a number of coping styles that have been described for people dealing with chronic pain. Knowledge of these assists health care as they can be instrumental in the development of chronic pain (Lucas, 2005). Bekkering et al. (2003) describes different ways that people cope with pain, such as having either active or passive coping strategies. An active coping strategy means taking action to control pain, such as moving or seeking distraction. A passive coping strategy means adopting a passive attitude and using medication, rest or depending on others to control pain levels. Active coping is associated with maintaining better functioning than passive coping (Bekkering et al., 2003) and a decreased likelihood of developing chronic pain (Lucas, 2005). There is no comparison in the study by Bekkering et al. (2003), however, of pain levels, and no indication of what ‘functioning’ means in the context of participants’ back pain.
Inefficient coping strategies can lead to “preoccupation with distressing thoughts and concomitant physiological arousal, thereby increasing pain, decreasing pain tolerance and leading to increased use of medication, lower levels of functioning, poor exercise tolerance and increased individualism” (Main et al., 2010, p. 209). Based on the importance of coping strategies, the authors encourage health professionals to include an assessment of these in patient management. By contrast, Corbett et al. (2007) found that one participant, who was active in his pain management by performing the recommended exercises with little benefit, felt this decreased his hope for improvement. There were a number of limitations to this qualitative study. The study followed on from another larger qualitative research project investigating people consulting their primary health care practitioner. The participants were sampled from participants in the previous study based on the emotional fluctuations they reported. Also, there was no indication of whether the exercises provided were specific for him and appropriate for his condition. The importance of this distinction between personalised and non-personalised exercise intervention lies in evidence from other literature stating that personalised exercises are more beneficial (Ferreira et al., 2006; Taylor et al., 2007). Conclusions regarding whether active rehabilitation increases hope in chronic pain, therefore, cannot be drawn based on this research alone.

Fear-avoidance:
The concept of physical danger and fear of movement has been defined as the ‘fear-avoidance’ model, whereby activities are avoided due to fear. The fear alludes to the danger of doing more damage (Bekkering et al., 2003; Cook & Hassenkamp, 2000; Vlaeyen & Linton, 2000). Main et al. (2010) reviewed pain beliefs and how they influence pain perceptions and treatment response. They found the appraisal of threat and fear response can manifest in catastrophizing, which translates to a tendency to both exaggerate the pain and to think negatively. First believed to be a type of ineffective coping strategy, catastrophizing is now viewed as a set of dysfunctional beliefs (Martel, Thibault, Roy, Catchlove, & Sullivan, 2008), which have a strong link to the development of chronic pain (Main et al., 2010)

Catastrophizing is not merely a psychological phenomenon; in chronic pain there is a system sensitization such that even the thought of a movement associated with pain can in fact provide enough stimulus to cause pain. To this end, “thoughts are nerve impulses” (Butler & Moseley, 2003, p. 80), meaning thoughts can cause pain. The avoidance of activity due to
fear may be instrumental in the development of chronic pain from an acute episode (Vlaeyen & Linton, 2000) via the de-conditioning process that occurs both physically and psychologically (Cook & Hassenkamp, 2000). As part of the de-conditioning process that occurs during the shift from acute to sub-acute and eventually chronic pain there is both a musculoskeletal and psychological breakdown (Cook & Hassenkamp, 2000). The psychological breakdown is proposed to be part of the fear-avoidance model (Vlaeyen & Linton, 2000). There is a positive correlation between the belief that pain indicates the need for avoidance of physical activity and increased disability (Main et al., 2010).

One study found that in 43% of cases physiotherapists mentioned the fear-avoidance model in discussion with patients presenting with pain. However, only in 43% of cases was there a direct mention of decreasing fear levels associated with avoidance of activity (Strand et al., 2005). The study participants had pain duration with a mean of 6 weeks (range from 1-12) which is classified as acute pain. As the fear avoidance model is associated more with chronic pain, although the percentage of physiotherapists addressing fear avoidance seems low, there is limited evidence demonstrating the clinical importance of fear avoidance in the management of acute pain (Pengel, Herbert, Maher, & Refshauge, 2003). One way of addressing the fear of movement is to give exercises or movements that patients can incorporate into their daily activities. This allows the individual to overcome the fear when movements are re-introduced under therapist guidance (Bekkering et al., 2003; Cook & Hassenkamp, 2000). The positive experience that can help to dispel fear of movement is when movements are pain free (Bekkering et al., 2003).

iii) Sharing power and responsibility:

A bond between the patient and practitioner is both ideal and necessary in order for the therapeutic encounters to be effective (Howard & Gosling, 2008). The personal and professional attitudes and beliefs of the health practitioner can be important in patient management because they affect management decisions and reported practice behaviour (Linton, Vlaeyen, & Ostelo, 2002; Main et al., 2010; Penney, 2009). As part of the patient-practitioner relationship there is a power inequality. Practitioners are seen as the more powerful because of their knowledge and training. Part of this power difference is dependent
on the characteristics of the patient, and whether they have an active or passive coping strategy (Bekkering et al., 2003).

Patient education is important in patient-centred care, acknowledging that patients may want information (Mead & Bower, 2002). Information includes explaining the fear avoidance model. Butler & Moseley state that “education, knowledge, and understanding provide the foundation for therapeutic movement. Why perform painful activities if you don’t understand why they hurt?” (Butler & Moseley, 2003, p. 108). The attitudes and beliefs of both patient and practitioner may affect the therapeutic outcome (Penney, 2009).

The structural-pathological model of patient education includes descriptions of pathology, musculoskeletal structure and function, as well as advising lifestyle modifications (Twomey, 1992). Other authors, however, claim that using a structural-pathological model of patient education can enhance the pain experience (Moseley, 2003b) and instead learning about the physiology of pain reduces the threat value, which in turn reduces activation of protective systems (endocrine, sympathetic, and motor) (Butler & Moseley, 2003). From a musculoskeletal aspect, modifying the patient’s lifestyle and altering the activities they perform both in the house and at work can prevent exacerbations (Kerssens et al., 1999). Corbett et al. (2007) investigates the impact that education has on patients. Understanding what the pain is enhances the possibility of the patient developing an acceptance of chronic pain. An acceptance of chronic pain can then lead on to an ability to modify lifestyle (Corbett et al., 2007). Targeting patients’ beliefs can improve therapeutic outcomes and prevent unnecessary misunderstandings and distress should the patient misinterpret information. Influential beliefs include: the nature of pain, its effects, and natural history (Main et al., 2010). There are inconsistencies within the literature regarding which model of patient education has the greatest benefit for therapeutic outcomes. There is evidence that health practitioners may underestimate the ability of patients to understand the neurophysiology of pain, which would in turn decrease the amount of information the health practitioner provides (Moseley, 2003b).

Corbett et al. (2007), in a qualitative study considering peoples struggle between feelings of hope and despair when dealing with chronic pain, found that participants reported that in all patient interactions, including education, there needs to be an awareness of the language utilized. This awareness includes not using technical language terms to ensure that information provided is accessible for the recipient. In a national survey of physiotherapists in
Norway it was found that half of the cases that were observed used a patho-anatomical explanation within the physiotherapist’s diagnosis. Not all of these diagnoses resulted in explanation of the patho-anatomical reasoning behind pain generation, however it is evident that the patho-anatomical model is widely used (Strand et al., 2005).

iv) Patient centred care is the therapeutic alliance:

*Personal meaning of illness:

The fear avoidance model results in decreased activity levels, which affect the biology, psychology and social aspects of daily life. Avoiding activity can result in decreased functional capability and diminished social activities, and can have a significant impact on quality of life and self image. This may result in the person becoming socially isolated and increasing invalidism (Main et al., 2010; Vlaeyen & Linton, 2000). There are other, less discernable fears that accompany chronic pain, such as the fear of unemployment due to disability, or the fear of losing friends and family should the pain continue indefinitely (Corbett et al., 2007).

As highlighted previously, a lack of functional capability and pain are both associated with feelings of fear. If an active coping strategy can be encouraged through the use of self-care, such as active rehabilitation, there is the possibility for engaging in positive actions that patients can undertake to alter the despair and negative thinking that accompanies the diagnosis of chronic pain (Corbett et al., 2007). Using self-care and addressing the fear of movement could engender feelings of control, which are associated with an active coping strategy and positive health outcomes (Bekkering et al., 2003). Fear of the future is predominant in people with chronic pain, particularly those with fluctuations in pain levels and economic difficulties and constraints. The lack of a definitive course of action and timeline results in a fear of what the future will hold and the course that life will take. This can lead to despair and negative thoughts (Corbett et al., 2007).

*Patient-practitioner bond:

A patient-practitioner bond can be developed through the use of common goals (Mead & Bower, 2002) which help patients to either recover or be able to self-manage. In patient management, if therapists focus solely on pain levels, rather than other aspects of care such as patient independence, this can negatively alter the recovery process (Bekkering et al., 2003; Kuchera, 2007). Within manual therapy the use of generally passive treatment techniques can
reinforce reliance on health care professionals and fear-avoidance (Cook & Hassenkamp, 2000).

**Osteopathy:**
According to the Osteopathic Council of New Zealand, osteopaths are: “primary healthcare practitioners who facilitate healing through osteopathic assessment, clinical differential diagnosis and treatment of dysfunctions of the whole person. Osteopaths use various, recognized techniques to work with the body’s ability to heal itself, thereby promoting health and wellbeing” (Osteopathic Council of New Zealand). The use of “diagnosis and treatment of dysfunctions of the whole person...promoting health and wellbeing” indicates that osteopaths have a responsibility based on the current clinical guidelines (Accident Compensation Corporation, 2004; Bach & Holten, 2009; Penney, 2009) to provide exercise advice.

Osteopaths work within a holistic health care system using a biopsychosocial model of illness (Stone, 1999; N. H. Williams, 2007). The biopsychosocial model is congruent with the four osteopathic principles as outlined by Penney (2010) “1. Body is a unit, person a unit of mind, body, spirit, 2. Capable of self regulation, healing and health maintenance, 3. Structure and function are reciprocally interrelated, and 4. Rational treatment based on the above” (Penney, 2010, p. 42). Penny (2010) places principle one in the social aspect of the biopsychosocial model, principle 2 in the psychosocial aspect, and principle 3 in the biological aspect of the biopsychosocial model.

*The impact on education on osteopaths using exercise in patient management:*
Education has been highlighted numerous times through this review as a factor influencing how health practitioners use exercise in patient management. In osteopathy there is no universal qualification. In the United States osteopaths are medical doctors who specialise in osteopathy. In Australia, New Zealand, the United Kingdom, and many other countries, osteopathy is specialised training. Variations in training programmes and qualifications among osteopaths across the world would need to be considered when examining the role of exercise in osteopathy.
Current research:

There is currently very little research into the field of exercise within osteopathy. To date, three studies (Howard & Gosling, 2008; Zamani et al., 2007; Zamani et al., 2008) have focused on exercise content in the undergraduate programme of seven UK schools of osteopathy (Zamani et al., 2007), how exercise is used within osteopathy in the UK (Zamani et al., 2008), and patient characteristics that could influence adherence to prescribed exercises at a student osteopathic clinic in Australia (Howard & Gosling, 2008).

Zamani et al. (2007) analysed the content of specific exercise study material in the undergraduate curriculum of seven schools of osteopathy in the United Kingdom (UK). The study used content analysis to provide their results. The principal findings of the study were that little specific exercise education was outlined in the curriculum papers, although there was no subjective or objective information gathered about the received education from students. This deficiency is important because the curriculum relies on teachers to provide their form of education. There may have been teachers that were exercise oriented resulting in students receiving more exercise education than is provided in the curriculum. There is a certain amount of transferability from the study in the UK to NZ. The NZ Unitec school of osteopathy is based on sister schools in the UK, therefore, there is the potential that the curricula may be similar. However, there is no evidence indicating this is the case in the literature currently.

There is a small amount of evidence that osteopaths provide exercises to patients. One Australian study found that 73% of participants attending the Victoria University Osteopathic Medicine Clinic were given exercises by student osteopaths (Howard & Gosling, 2008). In this study, 200 patients were surveyed. The focus of the study was to see if there could be factors or patient characteristics that could indicate increased likelihood of adherence to provided exercise. Although the provision of exercise was not the primary focus, it was reported that 73% of patients surveyed were provided with home based exercises.

A small qualitative study involving fifteen osteopaths in the UK found evidence that exercise consultation is infrequently used within osteopathy (Zamani et al., 2008). They identified that although the osteopaths reported providing exercise, they also described using more
generalised exercise advice than specialised exercise programmes. The reasons for this included “low levels of pre-graduation preparation and conceptualising exercise therapy as being associated with expertise in other manual therapy disciplines such as physiotherapy” (Zamani et al., 2008, p. 164). Although there was some evidence that exercise is used in some form in osteopathy in the UK the sample size was only fifteen individuals and too small to generalise to the osteopathic profession in the UK (Zamani et al., 2008).

**The importance of exercise in osteopathy:**

Many health care professionals, including osteopaths, consult with patients presenting with low back pain (Burton, 1981; McIlwraith, 2003). In 2003, according to McIlwraith back pain accounted for 68% of patients presenting to one osteopathic clinic in Inverness, Scotland (McIlwraith, 2003). A previous study reported that 85% of patients attending one of the 43 osteopathic practices in Great Britain included in the study complained of spinal pain, 52% complained of low back pain (Burton, 1981). Therefore it is important that osteopaths provide advice based on the best evidence available and clinical guidelines (Penney, 2009). One author stated that manual therapists have a responsibility to “include exercise as an essential part of prophylaxis and treatment in addition to their other more passive treatment modalities such as massage, mobilization, manipulation, and traction” (Twomey, 1992, p. 888). People in pain are potentially consulting a number of health care practitioners and receiving different information about pain management. Guidelines provide a basis from which clinicians can base their recommendations to ensure consistent, best evidence advice being provided regardless of health care modality the patient chooses (Penney, 2009).

Zamani et al. (2007) suggests several reasons in the UK for why further research in the field of exercise and osteopathy is required.

The nationwide policy on increasing physical activity, the evidence advocating the recommendation of exercise and its uses in treatment and management of manual therapy patients and the limited evidence of the osteopathic use of exercise makes research in the field important. (p. 98)

This is also applicable to New Zealand, as there is an emphasis in healthcare on the importance of regular physical activity for the maintenance of overall health and prevention of many chronic conditions.
Summary:

There are two distinct uses of exercise explored within this literature review that reflects a trend within exercise research. First is exercise (or physical activity) in the context of healthcare, with the emphasis on performing regular physical activity to improve overall health and wellbeing, both physical and psychological. Physical activity is recommended by health authorities based on the link between a sedentary lifestyle and many chronic conditions as well as premature morbidity (Ministry of Health, 2003; Sport And Recreation New Zealand, 2008). The onus is placed on primary health practitioners to provide physical activity advice. Osteopaths are primary health practitioners, but to date there is no research identifying whether osteopaths are aware of the current physical activity level recommendations, the risk of inactivity and whether awareness correlates to health behaviours in patient management.

The second use of exercise focuses on the management of specific conditions, particularly for chronic low back pain. A number of systematic literature reviews have concluded there is strong evidence that exercise therapy has beneficial results when used in a number of chronic conditions, including low back pain (Bekkering et al., 2003; Ferreira et al., 2006; Hayden et al., 2005; Smidt et al., 2005; Taylor et al., 2007; van Middelkoop et al., 2010). However there are inconsistencies within the literature surrounding exercise in the management of acute low back pain. Clinical guidelines state that remaining physically active helps recovery from acute low back pain (Accident Compensation Corporation, 2004; Bach & Holten, 2009; Penney, 2009). Given that back pain comprises 31-68% of osteopathic patient presentations (Burton, 1981; Waddell, 1998), osteopaths should be aware of and utilize the current best evidence regarding exercise in the management of both acute and chronic pain. There is a lack of research in this area, with only two small studies providing evidence that osteopaths are utilizing exercise as part of patient management (Howard & Gosling, 2008; Zamani et al., 2008), one study found osteopaths report being more comfortable advising patients on general exercise rather than specific exercise programmes (Zamani et al., 2008). Based on these interesting, but not generalizable results, further research is required regarding the use of exercise in osteopathy.
Although there is strong evidence of the benefits of both physical activity and exercise therapy, barriers have been identified that decrease their use in healthcare. A lack of patient adherence appears to be the most commonly identified barrier (Cook & Hassenkamp, 2000; Hillsdon et al., 2002; Howard & Gosling, 2008; Kerssens et al., 1999). Exercise is an important way of engaging in a patient centred approach to healthcare. Active, self-care techniques, such as exercise, encourage an active coping style in the context of patients suffering from chronic pain. An active coping style is associated with better health outcomes (Bekkering et al., 2003), and a decreased risk of developing chronic pain (Lucas, 2005).

Osteopaths claim to work within the biopsychosocial model of healthcare (Penney, 2010; N. H. Williams, 2007). There is potential that, based on the positive correlations between exercise and both psychological and physical wellbeing, exercise should be an important part of osteopathic patient management.

This chapter aimed to discuss the current exercise literature as well as provide a rational for the current study. The chapter started with definitions of the two groups of exercise; physical activity and therapeutic exercise. The next step was discussing both physical activity and therapeutic exercise. The chapter finished with an outline of healthcare practitioners, particularly in relation to advising physical activity levels, education in chronic pain, and patient education about their condition and lifestyle modification. Included in this section was a discussion of osteopathy including the current exercise literature and a rationale for why exercise could be an important and valid part of osteopathy.
CHAPTER THREE: METHODOLOGY
Introduction to Chapter Three:

The aim of this chapter is to discuss the two methods that were used in this study. Following an introduction to the study including the two methods, there is a discussion about the method used in Part 1: Interpretive description. Included in this part is a discussion about interviews as a means of data collection. There is then a discussion of the method survey research which was used for Part 2. This includes a discussion about survey research, Likert scales, data collection in survey research, and attitudes as part of survey research.

Part 1: Qualitative research

Interpretive description:

Part 1 of the study used the method of interpretive description (Thorne, 2008; Thorne, Kirkham, & MacDonald-Emes, 1997; Thorne, Kirkham, & O'Flynn-Magee, 2004). Interpretive description is a relatively new methodological approach within the qualitative paradigm stemming from nursing research in the clinical setting.

As Thorne et al. (2004) explain:

The foundation of interpretive description is the smaller scale qualitative investigation of a clinical phenomenon of interest to the discipline for the purpose of capturing themes and patterns within subjective perceptions and generating an interpretive description capable of informing clinical understanding. (p. 5)

The interpretive or exploratory way that research using interpretive description is approached provides flexibility. Some qualitative methodologies bind researchers to strict philosophical guidelines that are not necessarily suitable for more clinically focused research (Thorne et al., 2004). Because of the flexibility interpretive description provides it is beneficial for research in practice-based professions when investigating experience derived questions (Thorne, 2008). Osteopathy is a practice-based profession and this study aimed to answer a question about the attitudes of osteopaths towards exercise in clinical practice. Therefore the flexibility that interpretive description provides matches the aim of this study. Interpretive description
provides a framework to justify the use of specific research techniques and procedures where they are not conventionally used.

As Thorne (2008) describes, using interpretive description as a framework:

Permits us to build up a body of knowledge about the implications of design options in relation to the infinite universe of clinical phenomena that we might reasonably wish to know more about, and it provides us with a solid and defensible basis upon which to judge whether a particular piece of qualitative output is worthy of our serious attention. (p. 35)

**Interviews:**

Semi-structured face-to-face interviews were used in Part 1 of the study. Interviews conducted with people who have first-hand knowledge regarding a phenomenon of clinical practice have the potential to provide an extensive depth of response (Domholdt, 2005). Because of the advantages of face-to-face interviews, it is one of the most popular ways of collecting primary data in qualitative research (Thorne, 2008).

Semi-structured interviewers use open-ended questions that are related to the topic of interest (May, 2007). They allow the interviewer to guide the line of questioning (Creswell 2008), whilst ensuring that the same topics are covered in each interview and still encouraging exploration of the participants’ individual experience (Aronsen, 1994; May, 2007).

There are limitations in using face-to-face interviews as a primary data source. Because the data comes from individuals, it is subjective information. All subjective knowledge for each participant, and thus their story, is developed within the context of their ego, ideology, and social meaning (Thorne, 2008). Qualitative research findings cannot be generalized because the language and concepts that participants use are dependent on the context of time and place (Domholdt, 2005). The interplay between the researcher and participant during the interview process can influence the data provided, increasing the potential for bias. In this way the relationship is part of the research process (Domholdt, 2005). Thorne (2008) urges interviewers involved in qualitative research to be aware of their own personal ‘internal world’ and stay as neutral as possible whilst interviewing in an attempt to avoid influencing the participant with their own agenda. Other limitations of interviewing are that the presence
of the researcher may inhibit participants’ responses. There is also the possibility that not all participants will be equally articulate and perceptive (Creswell, 2008; Thorne, 2008).

Data analysis in interpretive often involves thematic analysis. As described by Thorne et al. (2004), data analysis within the framework of interpretive description establishes patterns or themes within the data.

**Part 2: Survey research**

Part 2 of the study used quantitative survey research to evaluate the preliminary questionnaire through a process of piloting. Survey research collects data that asks people what they believe, what they know, and how they behave and can collect information about concrete facts, knowledge, behavior, abstract opinions, and personal characteristics (Domholdt, 2005).

One of the detriments of survey research is that the validity of the data is dependent on participants reporting truthfully and accurately.

**Survey research:**

Survey research is a popular way of gathering information and is increasingly used in healthcare research (Rattray & Jones, 2007). Survey research is used both to increase theoretical knowledge and improve practical outcomes (Alreck & Settle, 2004; Rattray & Jones, 2007).

Alreck & Settle (2004) explain that surveys are often used to:

> Discover the wants, needs, and desires of a population to improve service providers’ ability to meet the needs of their clients. Researchers use surveys within a theoretical framework as a way to discover information about populations out of interest and a desire for knowledge. (p.5)

Survey research is useful for providing data that is self-reported. Survey research can be an effective, accurate, reliable, and valid approach to obtaining information about groups of people. A well designed and organized survey instrument (often a questionnaire) increases
the effectiveness of survey research and can answer many questions by asking only a few questions (Alreck & Settle, 2004).

**Questionnaire development:**
Before relevant items or questions can be developed, a topic framework needs to be established. Constructing a questionnaire that evaluates the target outcomes requires an understanding of the key issues of the topic. Literature Review and Qualitative research have been described to explore the questionnaire topic prior to drafting of items (Alreck & Settle, 2004; de Vargas & Vilar Luis, 2008; Domholdt, 2005; A. Williams, 2003).

Reviewing the relevant background literature will inform the researcher about what is currently known, identify methods for data collection, and indicate problematic areas (Meadows, 2003). Reviewing the literature allows researchers to identify and develop guiding issues on which to base questions that can be explored further during interview.

Qualitative research can be used as a preliminary approach to “identify issues of importance to [participants] as a first stage in questionnaire studies” (A. Williams, 2003, p. 245) and “identify the range of behaviours, attitudes and issues relevant to the objectives of the survey” (Meadows, 2003, p. 564). Interviews or focus groups conducted with a sample of participants who are part of the target population of the study provides information about what is important to that topic and gives an indication of what questions should be asked in the survey and how the questions should be formatted and posed (Alreck & Settle, 2004; de Vargas & Vilar Luis, 2008; Domholdt, 2005; A. Williams, 2003).

When developing a new questionnaire it is important to pilot and test the questionnaire in different ways for wording, content, validity and reliability (Domholdt, 2005; Meadows, 2003; Rattray & Jones, 2007). Validity is the extent to which any instrument (in this case a questionnaire) measures what it is intended to measure, while reliability is how consistently the questionnaire measures the outcomes over different populations and the same population independent of factors such as education or maturation (Edwards, 2010; Meadows, 2003; Rattray & Jones, 2007). For a questionnaire to be valid it needs to have face validity, content validity, reliability, and construct validity. Pilot work is a useful approach in addressing these needs. There are different ways and foci for piloting questionnaires. Foci for questionnaire piloting include internal validity, content, wording, and format or structure. The first step
involves piloting a draft of the questionnaire to research colleagues, content experts, and representatives of the target sample population (Domholdt, 2005; Edwards, 2010).

Benefits of survey research:
Surveys are flexible and versatile; they are not restricted into any one mode of inquiry and can be used in a wide range of research contexts. There are four methods of data collection in survey research: Telephone interviews; face-to-face interviews; online (email and web-based); and postal mail. Participants can be reached with combinations of visual or audible stimuli including mail, email, web-based, telephone, and face-to-face. Surveys can also reach participants in widespread geographical locations. The volume and complexity of both data collected and the analysis process can vary greatly in survey research (Alreck & Settle, 2004). The benefits of this flexibility is that survey research can be applied to many topics and many levels of inquiry from large cohort studies using complex statistical analysis to small pilot studies with few variables.

Because there are various methods by which target populations can be sampled in survey research, there is potential to gather accurate and generalizable information from large populations with relatively small samples (Alreck & Settle, 2004).

Survey limitations:
Survey research using questionnaires produces self-reported data. An important limitation of this approach is that survey designs cannot establish causality and may not be representative of actual behaviour. The participant may be unaware of the causality behind why they behave in a certain way. Participants may also not wish to disclose the information required for the study, which makes the data less valid and increases bias (Alreck & Settle, 2004).

One of the most significant limitations of survey research is the potential for bias to occur. Bias is conveniently considered in four key areas: frame/coverage error; measurement (instrument) error; non-response bias; and sampling error. All of these areas except measurement error are part of the larger ‘response bias’ (Alreck & Settle, 2004; Dillman, 2000; Lesser et al., 2001). Instrument bias, or ‘error’ occurs when bias is introduced by the questionnaire. For example a poorly constructed questionnaire that does not accurately reflect the topic introduces error or bias. Response bias occurs where characteristics such as personality, social status, occupation, and age of the respondents affect the data collected.
Questions about sensitive issues may not be fully answered using questionnaires. This is not unique to one method of data collection and can occur in any research where data collection depends on participants answering questions. Participants may feel embarrassed or threatened by questions and may be resistant to providing the information (Alreck & Settle, 2004). Therefore there is the possibility that the self-reported data collected may not be representative of the participants’ actual attitudes/beliefs/behaviours.

Non-response bias is where there is a low response rate and characteristics of responders and non-responders could be different which means that the data collected may not be representative of the population. If this occurs, it decreases the external validity and increases bias of the study (Alreck & Settle, 2004). An example of this could be osteopaths with very strong views, either for or against the use of exercise in osteopathy respond, but those that do not feel strongly are less likely to participate. Although important, there is no way of establishing the extent to which non-response bias is present.

Response rates in surveys are generally fairly low; more than 30% is rare (Alreck & Settle, 2004). Survey research with osteopathic participants in NZ and the United States of America report response rates of 33.9% (Allee, Pollak, & Malnar, 2005), 25% (Blaser, 2009), and a disparity between email (27.7%) and postal mail (11.5%) (Friedlander, 2008). Alle et al. (2005) collected data in the United States of America, thus potentially altering the applicability of these response rates to NZ; the studies of both Friedlander (2008) and Blaser (2009) were conducted in NZ.

There is evidence that response rates can be improved by using multiple reminder mailings and small financial incentives (Lesser et al., 2001). A review paper including research from the 1930s to 1980s concluded that small financial incentives (e.g. $2) can increase response rates between 5 and 31% with a mean increase of 19% (Lesser et al., 2001).

Non-response bias is more likely with online and mail methods of data collection when compared to face-to-face or telephone emails (Lesser et al., 2001); and although there is good evidence that financial incentives increase the response rate, there is insufficient data to show that financial incentives decrease non-response bias (Lesser et al., 2001). Another way of decreasing non-response bias is to weight responses (weighting class adjustment) dependent on demographical profile of respondents. Weighting class adjustment is where demographic information is marked as an adjustment class. The variables are given a weight based on the class of information. The aim is that the responses between non-respondents and respondents
within the same weighting class will be similar. If they are similar it indicates low levels of non-response bias. It has been suggested, however, that adding weighting class adjustment associated with demographics can decrease the precision of the measurement (Lesser et al., 2001).

The validity and reliability of an instrument depends in large part on each individual question or item. There are many forms that instrumentation bias and error can take; unstated criteria, inapplicable questions, example containment, over-demanding recall, overgeneralization, over-specificity, overemphasis, ambiguity of wording, double-barrel questions, leading questions, and loaded questions have all been defined as types of bias (Alreck & Settle, 2004).

**Likert scales:**
There are many formats that questions/items can take in a survey. Likert scales are used to measure the magnitude of a response characteristic (eg extent of agreement) for items that use structured closed question items. Likert scales provide numerical data that is directly comparable and can easily be statistically analysed as required (Alreck & Settle, 2004). The questions are statements and the respondent is asked to rank their level of agreement with the statement. The most commonly used magnitude scale are four or five point scales with ‘Strongly Disagree’ and ‘Strongly Agree’ as anchors and ‘Neither Agree nor Disagree’ as a neutral point (Rattray & Jones, 2007). There are many benefits of Likert scales, including cost effectiveness, flexibility and ease of development. When developing items, using already articulated statements is an advantage because they are a true representation of the participants’ responses (Alreck & Settle, 2004). Items can be either positively or negatively voiced. Questionnaire should have symmetrically balanced positively and negatively voiced items.

Alreck and Settle (2004) provide a guide for using Likert scale items:

1. The Likert scale should be used for several items, rather than just one or two, to obtain the inherent economy.
2. The researcher should identify or compose statements that are opinions typical of a global issue.
3. The items should be sufficiently diverse, so they represent an adequate range of the global issue.
4. There must be reasonable certainty that many respondents won’t pick only a neutral value.

5. If a summated score is to be computed, about half the items should be inclined toward the pro side of the issue and half toward the con side. (p. 122)

**Attitudes in survey research:**

‘Attitudes’ have been defined in the Cambridge dictionary of psychology as “evaluations of objects occurring in ongoing thoughts about the objects or stored in memory. Attitudes can be influenced by, and can influence, beliefs and behaviour in relation to the attitude” (Matsumoto, 2009, p. 59). Attitudes are often investigated in professional practice because it is generally believed that attitudes are likely to be predictors of behaviour. What people know is likely to influence their emotions and beliefs, and therefore influence how they act in relation to an issue. Therefore knowledge, or awareness, should be included in attitudinal research. Attitudes regarding an issue are influenced by experiences, both positive and negative, as well as an evaluation of the issue referenced to each individual’s personal values. Attitudes can be measured by both valence (positive or negative) and intensity. The action component of attitudes may be assessed by asking how the person acted in a similar situation previously, how they act towards the topic in the current situation, and how they intend to act in the future (Alreck & Settle, 2004).

In attitudinal research there are both ‘explicit’ and ‘implicit’ attitudes. Measurements of self-reported attitudes, beliefs and/or behaviours are usually considered to measure ‘explicit’ attitudes. Explicit attitudes are self-reported and therefore can be influenced both consciously and sub-consciously in a spontaneous fashion. Spontaneous influences include judgment, or behaviour towards the attitude subject that occurs automatically when the person encounters the attitude subject. Explicit attitudes involve a conscious, deliberate assessment of the attitude subject where there is an analysis of the benefit of a particular behaviour. This has been named the MODE model, an acronym for “motivation and opportunity as determinants of whether the attitude-to-behaviour process is primarily spontaneous or deliberative in nature” (Fazio & Olson, 2003, p. 301). Implicit attitudes are spontaneous associations between the attitude subject and the response that are difficult to control. Implicit attitudes are measured by tapping into these spontaneous responses whereas explicit measures are self-reported (Matsumoto, 2009).
Data collection:

There are four main approaches for collecting data in survey research; face-to-face interviews, telephone interviews, mailed surveys, and online surveys (Domholdt, 2005; Sue & Ritter, 2007). Each of these methods has strengths, weaknesses and limitations. There are two types of online survey research, emailed questionnaires and web-based questionnaires. There are many benefits of online surveys, and in particular web-based questionnaires. The most obvious benefit of online surveys is cost effective in that there is no real marginal cost – sending 100 emails is usually the same cost and time as sending 1000 emails. Online survey methods are not constrained by geography provided there is internet access. Online surveys have the potential benefit of fast turnaround, although this is not guaranteed.

Web-based surveys provide anonymity that is not achievable using email, face-to-face or telephone surveys because there is the option to exclude I.P addresses and there are no other identifying factors provided upon response which decreases the potential for investigator bias (Alreck & Settle, 2004; Edwards, 2010). Another benefit of web-based surveys is that the data can be directly entered into the software package of choice for easy analysis, thus saving time. One potential disadvantage in using online surveys is potential coverage bias secondary to computer literacy and the potential participant being able to be contacted via email (as occurs in both email and web-based surveys). In New Zealand, household access to internet is growing. In 2009 75% of NZ households had access to internet at home and 63% of these had broadband access (Statistics New Zealand, 2009). Another potential limitation of all survey research including online surveys is the possibility of participants abandoning the survey without completion (Sue & Ritter, 2007). A way to minimize this is to make the questionnaire short (Sue & Ritter, 2007).
Summary:

This chapter discussed the methods underpinning the current study; interpretive description and survey research. The chapter began by providing a rationale for the usefulness of the current study. Following the rationale was an examination of the method interpretive description which was used in Part 1 of this study. This included an examination of the validity of face-to-face interviews as a means of collecting data in qualitative research. The chapter then moved on to review survey research, the method used in Part 2 of the current study. Included in the review was a discussion about attitudes in survey research and the differences between implicit and explicit attitudes. The chapter then concluded with a discussion and outline of the different methods available for collecting data in survey research.
CHAPTER FOUR: METHODS
Introduction to Chapter Four:

This chapter describes the processes undertaken as part of this study. It is divided into two parts reflecting the two parts of the research design. Each part includes details of sampling, participants, data collection, and data analysis processes. The chapter begins with an overview of the methods, followed by a brief discussion of the ethical procedures undertaken to ensure that the study was in accordance with Unitec Research Ethics Committee (UREC). Provided here is a diagram showing the questionnaire development process that was undertaken during the study.
Overview of the study design:

The current study was undertaken to develop a questionnaire to be used as a tool to answer the research question ‘What are the attitudes of NZ osteopaths regarding the use of exercise within osteopathy? Above is a diagram that shows the development process.

Due to the lack of even basic research available about this topic, the first step (Part 1) was to undertake a qualitative exploration prior to the development of questionnaire items. Because qualitative research focuses on exploring the complexities of human experiences and behaviours, it was appropriate for this approach to identify key issues surrounding osteopaths’ attitudes towards the inclusion of exercise in osteopathy.

Part 2 used the method of survey research. Qualitative research is not generalizable beyond the participants at the time of data collection. Therefore, to answer the research question in this study requires the ability to measure attitudes of NZ osteopaths from a sample large enough to be generalizable to the population (in this case, NZ osteopaths). Using survey research to develop items and pilot the questionnaire to evaluate face validity of the questionnaire will enable future researchers to undertake research that more thoroughly address the research question.

Part 1 of the study used the method of interpretive description. Six participants were interviewed (five osteopaths and one senior Master of Osteopathy student). Verbatim transcripts were analyzed thematically using processes consistent with interpretive description (Thorne, 2008; Thorne et al., 1997; Thorne et al., 2004).

Part 2 involved drafting items, structuring them into a preliminary questionnaire, and then piloting the draft questionnaire. The items were developed based on the theme clusters identified in Part 1 using statements participants had made. 5-point Likert scales were used to measure the extent of agreement for each item. The items were grouped into three sections, these being: Demographics, Physical Exercise, and Therapeutic Exercise. A demographics section was also included in the preliminary questionnaire. After several revisions of items with supervisors, the preliminary questionnaire was uploaded into an online survey tool (http://www.SurveyMonkey.com) and ‘piloting’ commenced. Piloting involved two rounds; the first round assessed usability. The second was for expert review. Feedback from both
piloting rounds provided material for item revision with the aim of improving face validity of the final preliminary questionnaire.

Web-based data collection was chosen for the current study.

**Ethics:**

The project was approved by the Unitec Research Ethics Committee. All participants in Part 1 were given an information sheet (see Appendix A) which outlined what the study entailed, the data collection methods, consent procedures, and timeline for the research. All participants gave written informed consent prior to interview (see Appendix C).

Participants in Part 2, Round 1, were provided with an information sheet (see Appendix B) on the leading page of the online questionnaire when the participant followed the link embedded in the invitation email. They were advised in the information sheet that completion and submission of the questionnaire implied consent.

Participants in Part 2, Round 2, were informed by email of the progress of the research project to that point by the primary researcher. They were invited in the email to participate as an expert in the field of exercise or exercise within osteopathy. Consent was implied upon the participant’s responding in the affirmative to the invitation email.

The research process ensured participant anonymity. In Part 1 no information identifying participants was included in transcript extracts in the public domain and the identity of participants was known only to the primary researcher. Interviews for Part 1 were recorded using digital voice recording equipment. The transcriptionist who transcribed the interviews signed a confidentiality agreement (see Appendix G) and deleted all copies of the voice files after use. The voice files and hard copy transcripts are stored in a locked filing cabinet by the primary researcher and all electronic copies are kept in a password protected personal computer. All data excerpts have been anonymised.
Part 1:

Sampling:

Participants in Part 1 were purposively sampled based on their active involvement in patient management. Potential participants were initially contacted using one of two methods. NZ registered osteopaths were sent a letter (see Appendix F) and Information Sheet (see Appendix A) to either their clinic postal address or internal mail to the Unitec Osteopathic Clinic. Final year Master of Osteopathy students were recruited using a poster (see Appendix E) placed on a wall within the Unitec Osteopathic Clinic. The poster invited interested people to contact the primary researcher for further information. When students contacted the primary researcher they were sent the letter of invitation and Information Sheet.

Participants recruited from the Unitec student clinic (both registered osteopaths and students) identified themselves during the face-to-face interview as using a predominantly ‘structural’² treatment style. Practitioners of osteopathy in the cranial field were therefore sampled as representing a ‘functional’ treatment style. The intended benefit of including practitioners with different treatment styles was the potentially different attitudes practitioners may hold regarding the use of exercise within osteopathy. Letters of invitation and Part 1 Information Sheet were then sent to the clinical postal addresses of seven NZ registered osteopaths who were known by the researcher to use predominantly osteopathy in the cranial field.

Following distribution of letters of invitation and Information Sheet people contacted the primary researcher if interested in participating in the study and an interview was arranged.

² Two treatment styles or approaches have been found within osteopathy in previous research. These two approaches have been named ‘structural’ and ‘functional’ practice styles (Blaser, 2009).
Participants:
There were six participants for Part 1 of this study. Participants were from three different segments within the osteopathic profession; 1) Registered osteopaths practicing in Auckland (n=1), 2) Students enrolled in the Master of Osteopathy programme (n=1) and 3) NZ registered osteopaths teaching at the Unitec student osteopathic clinic (n=3). There is only one institution in NZ where an osteopathic qualification is available (Unitec), therefore clinical tutors were recruited from Unitec. Undergraduate osteopathy students in the Bachelor of Applied Science (Human Biology) were excluded based on their lack of direct clinical experience.

There were no exclusion criteria for this study from amongst the groups identified above.

Data collection:
All participants for Part 1 were required to be located in Auckland to enable face-to-face interviews. Participants chose the location most convenient for them for the interviews. Venues chosen were the osteopath’s clinic (n=2); and Unitec (n=4). Interviews were recorded using a digital Dictaphone. An interview guide (see Appendix D) was used as a reference during the interviews. The four items listed on the guide were ‘topics’ identified after reviewing the literature.

The interviews were transcribed verbatim as soon as possible following each interview. The first interview was transcribed by the primary researcher and the remaining five were transcribed by a professional transcriptionist. After transcription the primary researcher listened to recordings of the interviews whilst reviewing the transcriptions to ensure they were accurate.

Data analysis:
Interview data were analyzed using thematic analysis (Thorne et al., 2004). Theme clusters were identified by the primary researcher interpreting the raw data and grouping similar ideas from statements participants made to form the theme clusters. Theme clusters comprised different ideas that addressed a topic. Common ideas that came through the interviews, both positive and negative, addressing the same topic were grouped together. The different ideas within each theme cluster were named sub-themes. Once the theme clusters were identified the transcripts were reviewed further for a deeper understanding of the sub-themes and statements identified that illustrated the theme clusters. Network diagrams (‘mind-maps’)
were used to aid in the development of each theme cluster. The theme cluster was placed in the centre of the mind map and statements from different participants relevant to that theme cluster were placed around the outside.

Following a process outlined by de Vargas and Vilar (2008), once these theme clusters were identified items were drafted that became the statements making up the preliminary questionnaire. These items were statements constituting positive and negative attitudes towards the various aspects of each theme cluster.

**Part 2:**

**Sampling:**

**Part 2, Round 1: Usability**
Participants for Round 1 of the preliminary questionnaire pilot were recruited using non-probabilistic, purposive sampling. Emails were sent to 28 potential participants with an introduction outlining the study and a link to the preliminary questionnaire on Survey Monkey™. The survey software keeps responses anonymous to ensure those who responded couldn’t be identified as to whether they were osteopathy students or staff.

**Part 2, Round 2: Expert review**
The participants were sampled based on suggestions from research supervisors about people who might be regarded as experts in their respective fields. The experts were first contacted by email with an introduction to the primary researcher and study and invited to contact the primary researcher if interested in participating. Once the primary researcher was contacted with an affirmative answer the original email was followed by another email (n=2), or telephone call (n=3), outlining the research process, the format and content of the questionnaire. Participants were informed that the main aim of the process was to record their feedback on the content validity of the draft items.

The questionnaire was sent to three participants simultaneously (parallel). Based on expert feedback the items were reviewed and refined before being distributed (series) simultaneously to a further two experts (parallel). By progressing in this way a more refined questionnaire was reviewed each time.
Participants:
Participants for Round 1 were required to be enrolled in first or second year (2009, 2010) Master of Osteopathy programme, or be NZ registered osteopaths teaching in the Unitec Osteopathic Clinic.

Part 2, Round 2: Expert review
Two of the participants were identified as having extensive experience in the field of exercise, one in exercise science and the other in exercise rehabilitation. Two participants were invited to participate because they were known to use an approach to osteopathy that included extensive use of exercise as part of their clinical practice. The third participant was a non-practicing osteopath heavily involved in exercise rehabilitation.

Data collection:

Part 2, Round 1: Usability
The first round of piloting the preliminary questionnaire was undertaken using Survey Monkey™ and feedback was provided by participants on format, items and general accessibility. Individual responses on Survey Monkey™ were anonymous. Responses were collected using a 5-point Likert scale and a small number of open format written responses. For the pilot of the preliminary questionnaire open ended questions about the items and structure of the questionnaire involved areas for participant comment. All suggestions for improvement made by respondents were documented by the primary researcher.

Part 2, Round 2: Expert feedback
The feedback data was collected in two ways. Two experts had face-to-face interviews with the primary researcher and thus the feedback was in verbal form. Itemized notes were recorded by the primary researcher and collated into a Microsoft word document. For three participants, feedback was collected using email.
Data analysis:

**Part 2, Round 1: Usability**
Items were reviewed in response to feedback. The participants who responded to Round 1 answered the questionnaire and also wrote comments in the space provided. Data measuring attitudes was disregarded as it was not the aim of the round. The comments provided were copied into a Microsoft word document with the item number they corresponded with. The comments were reviewed in meetings between the primary researcher and research supervisors, and changes to the questionnaire layout and item wording were made where consensus was reached.

**Part 2, Round 2: Expert review**
The expert feedback was mostly in the form of email documents (3 of the 5 participants) with both overall comments and item specific comments. The feedback was reviewed by the primary researcher, and research supervisors, with alterations made to the items where appropriate.

**Summary:**

This chapter has discussed the procedures undertaken during this study. There was a discussion of Parts 1 and 2 as well as the ethical considerations of the research.

Part 1 of the study used a qualitative methodology through an interpretive description method. Five osteopaths and one final year Master of Osteopathy student were interviewed face-to-face. From the themes, items were drafted for a preliminary questionnaire. Part 2 of the study used quantitative survey research to develop a draft questionnaire. The testing process included first revision, expert review, piloting, and final revision.
CHAPTER FIVE: FINDINGS
Introduction to Chapter Five:

This chapter presents the findings of this study. There are two sections in the chapter; Section 1 presents the findings from Part 1 of the study and Section 2 presents the findings of Part 2. First in Section 1 is an exploration of the four theme clusters and sub-themes identified in Part 1. Within each theme cluster the sub-themes are discussed and excerpts are used to illustrate the ideas that are part of each sub-theme. The chapter then outlines the alterations made to the preliminary questionnaire during Part 2. The results of the two rounds of piloting are presented in this chapter with the alterations that were made to both the items and the questionnaire structure. The chapter finishes with a summary of the overall results of both Parts 1 and 2.

Symbols used in chapter five:

…Omitted text

[text] Inserted test for clarification of excerpt

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3 ‘Excerpt’ refers to an extract from the raw data (interviews) which are direct quotes.
Section 1: Part 1

Four theme clusters were identified during the data analysis process. These were: ‘Exercise and osteopathy: a perfect match?’, ‘Experiences with exercise’, ‘Exercise choice’ and ‘Barriers to providing exercise’. Within each theme cluster a number of sub-themes were identified which outline different aspects of the cluster. During the analysis process it was apparent that participants described two different ways they used exercise in osteopathy. These were (i) ‘general exercise’ for the maintenance of general health and wellbeing, and (ii) ‘specific exercises’ which were exercises targeted to alter the function of the patients musculoskeletal system as part of rehabilitation from a specific problem.

Table 1: Theme Clusters and Sub-themes of Part 1

<table>
<thead>
<tr>
<th>1. Exercise and osteopathy: A perfect match?</th>
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<tbody>
<tr>
<td>a. Osteopathy, job or vocation?</td>
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<tr>
<td>b. Role of the osteopath</td>
</tr>
<tr>
<td>c. Exercise within osteopathic treatment</td>
</tr>
<tr>
<td>d. Treatment outcomes</td>
</tr>
<tr>
<td>e. Balance of power in the therapeutic</td>
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<tr>
<td>relationship</td>
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</tbody>
</table>

| 2. Experiences with exercise in clinical       |
| practice                                      |
| a. Professional experience                    |
| b. Personal experience                        |
| c. Lifestyle modification                     |

| 3. Exercise choice                            |
| a. Knowledge                                  |
| b. Experience                                 |
| c. Individualizing exercise                   |

| 4. Barriers to providing exercise             |
| a. Non adherence                              |
| b. Osteopaths’ experience and knowledge       |
| c. Scope of osteopathy                        |
Chapter Five: Findings

Theme cluster 1: Exercise and osteopathy: A perfect match?

Theme cluster 1 explores participants’ views of exercise within osteopathy and incorporates participants’ views on what they perceive the role of an osteopath to be as well as where and how well exercise fits within the philosophies and practicalities of osteopathic practice.

There are five sub-themes within this theme cluster: a) ‘osteopathy, job or vocation?’, b) ‘role of the osteopath’, c) ‘exercise within osteopathic treatment’, d) ‘treatment outcomes’ and e) ‘balance of power in the therapeutic relationship’.

**Sub-themes:**

a) Osteopathy, job or vocation?

The question ‘what does being an osteopath mean?’ arose during the data analysis process. This includes the question ‘is osteopathy an occupation or a vocation?’ The participants had different opinions about what osteopathy meant to them. There was no direct questioning as part of the interview surrounding this topic, however, the idea arose from participants replies to other questions.

*I think being an osteopath is a lifestyle. It shouldn’t be something that happens between nine and five in an office. It’s something that happens all the time. So it’s a philosophy that you’re implying is appropriate for a lot of people as well.*

Another aspect of osteopathy as a vocation or occupation was the idea of job satisfaction. There was some reference in the data to how far outside the treatment room an osteopath should aim to influence. As one participant strongly stated:

*I would say they’re [the osteopath] not doing their job if they don’t [use exercise as part of treatment] because treatment is not just what happens in the treatment room, part of osteopathic treatment is what happens outside of that forty minutes a week. But exercise is as important then from that point of view as is advice on posture at a desk or how a student is studying.*

Job satisfaction was highlighted as one reason that osteopathy should extend further than osteopathic manual therapy.
What can be done is that you get into peoples’ lives a little bit and that’s not an invasive thing, it’s just getting to know them on a deeper level, really encouraging them to do things and change things and going the extra mile...I think it’s more satisfying as a practitioner to be involved with people to that degree.

b) Role of the osteopath:

Participants almost unanimously described one of the roles of an osteopath as being an educator. Education included: lifestyle advice, providing information and explanation about pathology, exercise, and explaining the nature of the patient’s problem. One participant described what being an educator means.

So I see the role as being as much an educator as a practitioner...In the sense of making them aware of what the tissues might do and how they might behave and trying to put it into lay language. I’ve done the years of trying to work it out from the books and I think what I need to do is facilitate that information to the person who’s not done any study of that kind of thing so that they understand how inflammation might swell up and go down again, how tissues might repair over a period of weeks.

In the statement above the participant identified the importance of using ‘lay language’ to help the patients understanding. The participant appears to view him/herself as a facilitator of knowledge; the practitioner has the knowledge which they feel is important for the patient to understand.

The importance of education and patients’ understanding how their body works was also highlighted by another participant.

I try to always get people to have a vision of how their body works and explain to them how it works for several reasons. I think if people understand the way their body works they’ll be more respectful of it and more understanding of it and I think visualization is a very powerful healing tool as well. So I visualize myself while I’m treating and if they can have a vision of what a synovial joint is and what’s happening to it when I’m articulating it, they have a vision of what’s happening to it when they use it. I think that’s quite important... I think educating people about how their body works is really important, understanding the way your body works is going to change the way you think, change the way you move.
Several ideas arose from this excerpt as the participant describes why a patient’s knowledge of their own body is important. The use of this knowledge as a ‘healing tool’ is an interesting perspective, and the participant described how visualization by both the practitioner and patient helps with treatment. Another idea outlined here was that if people are educated about their body, they may be more respectful about how they use their body and can alter the way they live.

Participants’ expressed the idea that osteopathy was not generally well regarded in the medical field. One suggestion about the use of exercise revolved around the idea that exercise could be used to demonstrate what osteopathy includes to the medical profession. The suggested benefit of this, from the viewpoint of the following participant, would be to influence the medical profession’s perceptions of osteopathy.

Our general perception by the medical world is of crystal waving hippies really who hold people’s heads and don’t have a clue about rehab. That’s unfortunate, and in some ways a little but true. In some ways too I think it’s the fault of say the Osteopathic Council and the Osteopathic Societies that they haven’t boycotted the medical fraternity more with what we do, with the skills and knowledge we have, and basically our education level so that they actually know that we are better than they think we are.

This statement is strong and raised another idea relating to the Osteopathic Council and Osteopathic Societies. The participant expressed the opinion that there needs to be more awareness created by the osteopathic profession about their scope of practice. This would raise the osteopath profile as health professionals and establish a stronger profile within the wider healthcare community.

The same participant explored this idea further and incorporated the issue of funding based on the image of osteopaths held by people outside the profession. This idea hints towards a revision of the scope of practice of osteopathy in the future, with the possibility of vocational scopes of practice or areas of special interest.

So then maybe you need to go into postgraduate work and give students or people in the profession the opportunity to study at that level into an area that they’re interested in. That could be spinal injuries, car crash injuries. I looked it up on the ACC website the other day and there are physios who do specific hand therapy. As an osteopath
you can’t get into that but why not? Why can’t we have specified hand therapists?
The answer is because nobody’s written a paper that they can take to ACC and tick a box. So we need to look at those things.

c) Exercise within osteopathic treatment:

The question of how exercise therapy fits within osteopathic practice drew polarized perspectives from the participants. At one end of the spectrum a participant stated:

As a treatment I think its [specific exercise] essential. I think it’s something that we have to incorporate in our treatment programmes and planning.

Compared to:

I think it’s [therapeutic exercise used as a treatment adjunct] very limited. Very limited indeed.

Participants were asked about how important exercise was in the spectrum of treatment techniques available in osteopathy, and whether it is a valuable addition. One participant answered:

If you can employ as many different strings to your bow and use them effectively with the patient you will see them less often.

Participants’ also described how exercise could be used as a tool where other osteopathic approaches may not be effective.

Manual therapists tend to mobilize things that they perceive to be restricted a lot and that tends to be, generally that’s the way we go. Like if something’s tight and something’s loose then we work on the tight, getting the tight one loose, but there’s not a lot of techniques that promote stability or making a joint less mobile, which is where therapeutic exercises comes in I think.

From another perspective job satisfaction appears to be linked with delivery (‘hands on’) of osteopathic manual therapy. One participant expressed the opinion that an osteopath’s role was to treat the patient with ‘hands on’ osteopathic manual therapy, and that was their expectations when entering the osteopathic profession.

My basis for being an osteopath is to treat people and that’s why I got into it.
When discussing the importance of exercise within osteopathy, participants acknowledged the existence of two ‘treatment styles’ within osteopathy: ‘structural’ ‘(classic)’, and ‘functional/cranial’ treatment styles. One participant indicated there should be no division and that being an osteopath means using all techniques, although somewhat paradoxically they still reported a technique style preference.

*I am a trained osteopath so I use all techniques, but I would predominantly probably use structural direct techniques.*

Different treatment styles were proffered as an explanation for using therapeutic exercise as part of patient management for individual osteopaths. Participants identified the idea that being more ‘structurally’ oriented potentially increases the importance that exercise holds.

*I think being more structurally oriented makes exercise a more relevant part of the deal. I think if I was more of a cranial practitioner or that end of the spectrum, maybe more of a counselor, I think maybe exercise wouldn’t feature as highly in my repertoire.*

Participants consistently voiced the idea that pre-registration education was an area that had the greatest impact on their attitudes towards exercise. Areas of education that seemed most significant included the curriculum of the school, teachers, fellow students, and society at the time of training.

Pre-registration education was proffered as an explanation by participants for treatment style choice. For one participant they conveyed how their education influenced treatment choice:

*I do a lot of structural direct technique and I think that emphasis through my course led me to where I am now. Had it been more exercise oriented I might have ended up feeling differently.*

While another compared the influence that osteopathic education has on the development of treatment styles. He/she uses two examples of osteopathic schools to demonstrate the idea.

*The course [pre-registration osteopathic education] gives emphasis based on the lecturers who give you the information. If you and I [Interviewer (osteopathic student) and participant] were at the European School of Osteopathy we might spend a lot more time doing indirect techniques and the more ethereal side of osteopathy.*
When discussing exercise within osteopathy, there appeared to be differences in participants’ attitudes whether referring to general or specific exercise. One participant referenced recommendations for physical activity levels.

[In the context of increasing cardiovascular fitness as the treatment draws to a close]...I always think of the British Heart Foundation suggestion that taking a dog for a walk for half an hour a day is enough to stop you getting heart disease.

Another commonly expressed opinion was that osteopaths are holistic practitioners. This seemed to include approaching patient healthcare from a bio-psychosocial model.

Because we’re kind of bio-psychosocial domain aware practitioners, hopefully, we can potentially have the broad view of an individual in their environment that is slightly more accurate than some other version of practitioners, and therefore, what exercise we do suggest might be more appropriate for that individual...So I think that’s where osteopathy scores, we spend so much time analyzing the patient in the context of their own world that what we do eventually offer as advice, and obviously I’m biased, is more accurate and more useful.

In this excerpt, the participant identified osteopaths as ‘bio-psychosocial’ practitioners which they then correlated to being able to provide exercise that is more appropriate for the patient. This is an interesting and important issue in the context of whether osteopaths should provide exercise advice. This participant indicated that osteopaths approach to patient management results in their exercise advice being more relevant for the patient than other health care professionals.

The importance of education was commonly expressed by participants in this study; both theirs and providing education to the patient. As outlined previously, the majority of participants expressed that there was little formal exercise education during their osteopathic education. One participant expressed the opinion that exercise should be included in osteopathic education, but as a specialisation rather than part of the core curriculum. This opinion was outlined within the context of the participant expressing the idea that there is the potential for specialisation in the future within the osteopathic profession and education.

I think when we get to the point of having a Master’s [degree] then we should have the ability to select papers that you want to do. So you can become a very sport rehab based masters osteopathic student or you can become a very cranial based or you can
become a very pediatric based...Have core papers, have your research papers and then have selected papers that you can do that individualize you into your specified direction.

In contrast, another participant received some exercise education while training as an osteopath. This participant expressed the opinion that specialisation, or in this case more emphasis on exercise education, could alter the ‘profile’ of osteopathy.

If there had been more teaching of exercise principles like there is in the sports department across the way, I think it might have changed the way I practice...I think I would have ended up more like a physio. I think I would have ended up doing group work, maybe doing exercise training as a, what do they call them, like a sports coach role with the osteopathy tacked on top rather than being the practitioner with an interest in the tissues where exercise is an additional component. So the potential there that had I done more in terms of exercise understanding I would have ended up being a coach of some kind.

The principles of osteopathy are taught as part of osteopathic education. One participant described how exercise fits within osteopathy based on the fundamental principle of ‘the rule of the artery is supreme’

I think the exercise part of that I would very much describe it in terms of loading of a particular tissue in terms of blood inflow and outflow so rule of the artery type stuff and try to express the exercise as a way of stimulating the change that we’re after from a tissue point of view.

d) Treatment outcomes

The interviews included a discussion regarding participants’ opinions about which part of the therapeutic intervention positive therapeutic outcomes from osteopathy occurred. Positive therapeutic outcomes were described as the removal of pain and functionally positive biomechanical alterations. The alteration in biomechanics served two purposes; pain removal and future injury prevention. There seemed to be a combination of answers to this line of questioning. Some participants expressed that it was predominantly passive osteopathic treatment that was responsible, others described a combination of exercise and passive.®

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®‘Passive’ osteopathic treatment refers to techniques of osteopathic manual therapy that are performed by the practitioner on the patient.
treatment. There was also the indication that it was predominantly exercise and other lifestyle modifications aided in part by osteopathic treatment. One participant discussed this with reference to a particular patient:

One patient in particular springs to mind who in the early days had been seeing a number of different practitioners for years on end for a grumpy low back problem who we sent to aqua aerobics and she got very into the idea and danced merrily away for six or eight weeks and came back saying “I’m really enjoying this.” Her back got better and I was able to discharge her and yes she came back with the occasional gremlin but she kept up that aqua aerobics and the frequency of visits to manual therapists had decreased from one a week for years on end to one every few months.

Another participant simply stated:

I think mostly it’s the treatment that gets rid of the pain. The exercise is something more long term. It’s a preventative.

Part of the importance of lifestyle modifications, including exercise, is the reality that the way in which people live has a larger impact on their recovery and pain regression than osteopathic treatment. This does not diminish the treatment, but recognizes the importance of the ‘bigger picture’ of the patient in their own environment.

The cross training might come from doing a bit of swimming and doing shoulder exercise instead and the combination of all those things doesn’t necessarily happen in the 20 minutes you’ve got them in front of you. It’s happening all the time with you coming in as an osteopathic observer of how progress is going. And so you can throw your 5% in with the soft tissue and structural techniques and improving their breathing mechanics, I think the bigger deal is how they’re living their lives.

If someone comes in and they’re that floppy biotype, they have lax ligaments and they’ve got an acute facet, then you can work to release the acute facet and you can work on all the muscles around it, but it’s going to come back unless you give them some sort of exercise that’s going to help them to distribute forces more evenly through their body.
e) Balance of power in the therapeutic relationship:

Another sub-theme in this theme cluster was ‘balance of power in the therapeutic relationship’. Participants described how prescribing exercise encouraged a sense of empowerment for the patient. This involves a shift from predominantly passive treatment (osteopathic manual medicine) to utilizing active treatments (exercise).

*I think the emphasis it [exercise] gives is a sense of ownership and responsibility that the patient then has and they’re not totally reliant on us [osteopaths] producing some magical effect.*

The same participant explored this idea further by identifying that not sharing the responsibility of health care can be a ‘sales pitch’ within osteopathy by claiming to cure rather than facilitate healing.

*The tendency in my opinion is that we, whether we like it or not, try to set ourselves up as being somebody who can provide a cure and that’s the sales pitch of being an osteopath.*

In ‘balancing the power’ the osteopath becomes a partner in the recovery process, not the keystone. Making this alteration in care decreases patient dependence and encourages a sense of ownership in patients. They become instrumental in their own recovery.

*I think it’s quite important that we share that responsibility, that the patient knows from the word go that they have to do something to get themselves better as well as us and we might be the facilitators but they have to do something towards it. Now that may be avoiding certain things but it could also be engaging in other things and that other thing is very often exercise.*

Two participants shared personal experiences during a discussion about what providing exercise can do for patients. One participant had a negative experience of being given advice about exercises that they found negated the need to seek further treatment in another health care modality. This experience created a negative attitude to exercise.

*I got advice, went home. I was like, you go to a physio and they go “go do these stretches” and I’m like well if that’s what’s going to cure my problems then why am I coming to you.*
In contrast, not providing exercise advice can be a cause of patient frustration. One of the participants had a personal experience as a patient consulting an osteopath who did not provide exercise advice. For the participant there was a frustration based on the dependence created by not being provided with tools to self-manage.

*I’ve been to a few osteopaths for some conditions and they’ve got no exercises to give, you’re like “what can I do to help?” “Oh no just come back next week”.*

Lifestyle modifications were also described by some participants to be a method of empowering patients by giving them tools which allowed them to remain in the occupation that was the cause of their complaint.

*Long term if they [the patient] want to stay in a job like that [sedentary] I think they’ve got to do more long term exercise when they’re not in pain. The patient needs to understand that continuing with exercises provided could allow them to remain in the same occupation.*

In contrast to the idea that exercise was prescribed as a means of empowerment, one participant described giving exercises more to pacify the patient; something to do rather than part of patient management.

*I’ll always try and give something but I don’t hang my coat on it. I’m giving it to them for something to do so they can go home and feel that they’ve got something to do. If they do it or don’t do it it’s no relevance to me.*

Providing patients with tools to self-manage has the added benefit of decreasing the financial commitment that patients make with therapeutic intervention.

*They want to get better and they don’t want to have to pay to see you the whole time and if they can do something to keep things at bay and they don’t have to pay for it then that’s great.*
Chapter Five: Findings

Theme cluster 2: Experiences with exercise in clinical practice:

Theme cluster 2 explores how participants have experienced exercise, both personally and professionally. Their experiences seemed to have a large impact on their attitudes towards the use of exercise in future clinical patient management.

Three sub-themes exist within this theme cluster: a) ‘professional experience’, b) ‘personal experience’, and c) ‘lifestyle modification’.

Sub-themes:

a) Professional experience:

One of the experiences participants shared whilst discussing exercise was the importance that exercise held within the society influenced how they thought about exercise. As one participant expressed:

*In those days* [referring to the time when the participant was being educated in osteopathy], *exercises weren’t as trendy as now. I mean Pilates wasn’t really popular in London and yoga was for strange vegetarian tree huggers and that sort of thing. In London in the eighties people weren’t body aware.*

Another participant described how people are becoming more conscious of exercise. This was reflected by participants’ experiences of people asking for exercises.

*People are asking more about advice on how to help themselves. I think that’s happened a lot more in the last five, ten years.*

Experiencing positive results with the use of exercise with patients appeared to influence participants’ attitudes towards using exercise as a treatment adjunct.

*I think probably when I emerged from college I didn’t use exercise in a particularly structured or organized way and I think experience has taught me that particularly if you can get the patient on side that you can get bigger, better, longer lasting changes out of people.*

The participant in the excerpt above brings up a number of issues that are explored in this chapter. Firstly, the lack of exercise knowledge after graduation. Secondly, the effect that experience has on how they approach exercise use. Thirdly, the necessity to get patients
adherence to exercise programmes. Lastly, the benefits that can be achieved by providing exercises.

b) Personal experience:

Personal experience appeared to have an influence on participants’ attitudes. Participants reported positive experiences of exercise and personal attributes or characteristics that encouraged them to use exercise with patients.

Having personal experience of beneficial outcomes from specific exercises seemed to encourage participants to use those exercises with patients.

*Personal experience of, I find the plank useful, not so much a useful thing to do but I do feel better if I can do it for longer.*

A personal propensity for physical activity appeared to provide a rationale for why encouraging physical activity for patients seemed natural.

*I’m a fairly physical person and so doing physical things come fairly naturally to me.*

c) Lifestyle modification:

Participants described how they had experiences of exercise being used as a viable way of altering the patient’s lifestyle. Other lifestyle modification such as stress, posture, and ergonomics may not be easily altered due to practicality or financial reasons. As one participant outlined:

*Stress management for example could be something that you can only talk about. Ergonomics, there may be limitations on what they can do in terms of changing the ergonomics of their work station or whatever, but exercise usually you can find ways in which you can create an exercise that works in their normal lifestyle and is something that is not too onerous and succeeds [in lifestyle modification] in that way.*

Another benefit of exercise as a lifestyle modification was the provision of some control for patients over their recovery. This seemed particularly important when other lifestyle modifications would not be manageable.
If people have a sedentary job, they’re stuck in front of a computer all day there’s not a lot they can do about that but you can give them exercises during the day every so often for a few minutes.

Participants highlighted that one of the goals of providing lifestyle modifications, including exercise, was the prevention of further injury. The basis of injury prevention is the physiological self-maintenance that occurs in healthy individuals. These mechanisms are impaired through inactivity or being ‘unfit’.

The fundamental law is the fitter you are the more you can get away with and if a person is very unfit they’re more reliant on me. Their body’s not going to actually be doing the self repairs properly because they’re not fit enough, there’s no muscle tone, there’s not enough sugar in the balance in the body or not enough de-stressing of adrenaline or cortisol load. So if they’re tense they make themselves at risk of getting unwell.

Exercise was also attributed by some participants to be responsible for increasing the long term positive benefits associated with osteopathy and that not performing exercise could be detrimental to recovery. The idea developed from personal experience of this phenomenon.

There have been occasions where a patient has patently not taken on the suggestion of doing a particular exercise and I found it more difficult to get the result out of them because of that.

An important issue was raised whilst discussing the use of exercise as a lifestyle modification. Patient adherence was something that was repeatedly discussed by participants as a barrier to prescribing exercise, as well as a ‘challenge’ for the participant to work around. An idea that was raised by a number of the participants was that discovering the patients motivating factor could provide an avenue for increasing adherence. Participants consistently referenced pain as a motivating factor. There was the expression that whilst the motivator (pain) was present and the modification (exercise) appeared to decrease pain levels, adherence rates were good. However, once the motivator (pain) was removed, exercise ceased.

So if pain is their factor once you remove the pain from them exercise becomes irrelevant, they forget, they don’t do it, they’re not in pain. So pain’s a driving factor. If we could keep the pain longer, then people would be more motivated.
While it’s sore, while there’s pain they're pretty good at it [adhering to exercise].

Another finding from the data was the practitioners’ experience that ‘motivated’ patients were more likely to adhere to an exercise programme. ‘Motivation’ was judged by the participants from the case history based on patients’ current activity level, history, and enquiries about exercise.

_I mean the case history will give you some ideas in terms of whether they're “exercisers” already or whether they're novices._

_Generally patient compliance is fairly low unless they have a history of going to the gym or doing exercise as part of their lifestyle really before they come to see you._

_I don’t give exercises to all my patients usually just to the ones that ask because then I know they’re going to do them._

Another aspect of lifestyle modification one participant highlighted as being important was helping to bring the triune nature of each patient into balance. By maintaining a good balance there was an understanding that good health could be maintained. Health in this context was described as

_Being able to do what they want to do, their body has a good recovery process, the internal mechanisms on the ability of physical activity, the ability to the cranial rhythm, the ability for biodynamic balances are all intact and they’ll be able to move forward as they need to._
Theme cluster 3: Exercise choice

There were a number of factors identified by participants as influencing their attitudes to the use of different exercises in clinical practice. The most commonly identified factors were knowledge, experience, and the necessity to individualize exercise based on the patient.

The sub-themes within the theme cluster therefore deal with a) ‘knowledge’, b) ‘experience’, and c) ‘individualizing exercise’.

Sub-themes:

a) Knowledge

Knowledge about different forms and the benefits of exercise seemed to impact how participants perceived the usefulness of exercise in their clinical practice.

i) Professional:

The following excerpt illustrates how one participant’s knowledge about the benefits of exercise, in this case abdominal strengthening exercises, increased the importance that exercise holds as part of treatment:

Abdominal toning is one of them [particular exercise that participant suggests]. If you can get patients to do something about the way in which their abdomen is pulling against their low back generally then it makes a huge difference [to the treatment outcome] and really makes life a lot easier.

There was an idea that came through from participants with varied opinions regarding what knowledge practitioners needed in order to provide specific exercises to patients. One participant indicated that requirements for developing specific exercises were anatomical knowledge, common sense, and the intended functional alteration from the exercise. There was an indication that anatomical knowledge was gained through the osteopathic education.

[In response to questions asking where specific exercises the participant used had originated] Just thinking about my anatomy and thinking about what I want to accomplish with a certain area of the body and thinking well how can I get them to do that?

As well as responding to individual needs, societal changes have determined that exercise goals need to reflect these changes so that general fitness levels become more of a goal than
specific exercises. Participants described how specific exercises and the exercise world in general had evolved over time and through societal changes. Societal changes they described included the increasing sedentary nature of both work and recreation, which in turn alters the emphasis placed on exercise.

As a society we are now spending our time battling the western excesses of obesity and sluggish behaviour because we all sit in cars and that sort of thing and maybe emphasis has changed from trying to find ways around injuries through particular exercise to just getting people off their backside and doing some exercise.

In the excerpt above the participant highlights two key issues - the increasing obesity rates due to ‘western excesses’ and the increase in ‘sluggish’ behaviour. Identifying these two issues have resulted in awareness that the goals of exercise provision are increased physical activity, rather than specific exercises. Another participant echoed the idea that people are increasingly living sedentary lives, which create unique problems.

I mean let’s face it people are more sedentary now than they ever used to be and they’re getting problems because of it.

Another participant, when discussing how exercise had changed over time, described a polarization occurring in the exercise world.

[Exercise] is more sophisticated for the elite end and it’s more a case of getting the non-exercisers to start exercising.

Exercises at the elite athlete end of the exercise spectrum have, in this participant’s opinion, become more sophisticated. At the other end of the spectrum people who are not exercising need to increase their physical activity levels, something that was not necessary previously.

ii) Personal knowledge

Exercise selection also seemed to be strongly linked to participants reporting personal knowledge about exercise forms.

I really encourage people, for example, to go to a Tai Chi class because I think personally that that’s the ultimate form of exercise in terms of your physical health, your mental health, your joint health, your muscular health.
This participant identified that their beliefs about exercise choices influenced which exercises they chose to encourage patients to perform.

Personal development of knowledge was one source specific exercise ideas came from. Personal interest in further developing exercise knowledge led to participants seeking information about exercise. During a discussion about where they got specific exercise ideas, participants described how an interest led them to seek an avenue to increase their knowledge. For example, one participant described using general media as a source of information.

*Just being interested in looking at different ways in which exercises can work. I mean just the straightforward *GQ* kind of magazines and finding out about different types of exercise.*

For another participant further developing exercise knowledge was not a high priority.

*I suppose new techniques coming out for exercise, specific exercise and I really haven’t kept up with that in all honesty, I could do, I could you know use the net and look at it but I must say I haven’t done that.*

This participant expressed a lack of interest in further developing exercise knowledge, despite acknowledging there is information available about exercise.

**b) Experience:**

One of the most significant and commonly highlighted influences on specific exercise choice was the interactions participants had with tutors and fellow students during their osteopathic education. Two participants responded similarly to this line of questioning, with both stating:

*[In response to questions regarding where specific exercise originated from]*

*As far as I remember there was no formal training, we got our ideas off other students...Third and fourth year you are treating so you tend to have mentors in the fourth year. You probably learn [specific exercises] off your mentors more than anything. It was more of a case of exercise being common sense or whatever were favourites of, say the fourth year mentors and/or the tutors as well.*

*From the few things I learned while I was a student; from just talking with other students while I was training*

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5 Gentlemen's Quarterly, a magazine with a focus on fashion, style and culture for men
Different experiences that affected participants’ exercise choices included empirical observation, educational, and awareness of exercise forms used in other health care modalities. Below are two excerpts illustrating the different forms that experience took for the participants; personal, professional, and educational.

Firstly, one participant discussed how they experimented in clinical practice, using different exercises to see the effects. The results provided knowledge.

* A certain amount of empirical experimentation with patients saying “how do you fancy trying to stretch your hamstrings on one side only and see what it does to your anteriorly rotated innominate?” and then getting some sort of result out of that or not has been the way of learning.

Next is an excerpt demonstrating how further education provided a new way for one participant to look at movement and exercise.

* I didn’t really know any exercises when I graduated from the undergrad...[training programme] taught me a lot about different body types and what different people can do...so I guess I apply that to my patients now.

c) Individualizing exercise:

Many participants stated that the exercises they chose to provide were influenced by the patient’s characteristics. The characteristic most often identified was the patient’s interests and exercise preferences. As one participant pointed out:

* Why tell them to go and do yoga if they hate sitting on the floor?

Another participant described how the interests and exercise preferences of the patient can be used to provide exercises.

* I like to find out what people do and tweak that. If they walk, make them walk properly...find something that they like to do and encourage them to do that.

The importance of individualisation based on what people like to do, whilst also noting that the exercise provided may not be ideal, was highlighted by one participant.

* [Exercises patients are provided with] Not always the best exercises but you try and make the best of what people had time to do, wanted to do, and were able to do.
Modifying exercises to include them in activities of daily living was suggested by the majority of participants to increase the likelihood of adherence. This applied to specific exercises as well as more general exercise. One participant shared his/her experiences of modifying an exercise.

*From my experience the way in which to incorporate exercises, whether we’re talking about specific individual exercises like an articulation movement of some kind, in that sort of circumstance then we’re looking at trying to incorporate the articulate exercise into something they would normally do.*

Targeting movement (exercise) into an already existing activity of daily living was a successful strategy for providing specific exercises. Another participant described a similar strategy:

*When I do talk about exercise to people and I expect poor compliance because that’s human nature I try to suggest something that can be part of their lifestyle so that it’s something that they take on as part of their normal life rather than “Oh I haven’t done my exercises today” and so for people who’ve got, as an example short Pecs I just say to them “look every time you walk through the door just stop and just do that”*[Demonstrating a stretch of the Pectoralis major]. *It will only take you a couple of minutes and you’re more likely to get buy in with that than saying “look you need to do this for 10 minutes three times a day”*

The benefit of providing specific exercises that are part of an already existing activity of daily living is increased adherence. The participant described how separate exercises will not necessarily be adhered to. Including the exercise into an activity the patient is already performing decreases the amount of extra work the patient has to do, which increases the likelihood of adherence.
Theme cluster 4: Barriers to providing exercise:

A number of barriers were identified by participants about providing exercises to patients. These appeared to stem from two key areas: (i) practitioner perceived patient barriers and (ii) practitioner barriers. Barriers identified by participants as stemming from the patient were a lack of motivation, performing exercises incorrectly, or resistance to an exercise programme. Practitioner barriers included knowledge and experience.

There are three sub-themes within this theme cluster: a) ‘non adherence’, and b) ‘experience’; and c) ‘knowledge’.

Sub-themes:

a) Non adherence:

There seemed to be a causative link for participants between experiencing a lack of patient adherence and their attitude to providing exercise. One participant described disillusionment from experiencing a lack of adherence.

*Giving people stuff to do it is almost impossible to get compliance to occur...most people you give them stretches they forget after two days. It just gets into the too hard basket.*

Another participant simply stated:

*It’s not that I don’t give advice. It’s just I’ve seen that a lot of advice doesn’t go very far.*

Not all participants were disillusioned from experiencing poor adherence. One participant indicated that to get change, practitioners needed to put thought and effort into the challenge.

*[When discussing lifestyle modification and tailoring exercise to fit the individual] I think you need to put a little bit more thought and effort in if you're going to really change people.*

The reaction to the experience of a lack of patient adherence seemed to create one of two attitudes: 1) participants did not place much emphasis in their practice on prescribing exercise, or 2) they found ways in which to motivate patients and increase adherence.
Chapter Five: Findings

One participant identified health status as a barrier to prescribing or modifying an exercise programme.

*I think times when I wouldn’t [prescribe exercise] are based around systemic health. So if you’ve got patients who are hyperthyroid, hypothyroid, diabetic, ill in some other sense, then there would be caveats attached to it.*

b) Experience:

A relationship seemed to exist between personal interest in sports and the emphasis placed on the provision of therapeutic exercise. One participant stated that from their experience, students of osteopathy are not interested in sports. The participant then described how a lack of sporting interest and knowledge could be a barrier to understanding exercise rehabilitation.

*The people that I’ve seen become osteopaths aren’t always sports related...I would say that it’s probably less than 20% for the osteopathic students I see. Some just don’t even know what a gym is. They know very little about sports so I don’t know how they are supposed to know about exercise rehab.*

Another participant, when discussing barriers to using exercise, described how a lack of experience and confidence when they graduated from their osteopathic education caused them not to use exercise with patients.

*I think just a lack of confidence to a large extent in terms of what I’m suggesting was the reason for not using it [specific therapeutic exercises] initially [post-graduation].*

c) Knowledge:

One participant expressed the opinion that exercise prescription should be a specialisation within osteopathic practice, rather than a common tool. Their reasoning was a lack of formal exercise rehabilitation programme education, and the idea that therapeutic exercise ‘regimes’ for specific injuries was too large a field for osteopaths to fully cover without specialisation.

*So we need to have papers that have the latest rehab programmes for this stuff [exercise for rehabilitation] so people know. Being generalized, I think is very hard. I mean you’d have to have papers that covered rehab of the elderly to pediatrics to secretaries to taxi driver...I mean it’s too big. You’d have to put it down to specific injuries.*
As part of this idea of specialisation was the caveat that there should be specialised formal education in rehabilitation available during the osteopathic education.

*I don’t think that we should be specialised to a point of individual sports, but we should be specialised to a point of knowing common rehab requirements. So we need to have papers that have the latest rehab programmes so people know.*

An important barrier to the use of exercise was participants’ beliefs about what their role as an osteopath entailed. One participant expressed how they became an osteopath to ‘treat’ people, meaning passive treatments. Passive treatments are when techniques are performed by the practitioner. Active techniques are when there are activities that are performed by the patient. Exercise is an example of an active treatment technique.

*My basis for being an osteopath is to treat people and that’s why I got into it...So I think the basis for what I do is that I have knowledge and I have skills that they [patient’s] don’t have and they’re paying me to treat them.*

The rationale for this participant was that as a trained osteopath they possessed knowledge and osteopathic skills the patient did not have and that the provision of these skills was the basis for the contract between patient and practitioner. This role did not include the provision of exercise.
Section 2: Part 2

Findings from Part 2 of the study: questionnaire piloting

In Part 2 of the study, the method survey research was used to draft and pilot items that were structured into a questionnaire. A number of items were drafted based on each theme cluster. For a table showing examples of this process see Appendix I. Following drafting, the items were reviewed in a consensus process between the primary researcher, principal and associate supervisors. After the consensus process the items were formatted on a five point Likert scale with ‘Strongly Disagree’ and ‘Strongly Agree’ as anchors. The items were structured into a three section questionnaire for piloting, consisting of ‘demographics’, ‘general exercise’, and ‘therapeutic exercise’.

In Part 2 two rounds of piloting were undertaken: called Round 1 and 2. During the pilot, items in the questionnaire were reviewed for clarity, wording, content, and format. Following a presentation at the research forum at Unitec, the definitions of physical activity and therapeutic exercise were altered. This resulted in the questionnaire being divided into five sections, instead of the previous three. The five sections of the final questionnaire were: ‘demographics’, ‘physical activity advice’, ‘physical activity prescription’, ‘therapeutic exercise prescription’, and ‘therapeutic exercise advice’.

Part 2, Round 1:

Results from usability testing:

Eleven people (39%) completed the pilot of the preliminary questionnaire. Section 2 of the questionnaire was changed following Round 1 of the preliminary questionnaire development and a literature review. The term ‘general exercise’ was changed to ‘physical activity’. Physical activity was then defined as ‘any bodily movement produced by skeletal muscles where the result is an expenditure of energy. Physical activity includes taking the stairs instead of the lift, hanging out the washing, walking to the shops or to work and school, gardening, vacuuming and sweeping, and carrying objects’ a definition provided by the New Zealand Ministry of Health (Ministry of Health, 2003). All items in the physical activity section were altered and the term ‘general exercise’ replaced with ‘physical activity’. The third section definition remained the same.
Chapter Five: Findings

After four questions the formatting of the questionnaire on Survey Monkey™ was altered as feedback indicated it was not possible to see the column headings which had the five possible attitude measures (‘Strongly Disagree’ to ‘Strongly Agree’). Without visual headings it was necessary to continually scroll up the page to answer the questions, a time consuming exercise. To negate the loss of column headings each section was divided into groups of five items, allowing the column headings to be accessible throughout the questionnaire.

The issue was raised of differentiating one item based on acute versus chronic pain. The original item was:

1. Therapeutic outcomes of osteopathic treatment are mostly dependent on people adhering to lifestyle modifications such as physical activity provided by the osteopath

Feedback was provided that the answer would depend on whether or not the situation involved a patient with acute or chronic pain. The primary researcher reviewed the rest of the items to ascertain if this was a common problem, or applicable to that item alone. The consensus was that the other items were not affected by the definition of acute versus chronic pain. Therefore the item was reworded and split into two items; one addressing acute pain and the other addressing chronic pain. ‘Persistent pain’ was used to avoid the connotations that are associated with ‘chronic pain’. The following items emerged:

2. Therapeutic outcomes of osteopathic treatment are mostly dependent in people with acute pain adhering to lifestyle modifications such as physical activity provided by the osteopath
3. Therapeutic outcomes of osteopathic treatment are mostly dependent in people with persistent pain adhering to lifestyle modifications such as physical activity provided by the osteopath

Two items concerning the same issue with alternate wording were deemed to be too similar and therefore one was removed. Item two was removed and item one remained.

1. Therapeutic exercises that are a modification of the patients daily activities increases the likelihood they will follow instructions
2. Therapeutic exercise incorporated into one of the patients daily activities increases the likelihood they will follow those instructions regarding exercise prescription
Some other minor wording alterations were suggested and changed where deemed appropriate by the primary researcher in conjunction with the principal and associate supervisors.

Part 2, Round 2:

**Results from experts round:**
There were five participants in Round 2.

*Demographics:*

After feedback about the demographics section a number of changes were made to wording and clarification of existing questions. There was also the addition of further demographical information.

In question seven regarding physical exercise, the recommendation for physical activity level was added so that the participants all had the same reference point about what physical exercise meant. The question therefore changed from: ‘Do you participate in physical exercise? Physical exercise is any physical activity whereby any bodily movement produced by skeletal muscles results in an expenditure of energy to a level that is sufficient to produce physiological adaptation’, To ‘do you participate in physical exercise? Physical exercise is any physical activity whereby any bodily movement produced by skeletal muscles results in an expenditure of energy to a level that is sufficient to produce physiological adaptation. The recommendation by the Ministry of Health and the American College of Sports Medicine for the appropriate level of physical activity is 30 minutes of moderate intensity activity, at least five days per week. Moderate intensity exercise means working hard enough to raise your heart rate and break a sweat, but still be able to hold a conversation’

Another suggestion was to add a question identifying if the participant was currently practicing osteopathy. Based on this feedback the question below was added. The benefit of this question is to be able to identify those osteopaths who are not currently practicing with the potential that being inactive may influence the attitude to exercise within osteopathy

1. ‘Are you currently practicing osteopathy?’

The second suggested inclusion to the demographics section was to add to the place of practice what age groups the practitioner treats in clinical practice. The suggestion stems from the fact that if the osteopath is predominantly/only treating children then therapeutic exercise
will be less of a feature than in adult care. This avenue had not been explored previously in this study and therefore was a valuable inclusion. Based on this the items below was added.

1. Do you treat all age groups?
2. If no to question 7, what age groups do you treat (e.g. Pediatrics, adults, geriatrics)

Feedback to clarify the meaning of ‘recreational sport’ which could mean any number of things resulted in the addition of a description of recreational sport including anything not at a professional level. Some people consider their sport as more than recreational whether or not they are competing at a professional level.

**Definition alteration:**

The definitions altered in the questionnaire based on feedback that they lacked clarity and the distinction between ‘physical activity’ and ‘therapeutic exercise’ was not clear based on the fact that all therapeutic exercises are in fact physical activity and the converse can be true.

**Section two:**

The original definition for the section on physical activity was ‘Physical activity for this section means any bodily movement produced by skeletal muscles where the result is an expenditure of energy. Physical activity includes taking the stairs instead of the lift, hanging out the washing, walking to the shops or to work and school, gardening, vacuuming and sweeping, and carrying objects’ However after feedback that taking the lift is also physical activity and that exercise is planned, structured to such and involves expending energy to such a level that physiological adaptation is reached. The term ‘physical exercise’ was suggested. Therefore the definition was altered to ‘Physical exercise for this section means physical activity where any bodily movement produced by skeletal muscles results in an expenditure of energy to a level that is sufficient to produce physiological adaptation. The recommendation by the Ministry of Health and the American College of Sports Medicine for the appropriate level of physical activity is 30 minutes of moderate intensity activity at least five days per week. Moderate intensity exercise means working hard enough to raise your heart rate and break a sweat but still be able to hold a conversation.’ This definition was based on the feedback and includes the recommendation for physical activity levels by the American Heart Association, the American College of Sports Medicine and in New Zealand the Ministry of Health and SPARC (American College of Sports Medicine, 2000; American
Heart Association American College of Sports Medicine, 2007; Ministry of Health, 2003; Sport And Recreation New Zealand, 2008). The alteration in definition also addressed the feedback regarding the four principles of exercise prescription, Frequency, Intensity, Duration, and Type. The Type of exercise was not specified.

Further definition revision following presentation of the research at the Unitec research forum altered the term ‘physical exercise’ to ‘physical activity’ and the resultant definition ‘any physical activity where “a bodily movement produced by skeletal muscle/s results in an expenditure of energy to a level that is sufficient to produce physiological adaptation’. The American College of Sports Medicine (ACSM) define physical activity as “bodily movement generated by skeletal muscles resulting in energy expenditure” (American College of Sports Medicine, 2000). The definition of physical activity in the preliminary questionnaire encompasses the ACSM definition of energy expenditure but also includes the acknowledgement that to achieve beneficial health outcomes, which are the intended result of physical activity, physiological adaptation of one or more systems occurs.

Section three:

The definition for therapeutic exercise was more problematic. There are numerous types of exercise that are utilized within the literature under the umbrella term ‘exercise therapy’. For example, there are stretching exercises, resistance training, aerobic exercises, and strengthening exercises. Because exercise therapy is poorly documented within osteopathic literature the definition did not exclude any of the listed exercises. Instead the definition was left broad to encompass any form of therapeutic exercise. Part of the feedback stated that some would not categorize stretching as an exercise. However, although not cardiovascular exercise, there is evidence that stretching exercises are beneficial in the management of back pain.

The definition altered in response to feedback originally ‘Therapeutic exercise for this section is described as the prescription of a physical activity programme that involves the patient undertaking voluntary muscle contraction and/or body movement with the aim of relieving symptoms, improving function, or slowing deterioration of health.’ This evolved into ‘Therapeutic exercise for this section is defined as a prescribed physical activity programme involving the patient undertaking voluntary muscle contraction and/or body movement with the aim of relieving symptoms, improving function or slowing deterioration of health.'
Therapeutic exercise can take many forms and can include any combination of strengthening, stretching, or aerobic exercises.’

Following the presentation at the Unitec research forum the definition altered again and instead was closely based on the ACSM definition of exercise training. Exercise training is defined as “planned, structured, and repetitive bodily movements done to improve or maintain one or more components of physical fitness” (American College of Sports Medicine, 2000). Based on this the definition of therapeutic exercise became ‘a physical activity programme involving a person undertaking voluntary muscle contraction and/or body movement with the intention of improving function, relieving symptoms, or slowing deterioration of health.

Therapeutic exercise is typically considered in a preventative or rehabilitation context and is usually associated with clinical management of any of a wide range of target disorders’.

A further inclusion into section three (therapeutic exercise) was whether the osteopath thinks there is enough education about therapeutic exercise available and whether they would participate in education if possible. In response to the feedback two items were added:

1. I would like to continue further education into therapeutic exercise if it was available
2. The post-graduate education into therapeutic education is not sufficient

Further questionnaire development:

Feedback was provided that some of the questions would be hard to answer if the responder was not currently prescribing therapeutic exercise. The suggested solution was to have a screening section including items such as:

- Prescribing therapeutic exercise to patients during an osteopathic consultation is integral to osteopathic manual medicine
- Osteopaths should use the best evidence available to guide their prescription of therapeutic exercise regardless of which discipline it comes from

By using these screening questions (for example) there would be a precedent set whether the osteopath uses exercise before the sections about how exercise is used.

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6 6 The term target disorder has been described by Sackett et al as the anatomic, biochemical, physiologic, or psychologic derangement whose etiology (if known), maladaptive mechanisms, presentation, prognosis, and management we read in medical texts...We shall call this element of a patient’s sickness the target disorder when it becomes the objective of the diagnostic process” (Sackett et al., 1991, p. 3).
The comment was made that otherwise the questionnaire could be hard to follow, jumbled and as a result frustrating. For example, if therapeutic exercise was not being provided it would be difficult to answer the following items (and most others in section three):

1. People who engage in regular physical exercise are more likely to follow instructions regarding therapeutic exercise
2. Patients who ask for exercises are more likely to follow the exercise prescription provided
3. While symptoms persist patients are more likely to carry out a therapeutic exercise programme
4. I think it is important to keep up to date with research regarding therapeutic exercise
5. My knowledge about therapeutic exercise is based mainly on my empirical clinical experience

There is a question raised after this feedback about whether there should be different sections, dependent on whether participants use exercise. This question will need to be answered after further questionnaire piloting by further research.

Subsequent to a presentation of the research at the Unitec research forum the structure of the questionnaire altered to include a differentiation between ‘advice’ and ‘prescription’. Prescription is defined by the presence of all of the following elements (sometimes referred to using the acronym “FITT”): frequency, intensity, type or mode of exercise, and time or duration (American College of Sports Medicine, 2000). The term ‘advice’ encompasses providing information regarding activity/exercise including instruction regarding any less than all four of the elements that define prescription (“FITT”). Based on the differentiation between ‘advice’ and ‘prescription’ of physical activity and therapeutic exercise the structure became: ‘demographics’, ‘physical activity advice’, ‘physical activity prescription’, ‘therapeutic exercise prescription’, and ‘therapeutic exercise advice’. Items in both the ‘physical activity’ and ‘therapeutic exercise’ sections were duplicated with reference to either advice or prescription. Several items in each category were not pertinent to either advice or prescription and remained in either ‘physical activity advice’ or ‘therapeutic exercise prescription’. These categories were chosen for the items to remain in, based on evidence that physical activity consultation is most often provided by advice, and therapeutic exercise is most commonly prescribed (American College of Sports Medicine, 2000). Thirteen items were placed in both the ‘physical activity advice’ and ‘physical activity prescription’ sections.
A further five items remained in the ‘physical activity advice’ section. Twenty six items were placed in both the ‘therapeutic exercise prescription’ and ‘therapeutic exercise advice’ sections, whilst 16 remained only in the ‘therapeutic exercise prescription’ section.

Overall result:

The overall result of parts one and two of the questionnaire development was the drafted items went from 45 to 99 (excluding the demographics section). Based on both rounds one and two some items had wording alterations for clarification and ease of understanding. The section regarding ‘Lifestyle modification’ was collapsed and the items added to section two. The sections were altered to: ‘physical activity advice’, ‘physical activity prescription’, ‘therapeutic exercise prescription’, and ‘therapeutic exercise advice’.

The demographics section was enlarged to include:

1. Are you currently practicing clinical osteopathic medicine?
2. Do you treat all age groups?
3. If no to question 2, what age groups do you treat (e.g. Pediatrics, adults, geriatrics)
4. Which of the following technique clusters would you most identify with?

<table>
<thead>
<tr>
<th>Cluster 1</th>
<th>Cluster 2</th>
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<tr>
<td>• Soft tissue technique</td>
<td>• Functional technique</td>
</tr>
<tr>
<td>• Joint Articulation</td>
<td>• Osteopathy in the cranial field</td>
</tr>
<tr>
<td>• Muscle Energy Technique</td>
<td>• Balanced-Ligamentous-Tension</td>
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<td>• High velocity, Low Amplitude manipulation</td>
<td>• Strain/Counter-strain</td>
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<td>• Visceral</td>
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This chapter has discussed the findings of the research. It began with an outline of the themes and sub-themes identified in Part 1. Excerpts were used with each idea described to show the basis for that idea. After discussing each theme in Part 1 the chapter then moved onto a discussion of Part 2. This included an explanation of how the questionnaire items and structure progressed through the piloting process. The chapter finishes with a brief summary of the overall result of the study.
Introduction to Chapter Six:

The aim of this chapter is to discuss the development of the questionnaire that was undertaken in the study. As part of this discussion the main findings from Part 1 are outlined alongside their relevance in relation to the current healthcare literature. The chapter begins with a discussion of the principal findings of the study, which was the preliminary questionnaire. This includes describing the questionnaire’s five sections. The discussion then outlines the weaknesses and limitations of the research study. The chapter concludes with an indication of what further research would extend what this study found.

Statement of principal findings:

Questionnaire: Sections, and structure:

The principal outcome of this study was the development of a three section; 99 item (excluding the demographics section) preliminary questionnaire designed to investigate the attitudes of New Zealand osteopaths toward the use of exercise within osteopathy. A two part study process was undertaken to draft and then pilot the items. In Part 1 qualitative research identified six theme clusters. Part 2 used quantitative survey research to draft and pilot items formatted into a preliminary questionnaire. All items are closed-format statements in the form of Likert scales, with the following five response options: ‘Strongly Disagree’; ‘Disagree’; ‘Neither Agree nor Disagree’; ‘Agree’; and ‘Strongly Agree’ (de Vargas & Vilar Luis, 2008). The questionnaire is structured into five sections: ‘Demographics’, ‘Physical activity advice’, ‘Physical activity prescription’, ‘Therapeutic exercise prescription’, and ‘Therapeutic exercise advice’. The subsequent ratings determine the strength of the attitude towards the statement. The two sections ‘Physical activity’ and ‘Therapeutic exercise’ were derived from participants’ descriptions of two forms of exercise they provided in practice, these being (i) general physical exercise for overall health, and (ii) specific therapeutic exercises used as a rehabilitation tool.
The demographics section contains 15 questions regarding age, gender, school of formative osteopathic education, years of clinical experience, highest qualification (any field), location of osteopathic practice, age group of clientele, treatment techniques most often used, personal activity levels, personal interest in and participation in recreational sport activities, and post-graduate education containing therapeutic exercise. What was included in the demographics section was drawn from a literature review, Part 1 of the study, and anecdotal evidence. The goal of the demographics section was to describe the sample characteristics and to investigate whether there were any predictor variables that could potentially predict attitudes towards exercise.

The second section ‘Physical activity advice’ contains 18 items. Although the recommendation for item phrasing is for half of the items to be positively framed and half negatively framed, the majority of items are positively framed (Alreck & Settle, 2004). To negate this limitation at this stage in the development process, a table with each item both positively and negatively phrased has been provided (Refer to appendix K). During future development of the questionnaire there is the potential to distribute positively phrased items to half the population and negatively phrased items to the other half to identify the influence of item valence on the utility of the questionnaire. In this way symmetrical valence can be achieved (Pincus et al., 2006). Questionnaire items address issues such as lifestyle modification, personal and professional responsibility, patient healthcare, treatment outcomes, injury prevention, and exercise individualisation.

The third section of the preliminary questionnaire; ‘Physical activity prescription’ contains 13 items (Refer to Appendix J). The items are repetitions of section two with wording alterations to make the statement refer to prescription of physical activity, rather than advice.

Section four ‘Therapeutic exercise prescription’ contains 42 items (Refer to Appendix J). They address issues including education, patient adherence, practitioner experience, patient empowerment, active versus passive techniques, attitude to funding, personal interest in further therapeutic exercise education, treatment outcomes, patient motivation, and exercise individualisation.

The last section ‘Therapeutic exercise advice’ contains 26 items (Refer to Appendix J). These are repetitions of items in section four referring to advice rather than prescription. The positive advantage that this separation establishes is the differentiation between osteopaths’ attitudes to prescription and advice regarding both physical activity and therapeutic exercise.
By dividing the sections into advice and prescription there are no ‘grey areas’ that exercise or activity can fall into. Previous to this division ‘physical activity’ in the questionnaire referred to advice, rather than prescription. However, activity can be prescribed or advised. In the same manner, ‘therapeutic exercise’ referred to prescription, but can be advised or prescribed. Although it is more common for physical activity to be advised and therapeutic exercise prescribed, the opposite can occur (American College of Sports Medicine, 2000).

**Strengths and weaknesses of the study/internal validity:**

**Strengths:**

**Rigour in the development process:**

*Part 1: item development:*

“A survey’s value depends on both the amount of resources devoted to it and the care and expertise that goes into the work” (Alreck & Settle, 2004, p. 7). One strength of this study was the iterative and consultative process taken in drafting and piloting the questionnaire items. Within survey research there are four areas where error or bias can occur, these being: frame/coverage error, measurement error, non-response bias, and sampling error (Alreck & Settle, 2004; Dillman, 2000; Lesser et al., 2001). Sampling error, non-response bias, and frame/coverage error are outside the scope of this study. Measurement, or instrument error in this context, can also be referred to as face validity. The idea is that the instrument (questionnaire) measures what it is designed to measure and does so reliably. This study minimized instrument error by using a strong development process, which included careful and studious item development and testing. Qualitative research was undertaken prior to item drafting and two rounds of questionnaire piloting were performed. Usability and expert review were used to provide feedback on item phrasing, and content (Domholdt, 2005; Meadows, 2003; Rattray & Jones, 2007).

Items in a survey need to gather information that adequately answer the questions the study proposes about an issue. Prior to item drafting both a literature review and qualitative research were undertaken, two processes suggested when developing a survey to increase the quality of the items and the validity (Alreck & Settle, 2004; de Vargas & Vilar Luis, 2008; Domholdt, 2005; A. Williams, 2003). Undertaking a literature review provides information about the
current knowledge, potential pitfalls, and future research directions. A literature review was conducted encompassing exercise predominantly, but not exclusively, in the fields of: osteopathy, primary healthcare, physiotherapy, chiropractic, psychology, and nursing. Information about patient-centered care and exercise for the management of acute and chronic pain was also reviewed. There is little research about exercise in osteopathy. What is available has, to date, focused on exercise content within the undergraduate programme of seven schools of osteopathy in the United Kingdom (Zamani et al., 2007), the use of exercise in clinical practice in the United Kingdom (Zamani et al., 2008), and characteristics of patient adherence to exercises provided by students in a student clinic in Australia (Howard & Gosling, 2008). Literature in other fields provided information about the different forms of specific exercises available, the effectiveness of exercise, the influence that education has on the development of attitudes, and how giving exercises fits into a patient-centered approach.

A method used in other survey development research (de Vargas & Vilar Luis, 2008) to increase the relevance of the questionnaire is to undertake a qualitative study prior to item development. The same technique was used in this study. An interview guide (see Appendix D) was used with four key areas identified during a literature review the primary researcher wanted to explore with participants. Using qualitative research prior to item drafting gives the content basis for the items. It provides information about the potential range of attitudes relevant to the survey topic (Meadows, 2003) and the important issues (A. Williams, 2003). Conducting interviews with participants selected from within the target population for the questionnaire provides information about the important issues around the survey topic (Alreck & Settle, 2004; de Vargas & Vilar Luis, 2008; Domholdt, 2005; A. Williams, 2003).

After analysis of interview data four theme clusters were identified. The theme clusters represented different areas within attitude development and the influences the participants reported that altered, or helped shape their attitudes. The four themes identified were: Osteopathy and exercise: A perfect match’, ‘Experiences with exercise’, ‘Exercise choice’ and ‘Barriers to providing exercise’. There are a number of sub-themes within these theme clusters that further explore the experiences participants had that influenced their attitudes and behaviours.

The four theme clusters were used as the basis for drafting items (A. Williams, 2003), many of which closely reflected statements participants had made (Refer to Appendix I). The strength in this item drafting process is that the statements were not singularly based on either
the researcher’s academic experience, or a literature review, but were representations of the issues identified by the participants (Alreck & Settle, 2004). Care was taken when drafting the items to ensure only one concept per item, as Likert scales indicate the extent of agreement/disagreement with a statement and, to avoid ambiguity, should only measure one concept per item. The wording and content of each item impacts significantly on the quality and face validity of the questionnaire. Because of this, during the development of the preliminary questionnaire a consensus process was used between the primary researcher and the principal and associate supervisors regarding wording and content of the items.

**Part 2: Questionnaire piloting:**

There were a number of alterations made and items added following Round 2 of the piloting. Topics that the experts suggested were missing included further exercise education and cognisance of the separation between active and passive treatment techniques. Because education was identified by participants in Part 1 as having influenced their attitudes toward the use of exercise, the suggestion in Round 2 to add further items regarding post-graduate exercise courses was relevant for the questionnaire. The suggestion for active versus passive care was also an idea raised by the participants in Part 1 of the study. The expert made the suggestion to add a government funding item to the questionnaire. This raises an interesting issue that would be beneficial to gather data regarding the attitudes of osteopaths towards this topical issue.

Although one item added, based on the suggestion of an expert in Round 2, aims to identify the current level of knowledge about active versus passive care, there are a number of issues with this item. Firstly, there is no definition of active and passive treatment. Instead, it is based on the assumption that osteopathic practitioners know these differences. Secondly, the answers are all self-reported and as such are dependent on participants reporting truthfully. Another issue with self-reporting in items that are attempting to measure current knowledge is that the responses are perceptions of the respondent and as such are not objective measures of knowledge. It would, however, give an indication of osteopaths’ attitudes towards the use of active versus passive care from which further research could evolve. Fully investigating the important topic of active versus passive care is outside the scope of the current research.

The final questionnaire draft contains 99 items and 15 demographic questions. The additions to the demographics section include; age group the practitioner treats, current practicing state
(active or not), and treatment style \(^7\hspace{1px}^7\) indicated by the participant selecting the group of techniques most commonly used. Knowing the predominant age group of patients provides context for participants’ attitudes. Treating mainly children or older adults for example could influence the osteopath’s attitude towards the importance placed on the provision of exercise. Similarly, identifying treatment styles provides the potential for correlations to be made between style and attitude to exercise.

**Questionnaire content:**

A strength of the preliminary questionnaire is the wide range of topics covered. This is advantageous because it currently includes many of the aspects of this topic that are described in the literature. The questionnaire has 99 items and covers a large variety of topics, such as: adherence; education; scope of practice; patient healthcare; role of osteopaths as healthcare professionals; where the benefits of osteopathy arise; patient empowerment; and future funding. The literature review identified all of these areas as important when considering exercise within patient management. Although it is recommended that questionnaires be as short as possible to discourage abandonment (Sue & Ritter, 2007), at this stage in the questionnaire development, and prior to statistical factor analysis, a large number of items decreases the likelihood that an important concept is excluded prior to item reduction. There are many items representing each theme cluster, thus enhancing the possibility of finding strong items during the factor analysis stage of questionnaire development. There is also the potential for the questionnaire to be the basis for other survey research studies. Because such a wide range of topics is used, further survey research of any of these topics could use the current questionnaire as a basis.

**Limitations of the study:**

**Acute and chronic pain:**

One possible limitation of the questionnaire is that the items in Sections Two and Three are not divided into statements relating to acute and chronic pain. There is strong evidence that physical activity is beneficial in the management of acute pain (Accident Compensation Corporation, 2004) and exercise therapy is beneficial in the management of chronic pain (Bekkering et al., 2003; Chou & Hoyt Huffman, 2007; Ferreira et al., 2006; Hayden et al.,

\(^7\hspace{1px}^7\) Treatment style refers to groupings of techniques. There are two different groups of techniques that have previously been identified in osteopathy, referred to as ‘practice style 1’ which included techniques recognised as structural techniques and ‘practice style 2’ which included techniques recognised as functional techniques (Blaser, 2009).
Chapter Six: Discussion

2005; Kerssens et al., 1999; Smidt et al., 2005; van Middelkoop et al., 2010). There is little evidence that specific exercises are beneficial for acute pain (Accident Compensation Corporation, 2004; Penney, 2009; van Middelkoop et al., 2010). For this study, because the literature does not present the attitudes of osteopaths towards the use of exercise, attempting to identify the subtleties of attitudinal differentiation based on patients with acute or chronic pain would have been premature. However, this is an important topic due to the extent of research about chronic pain and the use of exercise as part of its management. Therefore, although it was outside the scope of this study there is the potential for future research in this area. This could involve tailoring the current questionnaire items for acute and/or chronic pain, or developing a new questionnaire based on the one developed in this study.

Potential Non-response bias:
Non-response bias means that there may be some bias where a certain characteristic of the population surveyed will be more likely to respond. The result could be that the sampled population is not in fact accurately represented (Alreck & Settle, 2004). The potential for the current questionnaire is that osteopaths with a strong opinion about exercise, either positive or negative, maybe more likely to respond, thereby creating response bias. Many of the questionnaire items relate to the use of therapeutic exercise (such as exercise choice and factors affecting this choice). These items are based on the assumption that the respondent provides therapeutic exercise as part of their patient management. If they do not they may be unable to answer the item. The limitation involves the potential non-response that could occur when participants that do not provide therapeutic exercise will not answer the item (Dillman, 2000) - which may alter the results.

Another potential limitation of online survey research is the necessity for participants to have access to and be computer literate. The participants of the current study were all educated health professionals. Based on this information and statistics of home internet access in NZ there was a high probability that they had access to a computer and were computer literate.

The suggestion arose in the expert review round of questionnaire piloting that to negate the potential for non-responders the questionnaire could have a screening section so that the format would be: demographics; physical activity; introductory attitude screening question where a positive or negative attitude to therapeutic exercise is established; therapeutic exercise. Because this study did not distribute the questionnaire to the sample population the suggestion was not followed. However, further research could take advantage of this
Chapter Six: Discussion

suggestion if appropriate. Those participants identified in Section Three as having a positive attitude towards therapeutic exercise can continue through to the section covering specific aspects of how therapeutic exercise is used and those with negative attitudes can continue to the attitudinal questions without answering the section.

**Self-reported attitudes:**

Self-reporting of attitudes relies on participant reported information, not objectively observed behaviours. One limitation of the questionnaire is that the results are self-reported. Potentially the questionnaire could be included in a study investigating whether reported attitudes about exercise reflect practice behaviours.

Alreck & Settle (2004) outline reasons why survey research is limited yet valuable:

> Respondents’ answers are merely stand-ins for actual conditions or actions. It’s typically important to know the answers to survey questions and understand the things they represent. Actions usually follow opinions. On the other hand, survey responses are never precisely indicative. (p. 9)

**Weaknesses of the study:**

**Participant sample for Part 1:**

Participants in qualitative research are not selected in an attempt to be representative of a group of people, instead being selected based on their demographics, treatment characteristics or the opinion they are known to hold (A. Williams, 2003). Purposive sampling in Part 1 of the study meant that five of the six participants were associated with Unitec. The low number of participants not teaching at Unitec reflects the poor response rate to the invitation to participate (14%). However, there was diversity in the sample despite the common element of their association with Unitec osteopathy programme.

Participants were educated at two different schools of osteopathy in two different countries. Years of osteopathic experience ranged from 4 to 24 years. Potentially, being associated with the same learning institute could influence participants’ attitudes and knowledge about exercise, with the result that they may not have provided a cross section of the osteopathic profession in New Zealand. This limitation was minimized by recruiting content-expert osteopaths from outside Auckland and not associated with Unitec to provide feedback of the items in Part 2.
Only one participant in Part 1 was known to the researcher to have a more ‘functional’ treatment style, although he/she did not identify with either treatment style. The other participants in Part 1 identified themselves as having a ‘structural’ treatment style. Letters of invitation were sent to seven Auckland osteopaths known to the researcher as having ‘functional’ treatment styles. Only one person responded. This could have negatively influenced the data and created bias in the drafted items.

**Part 1 - qualitative research:**

There were a number of limitations during the interviewing process that may have negatively affected item drafting. The idea of two exercise forms, general exercise and specific exercises developed during the interviewing process. Although this was a limitation in developing a questionnaire, it is also a strength of qualitative research because it allows for and enables the emergence of ideas that were not initially considered. These emergent ideas can be incorporated and further developed in subsequent interviews. Although the idea of separate exercise forms was incorporated into the structure of the preliminary questionnaire with the use of two sections (physical activity and therapeutic exercise), the items in each section may have been stronger if there was more extensive exploration of this topic within the interviews.

As is the usual practice when using semi-structured interviews to gather data, the interviewer guided the line of questioning whilst allowing the participant to explore their individual experience. (Aronsen, 1994; Creswell, 2008; May, 2007). Although this approach is consistent with semi-structured interviews, the disadvantage for this study was that each participant referenced their attitudes and opinions based on cases they remembered or experienced. Whilst this individual exploration and referencing is an advantage in qualitative research, for item drafting it may have been better to put forth clinical cases or examples from which they could reference their response. This may have provided a clear range of attitudes based on common clinical cases rather than personal experience.
Meaning of the study: possible mechanisms and implications for clinicians or policymakers:

Attitudes affect behaviour:

Health practitioners’ attitudes have been reported to influence therapeutic outcomes because they affect the choice of treatment modalities used as part of patient management (Keller, 2006; Main et al., 2010). There is evidence that patients can be educated about the physiology of pain, however, health professionals underrate the abilities of patients to understand this information (Moseley, 2003b). Although the questionnaire will not provide definitive evidence of how osteopaths are using exercise, investigating their attitudes and identifying key areas that influence attitude development could give an indication of behaviour. The potential is then present for further behavioural studies investigating the actual behaviours of osteopathic health practitioners in relation to exercise advice/prescription within their patient consultations. This study is the first investigating the topic of exercise within osteopathy in New Zealand and one of a few studies worldwide (Howard & Gosling, 2008; Zamani et al., 2007; Zamani et al., 2008).

Clinical guidelines exist for the management of low back pain that state there is strong evidence that physical activity improves acute low back pain and that rest is harmful for recovery (Accident Compensation Corporation, 2004). There is also strong evidence that therapeutic exercise is beneficial for decreasing pain levels and improving function in chronic low back pain (Bekkering et al., 2003; Chou & Hoyt Huffman, 2007; Ferreira et al., 2006; Hayden et al., 2005; Kerssens et al., 1999; Smidt et al., 2005; van Middelkoop et al., 2010). As well as improving clinical outcomes for recovering from back pain, physical activity has an important role in maintaining health. There are several evidence based clinical guidelines available providing recommendations for appropriate levels of physical activity (American Heart Association American College of Sports Medicine, 2007; Ministry of Health, 2003).

Regardless of the inconsistency of evidence about the effectiveness of therapeutic exercise for improving the clinical outcomes as part of rehabilitation, there is evidence that physical activity is important for the maintenance of health. Based on this there are clear recommendations for physical activity levels which health care professionals should be aware of and advise patients accordingly. There is currently no discussion within osteopathic literature that guidelines have any influence on exercise advice provision in osteopathy. Although questions surrounding knowledge of the current guidelines regarding physical
activity levels were not part of the interview, one participant in Part 1 identified some knowledge of the recommendations. Future research would be beneficial to identify if osteopaths are aware of and adhering to clinical guidelines for physical activity levels, and guidelines for the management of conditions such as low back pain.

Influences on attitudes:

There were a number of factors identified in Part 1 of the study that appeared to influence osteopaths’ attitudes towards the inclusion of exercise in osteopathy. Factors identified by previous authors that affect all aspects of patient management in other health professions include: education, professional status, previous clinical and personal experience as well as treatment style, communication style, confidence in treatments, and their beliefs about the problem (Keller, 2006; Main et al., 2010). This study found similar factors were identified by participants including: education, clinical experience, personal interest and experience, treatment style, confidence in exercise as a treatment modality and belief about the scope of osteopathy. Many of these factors are congruent with the current literature, with the addition of confidence in exercise as a treatment modality and belief about the scope of osteopathy in relation to exercise.

Participants from Part 1 of this study reported little formal exercise education during their osteopathic education. Although there is little literature regarding the extent to which education about exercise is included in osteopathic programmes, one study in the UK identified a lack of exercise education in the curriculum of seven osteopathic schools (Zamani et al., 2007). The results of this study are consistent with research in the UK that identified a lack of specific exercise education as one of the barriers osteopaths included in a discussion about how exercise is used within osteopathy in the UK (Zamani et al., 2008). The preliminary results of this study and previous research identified education as one of the contributing factors osteopaths highlight as impeding their confidence in delivering exercise programmes to patients. Therefore, further research would be beneficial on a larger scale than any of these studies to identify the current level of exercise education in osteopathic programmes and the impact this has on osteopaths in clinical practice. The preliminary questionnaire developed in this study provides a useful step in identifying osteopaths’ attitudes towards exercise and the factors, including education, that may have influenced the development of their attitudes. The questionnaire in this study is tailored towards NZ osteopaths, however it could be easily modified for use in other countries or professions.
Patient empowerment:

There are items relating to patient empowerment. In Part 1 the idea arose that educating patients about lifestyle and in particular about exercise encourages self-maintenance and a sense of empowerment for the patient. Instead of being reliant on the health professional, in this case osteopaths, the patient has greater control over their recovery. This idea is congruent with other literature that identifies an active coping strategy and the feeling of control over healthcare with improved pain management and psychological well-being (Bekkering et al., 2003; Corbett et al., 2007). Although the interviews were not specific to chronic pain, which most literature surrounding psychological aspects of pain management appear to be, the results are similar. Given the increasing popularity of patient-centered care, active coping styles, active treatment styles, and research into chronic pain, patient empowerment is a topic that is important for future healthcare. The results can’t be generalized. However addressing the use of exercise as a tool for patient empowerment requires further research as it is an important topic.

Possible predictors of attitude:

There are a number of questions in the demographics that will allow correlations to be made when the questionnaire is distributed in future research to a larger sample. Previous research has identified two clear practicing styles based on technique clusters (Blaser, 2009). There is the potential therefore in this study for a correlation to be made once the results of the survey are gathered between treatment style and attitude to exercise within osteopathy. Another question identifies a personal interest in recreational sports. There is the potential therefore to correlate self interest in sports and attitude to the importance of exercise. There is a question regarding where the participants osteopathic qualification was gained. There is the potential to investigate a possible correlation between attitude and educational facility. There are two questions regarding education, highest qualification in any field and any education regarding exercise therapy/therapeutic exercise. The answers to these questions will allow a correlation to be examined between education level and attitude to exercise. All of these have the potential to identify areas for further research.
Chapter Six: Discussion

Unanswered questions and future research:

Attitudes of NZ osteopaths regarding exercise within osteopathy:

The question ‘what are the attitudes of New Zealand osteopaths regarding exercise in osteopathy?’ remains unanswered. Due to the time limitations and the scope of a 90 credit masters study, the questionnaire was not distributed past the initial piloting stage. Further research is necessary to validate the questionnaire and investigate the attitudes of NZ osteopaths towards exercise in osteopathy.

Questionnaire development:

The preliminary questionnaire will need to be piloted further and undergo evaluation of construct validity where each item is tested to ensure that it represents the construct that is being measured. Construct validity refers to the “extent to which a measure reflects accurately the variability among objects as they are arrayed on the underlying (latent) continuum to which the construct refers” (Sechrest, 2005, p. 1584). In this study construct validity relates to how well the theory of what the questionnaire item will be measuring is matched by what the item actually measures. Part of construct validity is how well inferences can be made from the analysis of the data for representing the theoretical construct of the items. This can be done using factor analysis, which is a group of statistical techniques used to decrease the number of variables and produce a factor loading for each item in percentage. The strength of the relationship between the item and factor is given a number. The closer the percentage to 100% the stronger the relationship and the more valid the item (de Vargas & Vilar Luis, 2008).

The preliminary questionnaire is currently in five sections; ‘Demographics’, ‘Therapeutic exercise’ (advice and prescription) and ‘Physical activity’ (advice and prescription). For this study the distinction was made between advice and prescription based on the FITT guidelines. It is currently unknown whether these same guidelines are used by osteopaths when providing exercise programmes. It may not be relevant for osteopaths to divide the provision of physical activity and therapeutic exercise into these two sections. The same item was used for both advice and prescription for both therapeutic exercise and physical activity. The underlying construct that people respond to when completing the items may be broader than the difference between the operationally defined differences between prescription and advice. This can only be investigated with further piloting of the questionnaire. Factor analysis in the
next stages of questionnaire development with a large sample will provide statistical information about this possibility.

The role of an osteopath:

What osteopaths believe to be their role as health professionals and manual therapists is not well defined in the literature. In themes from Part 1 the participants all had differing views about what being an osteopath meant; whether it was to be purely a manual therapist, a primary health practitioner, or a combination of these. If osteopaths are not able to reach agreement about what the role of an osteopath there is little chance of presenting a united face to the public. Tyreman (2008) states that there are three categories that must be met for a group to be called a ‘profession’. One of these categories is that “professionals are expected to adopt and practice in accordance with agreed behaviours” (Tyreman, 2008, p. 90). Further research is necessary to investigate osteopath’s views about the role and professional behaviours of an osteopath.

Another aspect of the role of an osteopath that was identified in Part 1 of this study was the idea of osteopathy versus osteopathic manual therapy. Some of the participants in Part 1 expressed the idea that using lifestyle modifications, of which exercise consisted heavily, allows the osteopath to get involved in the lives of patients and make a big difference. Another participant contrasted this opinion with the explanation that he/she became an osteopath to ‘treat’ people, meaning with osteopathic manual therapy. The same participant stated that patients consult with osteopaths to receive osteopathic manual therapy, therefore they should not be provided with lifestyle advice/education.

Treatment style:

There is anecdotal evidence that treatment style has an effect on attitudes to exercise within osteopathy. The idea was expressed by participants that practitioners with a more structural treatment approach would be more inclined to use exercise than practitioners with a more functional approach. Using a structural approach means using techniques such as High-Velocity, Low-Amplitude (HVLA) manipulations, Muscle Energy Technique (MET), articulation, and soft tissue massage. A more functional approach means using techniques such as Functional technique, osteopathy in the cranial field, and strain/counter-strain. Unpublished research (Blaser, 2009) provides preliminary evidence that there are two distinct practicing styles that may be identified in New Zealand, these being: ‘structural’, consisting of a group of techniques including HVLA, MET, and articulation. Practice style 2 was
described as being more ‘functional’ and consisted of a group of techniques including visceral technique, Strain-Counter-Strain, Balanced-Ligamentous-Tension, and osteopathy in the cranial field (Blaser, 2009).

Although treatment style was not the focus of this study participants in Part 1 were asked what their treatment style was and how they believed that affected their attitudes towards using exercise in clinical practice. Most of the participants identified themselves as having a predominantly ‘structural’ treatment style. There did not appear, however, to be a relationship between treatment style and attitude to exercise. Future research into identifying different treatment styles within osteopathy and the effect that these different approaches have on multiple factors in clinical practice may well be useful.

Summary:

A ninety-nine item preliminary questionnaire was developed using a two part study process. Following a literature review that provided the topics for an interview guide (see Appendix D), Part 1 of this study used qualitative research to identify themes/issue pertinent to the topic of exercise use in osteopathy. Part 2 of the study involved quantitative survey research to draft and pilot a 45 item questionnaire, based on the theme clusters identified in Part 1. The preliminary questionnaire involved two piloting rounds: Round 1 usability and Round 2 experts review. Participants from parts one and two were asked to look at the mechanics, content, and wording of the items. Experts were also asked to identify potential areas of the topic not adequately covered.

Overall, the addition of items following piloting resulted in a sixty-two items questionnaire with fifteen demographic questions. The development process was in keeping with the recommended survey development process involving two parts. The benefits of developing surveys in this manner are that items are not made up, but based on the thoughts of participants who are part of the target population.

The preliminary questionnaire is now ready for the next stage in development; factor analysis and construct validity testing. A table is provided (see Appendix K) showing the items both positively and negatively phrased. Therefore the next stage in development can test both the
negatively and positively phrased items to discover which one is stronger. In this manner symmetrical valence can be maintained by ensuring even phrasing.

This chapter discussed the findings of the study in relation to previous research. The principal findings discussed included a number of factors that participants in Part 1 identified as being influential in developing their attitude towards exercise. These findings were discussed in relation to similar findings in other healthcare literature, as well as the few research studies investigating exercise use and education within osteopathy. The chapter finished with implications of the findings of this study and future directions research could take to expand the knowledge about osteopathic practice.
REFERENCES:


APPENDICES:

Appendix A: Participant information sheet (Part 1)

My name is Rebecca Mckay-Watts. I am currently enrolled in the Master of Osteopathy programme at Unitec NZ, for which I am conducting research in order to complete a Thesis course which constitutes a large part of the degree.

About the study:

The aim of my research is to develop an instrument to investigate the attitudes of NZ osteopaths regarding therapeutic exercises in rehabilitation. The study is being completed in two phases. You are invited to participate in phase one of the study which involves interviewing 6 to 8 people gathered from a selection of osteopaths who are registered with the Osteopathic Council of New Zealand currently practising in Auckland and students completing their final year Master of Osteopathy programmes.

Participation requirements:

If you agree to participate you will be asked to complete an audio-taped interview with me lasting approximately thirty minutes during which time the topics covered will be:

- What you think about therapeutic exercise
- What place you think therapeutic exercise holds within rehabilitation
- What experiences have led to the development of these attitudes
- How previous education prepared you to prescribe a therapeutic exercise regime

The interview will take place at a time and place convenient for you.

What will happen to the data?

The interviews will be taped after which the tapes will be transcribed by me or a transcribing typist who has signed a confidentiality agreement. There will be no identifying factors such as name, or place of practice on the transcriptions thus protecting your anonymity. A copy of the transcript of your interview will be sent to you. Should you have any queries or concerns about the transcript please contact me and I will review them with you.

The transcriptions will be analysed and themes identified which will then be used to develop a questionnaire to be tested in the second phase of the study.

Withdrawal procedure:
You have the right to withdraw at any time prior to the interview and up until two weeks following the interview. This can be done by contacting me (see contact details below)

Confidentiality and Anonymity:

Anonymity will be maintained throughout the research process. Identification of individuals will be avoided through the use of pseudonyms where applicable. All data and consent forms will be stored securely in locked cabinets (hard copies) and password protected computer files.

If you have any queries or concerns regarding the research, you may contact my principal supervisor at Unitec, or me by email or phone

My principal supervisor is Robert Moran, phone 815 4321 ext 8642 or email rmoran@unitec.ac.nz

My contact details phone 021 136 4625 or email bexmw@ihug.co.nz

UREC REGISTRATION NUMBER: (2009-962)

This study has been approved by the UNITEC Research Ethics Committee from (date) to (date). If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the UREC Secretary (ph: 09 815-4321 ext 6162). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.
Appendix B: Participant information sheet (Part 2)

My name is Rebecca Mckay-Watts. I am currently enrolled in the Master of Osteopathy programme at Unitec NZ, for which I am conducting research in order to complete a Thesis course which constitutes a large part of the degree.

About the study:

The aim of my research is to develop an instrument to investigate the attitudes of NZ osteopaths regarding therapeutic exercises in rehabilitation. You are invited to participate in phase two of the study which involves piloting a questionnaire to at least 100 people gathered from osteopaths registered with the Osteopathic council of New Zealand and students enrolled in the osteopathic programme at Unitec. The questionnaire is available to you for the next two weeks on Survey Monkey™ (please see the URL link in the email that will take you to the questionnaire).

Participation requirements:

Participation requires the completion of a questionnaire designed to investigate the attitudes of NZ osteopaths regarding therapeutic exercise in rehabilitation. The questionnaire will be available on the Survey Monkey™ and an email invitation will be sent to you which will include an electronic link. The survey will be available for two weeks.

What will happen to your answers?

The answers to the questionnaire will be analysed to provide information about the usefulness of the questions in eliciting the required information. From this recommendations for further development of the questionnaire will be revised and implemented.

Confidentiality and Anonymity:

Due to the nature of Survey Monkey™ your responses will be anonymous. There is an option in Survey Monkey™ that I will use that masks the participant email addresses such that the researcher will be blinded to the identity of the respondent.

If you have any queries or concerns regarding the research, you may contact my principal supervisor at Unitec or me by phone or email (see contact details below).

My principal supervisor is Robert Moran, phone 815 4321 ext 8642 or email rmoran@unitec.ac.nz

My contact details phone 021 136 4625 or email bexmw@ihug.co.nz
UREC REGISTRATION NUMBER: (2009-962)

This study has been approved by the UNITEC Research Ethics Committee from (date) to (date). If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the UREC Secretary (ph: 09 815-4321 ext 6162). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.
Appendix C: Participant consent form

Re: Development of a preliminary questionnaire to investigate the attitudes of NZ osteopaths regarding use of exercise in osteopathy

I have read and understood an explanation of this project for the completion of the Master of Osteopathy programme at Unitec. I have been given the opportunity to ask questions and having them answered.

I understand that everything I say is confidential and none of the information I give will identify me and that the only persons who will know what I have said will be the researcher and her supervisor. I also understand that all the information that I give will be stored securely on a password computer or in hard copy in a locked filing cabinet for a period of 5 years.

I understand that the interview will be taped and transcribed.

I understand that I will receive a transcript of the interview and may contact the researcher with within two weeks of receiving it if I wish to make any additions or changes or deletions or to withdraw the data.

I have had time to and have considered my participation and I give my consent to be part of this research project.

Participant Signature.................................................................Date....................

Project researcher...........................................................................Date....................

Principal supervisor.................................................................Date....................

UREC REGISTRATION NUMBER: (2009-962)

This study has been approved by the UNITEC Research Ethics Committee from (date) to (date). If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the UREC Secretary (ph: 09 815-4321 ext 6162). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.
Appendix D: Interview schedule:

During each semi-structured interview the topics below will be discussed and any further exploration into the topics should there be issues raised that the researcher would like to explore relating to the research topic.

- The participants attitude towards therapeutic exercise
- What place the participant thinks therapeutic exercise holds within rehabilitation
- What experiences have led to the development of the participants attitudes
- How previous education prepared the participant to prescribe a therapeutic exercise regime
Do YOU have an opinion on the use of THERAPEUTIC EXERCISE IN OSTEOPATHY?

We are looking for clinical tutors and second year Master of Osteopathy students to offer their opinions to help develop a questionnaire investigating the attitudes of NZ osteopaths towards therapeutic exercise

If you are interested please contact me for more information

Rebecca McKay-Watts
021 136 4625
bexmw@ihug.co.nz
Dear,

My name is Rebecca Mckay-Watts and I am currently enrolled in the Master of Osteopathy programme at Unitec. As part of the programme we must complete a project and I wonder if you would be interested in participating?

The aim of the project is to develop a questionnaire to investigate the attitudes of New Zealand osteopaths regarding therapeutic exercise in rehabilitation. The first part of this process involves talking with members of the profession about exercise in relation to osteopathy.

I am looking for people who would be willing to participate in one 30 minute interview arranged at a time and place that is convenient for you.

If you are interested please see the information sheet attached to this letter and contact me (details provided below and on the information sheet) if you have any questions or wish to participate.

Thank you for your time,

Kind Regards,

Rebecca Mckay-Watts

Phone: 021 136 4625
Email: bexmw@ihug.co.nz
Appendix G: Typist confidentiality agreement

Attitude of NZ osteopaths regarding therapeutic exercise in rehabilitation

NON-DISCLOSURE OF INFORMATION

Transcribing Typist

I ____________________________ agree not to disclose the name of, or any information that would lead to the identification of the participants in the research study being undertaken by Rebecca Mckay-Watts.

The audiotapes, transcription hard copies, and computer files will not be made available to anyone other than the researcher and will be kept securely while in my possession.

I will not retain any copies of the audiotapes, computer files, or transcriptions.

Signed: ____________________________

Name: ____________________________

Date: ____________________________
Appendix H: Further questionnaire development process schema

Project two: Validating the preliminary questionnaire

Survey currently on the Unitec account in the Survey Monkey™ software

Roll out questionnaire to registered osteopaths (New Zealand and Australia)

Use of 5-point Likert scale scores for statistical analysis for factor analysis (grouping)

Factor analysis for psychometric properties testing

Items revised based on results of psychometric property testing. Number of items reduced

Outcome of project two; validated questionnaire with internal validity and psychometric factor testing
## Appendix I: Table demonstrating item development process

<table>
<thead>
<tr>
<th>Theme cluster</th>
<th>Transcript</th>
<th>Item</th>
<th>Revised item</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exercise choice</td>
<td>A certain amount of empirical experimentation with patients saying how do you fancy trying to stretch your hamstrings on one side only and see what it does to your anterior rotated innominate and then getting some sort of result out of that or not has been the way of learning. I suppose new techniques coming out for exercise, specific exercise and I really haven’t kept up with that in all honesty, I could do, I could you know use the net and look at it but I must say I haven’t done that.</td>
<td>• The therapeutic exercises I use in clinical practice have been developed through experience using different therapeutic exercises with patients</td>
<td>• My knowledge about therapeutic exercise is based mainly on my clinical experience</td>
<td>The wording was altered for clarity.</td>
</tr>
<tr>
<td>Barriers to providing exercise</td>
<td>Giving people stuff to do it is almost impossible to get compliance to occur...most people you give them stretches they forget after two days. It gets just the</td>
<td>• Overall patients do not follow instructions regarding exercise so I don’t give any</td>
<td>• Overall, patients do not follow instructions regarding therapeutic exercise so I don’t</td>
<td>Using the generic term ‘exercise’ was not possible after the two revision rounds and</td>
</tr>
</tbody>
</table>
The people that I’ve seen become osteopaths aren’t always sports related... I would say that that’s probably less than 20% for the osteopathic student I see who some just don’t even know what a gym is. So they know very little about sports so I don’t know how they are supposed to know about exercise rehab.

| I am not interested in sports therefore I do not use therapeutic exercise in my clinical practice |
| Overall, I have found patients can be encouraged to follow advice regarding therapeutic exercise |
| Overall, patients do not follow instructions regarding physical exercise so I don’t offer any |
| Overall, I have found patients follow advice regarding physical exercise |

consultation with supervisors (usability, and expert feedback). Instead the same item was used for both physical exercise and therapeutic exercise. There was also positive and negative statements provided for each of these items because patient motivation appeared to consistently be a reason to not give exercises (specific or general).

The item was deleted and replaced with questions in the demographics addressing recreational sport involvement. It was decided more would be gained from the information by using the demographics information to assess the correlation between attitude and interest in sports.
**My basis for being an osteopath is to treat people and that’s why I got into it...So I think the basis for what I do is that I have knowledge and I have skills that they don’t have and they’re paying me to treat them.**

- I have been trained as an osteopath to treat patients using osteopathic manual therapy therefore I do not see the need for me to provide patients with lifestyle modifications
- Patients seek osteopathy to receive osteopathic manual therapy therefore they should not be prescribed therapeutic exercise
- Prescribing therapeutic exercise to patients during an osteopathic consultation is integral to osteopathic manual medicine
- There is no place for prescribing therapeutic exercise to patients within osteopathic philosophies and principles

This item deals with an important issue thus it was expanded into three items. The items explore different avenues, what the patient wants, and whether therapeutic exercise even fits within osteopathic medicine.

| Exercise choice | **Third and fourth year you are treating so you tend to have like mentors in the fourth year and you probably learn off your mentors more than anything and it was more of a case of exercise being common sense or whatever were sort of favourites of say the fourth year mentors and or the tutors as well, so probably tutors and fourth years.**

[In response to questions asking where specific exercises the participant used had originated] *Just thinking about my anatomy*

- My attitudes to using therapeutic exercise in my clinical practice are most strongly influenced by the opinions of tutors I was taught by during my osteopathic training
- The therapeutic exercises I use in clinical practice are
- The opinions of my teachers during my osteopathic training were the strongest influence on my thinking about therapeutic exercise
- The therapeutic exercise advice I provide in clinical practice is based on my anatomical

Rewording increased the impact of the item.

Further research about item development highlighted that items
and thinking about what I want to accomplish with a certain area of the body and thinking well how can I get them to do that?

most strongly based on my anatomical knowledge and the functional changes I want to make to patients

knowledge
- The therapeutic exercises advice I provide in clinical practice are based on the functional changes I want to make in people

should not be double-barrelled. Therefore the item was split into two, one addressing anatomical knowledge and the other functional changes.

---

| Experiences with exercise in clinical practice | Stress management for example could be something that you can only talk about. Ergonomics, there may be limitations on what they can do in terms of changing the ergonomics of their work station or whatever, but exercise usually you can find ways in which you can create an exercise that works in their normal lifestyle is something that is not too onerous and succeeds in that way.

I didn’t really know any exercises when I graduated from the undergrad...[training programme] taught me a lot about different body types and what different people can do...so I guess I apply that to my patients now. |
| Therapeutic exercise allows the osteopath an easily accessible way to modify the patient’s lifestyle |
| The therapeutic exercises I use in clinical practice are most strongly based on personal research that I have done |
| The osteopathic consultation provides an excellent opportunity to address patients’ lifestyles |
| The therapeutic exercises I prescribe in clinical practice have mostly been developed after graduation from my osteopathic training |

Re-phrasing the statement clarified the message. The item was rephrased to make the meaning more clear. The addition of ‘developed after graduation’ leaves the...
| Exercise and osteopathy: A perfect match? | *I think being an osteopath is a lifestyle. It shouldn’t be something that happens between nine and five in an office. It’s something that happens all the time. So it’s a philosophy that you’re implying is appropriate for a lot of people as well.*

As a treatment I think it’s essential. I think it’s something that we have to incorporate in our treatment programmes and planning. | • As health practitioners osteopaths have a personal responsibility to maintain a healthy lifestyle including regular exercise

• Osteopathic management of patients is not complete without including lifestyle modifications such as therapeutic exercise | • As a health practitioner, I have a responsibility to maintain a healthy lifestyle myself including regular physical exercise

• Performing therapeutic exercise is usually more important to patients recovery than osteopathic manual therapy for people | The item was reworded to be personal rather than professional.

The same items as previously addressing therapeutic exercise. The idea behind these items however is respondent more freedom for interpretation. |
The cross training might come from doing a bit of swimming and doing shoulder exercise instead and the combination of all those things doesn’t necessarily happen in the 20 minutes you’ve got them in front of you. It’s happening all the time with you coming in as an osteopathic observer of how progress is going. And so you can throw your 5% in with the soft tissue and structural and improving their breathing mechanics, I think the bigger deal is how

| Therapeutic outcomes of osteopathic consultations are mostly dependent on what occurs in the treatment room |
| Osteopathic manual therapy alone is powerful enough that supplementary therapeutic exercise is unnecessary |
| My time as an osteopath is better spent treating the patient with osteopathic manual therapy than prescribing therapeutic exercises |

with acute pain

- Performing therapeutic exercise is usually more important to patients recovery than osteopathic manual therapy for people with persistent pain
different. Where previously it was where treatment occurs, in this context it is where osteopathy extends to, and how important is therapeutic exercise in osteopathic management. The lifestyle management and therapeutic exercise was split into two (see above items) as therapeutic exercise is not a lifestyle modification.

The idea behind the item led to several more items being developed and reworded in the supervision round. ‘Therapeutic outcomes’ altered to ‘patients’ recovery’. Another idea was incorporated into this
They’re living their lives.

I think mostly it’s the treatment that gets rid of the pain. The exercise is something more long term. It’s a preventative.

- A positive osteopathic manual therapy treatment outcome can be maintained by patients performing some form of general exercise.
- Performing therapeutic exercise is usually more important to patients recovery than osteopathic manual therapy for people with acute pain.
- Performing therapeutic exercise is usually more important to patients recovery than osteopathic manual therapy for people with persistent pain.
- Therapeutic outcomes of osteopathic treatment are mostly dependent in people with acute pain adhering to lifestyle modifications such as physical exercise modifications.
- Therapeutic outcomes of osteopathic treatment are mostly dependent in people with persistent pain adhering to lifestyle modifications.

The item, the idea of where the osteopath should focus in order to produce the most benefit for patients. The two areas suggested were active and passive treatment. The first alteration to the third/fourth item occurred after the same feedback as the preceding items (acute versus persistent pain) and was resolved similarly.

The item altered following feedback that the statement was unable to be answered due to its dependence on the phase of pain the patient was experiencing (acute versus persistent pain (chronic)). Therefore the item was split into two, assessing acute and persistent pain as...
I think the emphasis it gives is a sense of ownership and responsibility that the patient then has and they're not totally reliant on us producing some magical effect.

- Giving patients therapeutic exercises gives them a sense of ownership of the outcome of treatment (‘outcome of treatment’ was changed to ‘recovery’ after supervisor revision)

- Prescribing therapeutic exercises to patients encourages a sense of ownership over their treatment

- Modifications such as physical exercise modifications

The wording of the item altered ‘...giving a sense of ownership over their recovery’. ‘Giving’ implies more power from the practitioner in providing a means of ownership. The point however, is thus disregarded. Therefore the item changed to ‘encourage’ thereby giving power back to the patient. The word ‘recovery’ was changed to ‘treatment’ because then the patient is active in separate situations. At the end of the item was ‘provided by the osteopath’ which was removed. The question regarding exercise provision is already well covered elsewhere in the questionnaire.
The course gives emphasis based on the lecturers who give you the information. If you and I were at the European School of Osteopathy we might spend a lot more time doing indirect techniques and the more ethereal side of osteopathy...and I think that probably leads people to that slightly more structural approach to things.

- The curriculum of the school at which I studied has been the strongest influence on my attitudes to using therapeutic exercise in my clinical practice
- Osteopaths have limited education about therapeutic exercise during their pre-registration training
- The curriculum of the school at which I studied strongly influenced my thinking about therapeutic exercise
- I had limited education about therapeutic exercise during my pre-registration training

These items were reworded for clarity (item one). To answer the items as they were, one would have to have some knowledge of all the osteopathic schools and their education programmes. Instead the item was made personal. Further correlation is possible given that the school of education is listed in the demographics.

Notes:

1. “Transcript” refers to data excerpts from interviews. They are direct quotes.
2. “Item” refers to the statement as part of a questionnaire. They will be formatted with a Likert scale ranging from ‘Strongly Disagree’ to ‘Strongly Agree’ on a five point scale. There are some negative and some positive sliding statements, although the predominance is positive. Positive statements
are those where strongly agree is rated 1 and strongly disagree is rated 5. Negative is the other way where strongly disagree is 1 and strongly agree 5.

The items were constructed from the excerpt via consultation between the researcher and supervisors.

3. “Revised item” refers to the item in column 2 that has been reviewed via two piloting rounds investigating the face validity of the questionnaire. The two rounds of piloting were usability and content expert. Prior to the formal rounds, there was revision with supervisors regarding wording and flow of the items. Within the usability round, the preliminary questionnaire was tested by 12 people, students of the Master of Osteopathy programme, and registered osteopaths.

4. “Rationale” refers to the rationale behind why the items were reviewed and altered following the piloting rounds.
Appendix J: Preliminary questionnaire

Section 1: Demographics:

1. Institution where you gained your qualification (If you are a practitioner- If you are pre-qualified, please indicate your current institution)
2. How many years have you been practicing as an osteopath
3. What is your age?
4. Gender
5. Are you currently practicing osteopathy?
6. In what kind of area is/are your practice(s) or student clinic located?
7. Do you treat all age groups?
8. If no to question 7, what age groups do you treat (eg. Paediatrics, adults, geriatrics)
9. What is your highest qualification (In any field)?
10. Which of the following technique clusters would you most identify with?

<table>
<thead>
<tr>
<th>Cluster 1</th>
<th>Cluster 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Soft tissue technique</td>
<td>• Functional technique</td>
</tr>
<tr>
<td>• Joint Articulation</td>
<td>• Osteopathy in the cranial field</td>
</tr>
<tr>
<td>• Muscle Energy Technique</td>
<td>• Balanced-Ligamentous-Tension</td>
</tr>
<tr>
<td>• High velocity, Low Amplitude manipulation</td>
<td>• Strain/Counter-strain</td>
</tr>
</tbody>
</table>

11. Do you participate in physical exercise? Physical exercise is any physical activity whereby any bodily movement produced by skeletal muscles results in an expenditure of energy to a level that is sufficient to produce physiological adaptation. The recommendation by the Ministry of Health and the American College of Sports Medicine for the appropriate level of physical activity is 30 minutes of moderate intensity activity at least five days per week. Moderate intensity exercise means working hard enough to raise your heart rate and break a sweat but still be able to hold a conversation.
12. If yes, how often and at what intensity do you participate in physical exercise?
13. Are you interested in recreational sport/s? Recreational sports includes any form of activity or exercise that is performed at less than a professional level
14. If yes, how often do you participate in recreational sport/s?
15. What, if any education/training have you received about exercise therapy/therapeutic exercise

Section 2: Physical activity advice

Please answer the following questions about physical activity. The following statements in this section relate to providing physical activity advice with the intention of improving overall health and wellbeing. Physical activity for this section means any physical activity where a
bodily movement produced by skeletal muscles results in an expenditure of energy to a level that is sufficient to produce physiological adaptation. The recommendation by the Ministry of Health and the American College of Sports Medicine for the appropriate level of physical activity is 30 minutes of moderate intensity activity at least five days per week. Moderate intensity exercise means working hard enough to raise your heart rate and break a sweat but still be able to hold a conversation. Advice for this section refers to providing information regarding activity/exercise that including instruction regarding any less than all four of the elements that define prescription (“FITT”)

1. As a health practitioner, I have a responsibility to maintain a healthy lifestyle myself including regular physical activity
2. As health practitioners, osteopaths have a professional responsibility to provide lifestyle modification advice
3. The osteopathic consultation provides an excellent opportunity to address people’s lifestyles
4. Typically I provide physical activity advice to all my patients
5. Osteopaths should not give lifestyle modification such as physical activity advice because they are not educated adequately in this area
6. While symptoms persist people will follow advice regarding physical activity
7. Overall, people do not follow advice regarding physical activity so I don’t offer any
8. Overall, I have found people follow advice regarding physical activity
9. Physical activity advice should be guided by the personality and interests of the person
10. Osteopaths show interest and commitment to patients by giving lifestyle modifications such as physical activity and physical activity modifications as part of osteopathic consultations
11. Therapeutic outcomes of osteopathic treatment are mostly dependent in people with acute pain adhering to lifestyle modifications such as physical activity modifications
12. Therapeutic outcomes of osteopathic treatment are mostly dependent on people with persistent pain adhering to lifestyle modifications such as physical activity modifications
13. Osteopathic management is not complete without the inclusion of lifestyle modification such as physical activity advice
14. Performing some form of physical activity at the recommended level (30 minutes of moderate intensity exercise 5 days per week) is necessary for good health
15. People who are performing some form of physical activity in a safe way to the recommended level are less likely to develop musculoskeletal problems compared to people who have a sedentary lifestyle
16. People seek osteopathy to receive osteopathic manual therapy therefore they should not be provided with physical activity advice
17. People who perform some form of physical activity in a safe way to the recommended level have better therapeutic outcomes from osteopathic manual therapy
18. People who perform physical activity in a safe way to the recommended level will maintain positive therapeutic benefits gained from osteopathic manual therapy

Section 3: Physical activity prescription:

Physical activity for this section means any physical activity where a bodily movement produced by skeletal muscles results in an expenditure of energy to a level that is sufficient to produce physiological adaptation. The recommendation by the Ministry of Health and the American College of Sports Medicine for the appropriate level of physical activity is 30 minutes of moderate intensity activity at least five days per week. Moderate intensity exercise means working hard enough to raise your heart rate and break a sweat but still be able to hold a conversation. Prescription for this section is defined by the presence of all of the following elements (sometimes referred to using the acronym “FITT”): frequency, intensity, type or mode of exercise, and time or duration.

1. Typically I prescribe physical activity to all my patients
2. Osteopaths should not prescribe physical activity advice because they are not educated adequately in this area
3. While symptoms persist people will follow prescribed physical activity programmes
4. Overall, people do not follow prescribed physical activity programmes so I don’t offer any
5. Overall, I have found people follow prescribed physical activity programmes
6. Prescribed physical activity programmes should be guided by the personality and interests of the person
7. Osteopaths show interest and commitment to patients by prescribing physical activity programmes as part of osteopathic consultations
8. Therapeutic outcomes of osteopathic treatment are mostly dependent in people with acute pain adhering to prescribed physical activity programmes
9. Therapeutic outcomes of osteopathic treatment are mostly dependent on people with persistent pain adhering to prescribed physical activity programmes
10. Osteopathic management is not complete without the inclusion of prescribed physical activity programmes
11. People seek osteopathy to receive osteopathic manual therapy therefore they should not be prescribed physical activity programmes
12. People who perform prescribed activity programmes have better therapeutic outcomes from osteopathic manual therapy
13. People who perform prescribed physical activity programmes will maintain positive therapeutic benefits gained from osteopathic manual therapy

Section 4: Therapeutic exercise prescription
Please answer the following questions regarding therapeutic exercise. Therapeutic exercise for this section is a physical activity program involving a person undertaking voluntary muscle contraction and/or body movement with the intention of improving function, relieving symptoms, or slowing deterioration of health. Therapeutic exercise is typically considered in a preventative or rehabilitation context and is usually associated with clinical management of any of a wide range of target disorders. Prescription for this section is defined by the presence of all of the following elements (sometimes referred to using the acronym “FITT”): frequency, intensity, type or mode of exercise, and time or duration.

1. Osteopaths should only prescribe therapeutic exercise if they have undertaken appropriate training
2. Other health care practitioners are better placed to prescribe therapeutic exercise than osteopaths
3. Overall, people do not follow instructions regarding therapeutic exercise so I don’t prescribe any
4. People who engage in regular physical exercise are more likely to follow instructions regarding therapeutic exercise
5. People who ask for exercises are more likely to follow the exercise prescription provided
6. While symptoms persist people are more likely to carry out a therapeutic exercise programme
7. Because people only follow instructions regarding therapeutic exercise for a short time period there is little benefit in prescribing it
8. Overall, I have found people can be encouraged to follow advice regarding therapeutic exercise
9. People seek osteopathy to receive osteopathic manual therapy therefore they should not be prescribed therapeutic exercise
10. Prescribing therapeutic exercise during an osteopathic consultation is integral to osteopathy
11. There is no place for prescribing therapeutic exercise within osteopathic philosophies and principles
12. I do not prescribe therapeutic exercise because I don’t have confidence that I have the skill to provide specific therapeutic exercises
13. Therapeutic exercises that have relevance to one of the patient’s daily activities increases the likelihood they will follow those instructions
14. The therapeutic exercises I prescribe in clinical practice are based on my anatomical knowledge
15. The therapeutic exercises I prescribe in clinical practice are based on the functional changes I want to make in people
16. The therapeutic exercises I prescribe in clinical practice have mostly been developed after graduation from my osteopathic training
17. Osteopaths should use the best evidence available to guide their prescription of therapeutic exercise
18. Best evidence should be used for therapeutic exercise prescription regardless of which discipline it comes from
19. I think it is important to keep up to date with research regarding therapeutic exercise
20. My knowledge about therapeutic exercise is based mainly on my empirical clinical experience
21. The general societal attitudes to exercise at the time I trained most strongly influence my thinking about therapeutic exercise
22. The opinions of my teachers during my osteopathic training were the strongest influence on my thinking about therapeutic exercise
23. The curriculum of the school at which I studied strongly influenced my thinking about therapeutic exercise
24. Many of my patients have benefited from therapeutic exercise
25. I had limited education about therapeutic exercise during my pre-registration training
26. Performing prescribed therapeutic exercise will undo the benefits of receiving osteopathic manual therapy
27. Prescribing therapeutic exercises to people encourages a sense of ownership over their treatment
28. There is no benefit to giving patients therapeutic exercises whilst they are receiving osteopathic manual therapy
29. Prescribing therapeutic exercise is very time consuming
30. I do not prescribe therapeutic exercises because they are very time consuming
31. My time as an osteopath is better spent treating the person with osteopathic manual therapy than prescribing therapeutic exercises
32. Osteopathic manual therapy alone is powerful enough that supplementary therapeutic exercise is unnecessary
33. Performing therapeutic exercise is usually more important to patients recovery than osteopathic manual therapy for people with acute pain
34. Performing therapeutic exercise is usually more important to people recovery than osteopathic manual therapy for people with persistent pain
35. Prescribing therapeutic exercise should not be part of osteopathic management
36. Therapeutic exercises can be provided by other health care practitioners therefore osteopaths do not need to prescribe therapeutic exercise
37. Prescribing therapeutic exercise will reduce the number of treatment sessions needed and therefore saves the person money
38. People who undertake therapeutic exercise will need less osteopathic manual therapy
39. I think in the future, funding will be more likely targeted to those therapies that utilize active treatment programmes rather than passive treatment programmes
40. I am cognisant of the research around the effectiveness for treatment outcomes of active versus passive treatment for musculoskeletal conditions
41. I would like to continue further education into therapeutic exercise if it was available
42. The availability of post-registration education into therapeutic education is sufficient
Section 5: Therapeutic exercise advice:

Therapeutic exercise for this section is a physical activity program involving a person undertaking voluntary muscle contraction and/or body movement with the intention of improving function, relieving symptoms, or slowing deterioration of health. Therapeutic exercise is typically considered in a preventative or rehabilitation context and is usually associated with clinical management of any of a wide range of target disorders. Advice for this section refers to providing information regarding activity/exercise that including instruction regarding any less than all four of the elements that define prescription (“FITT”)

1. Osteopaths should only provide therapeutic exercise advice if they have undertaken appropriate training
2. Other health care practitioners are better placed to provide therapeutic exercise advice than osteopaths
3. Overall, people do not follow advice regarding therapeutic exercise so I don’t prescribe any
4. People who engage in regular physical activity are more likely to follow advice regarding therapeutic exercise
5. People who ask for exercises are more likely to follow the therapeutic exercise advice provided
6. While symptoms persist people are more likely to carry out advised therapeutic exercises
7. Because people only follow advice regarding therapeutic exercise for a short time period there is little benefit in prescribing it
8. Overall, I have found people can be encouraged to follow advice regarding therapeutic exercise
9. People seek osteopathy to receive osteopathic manual therapy therefore they should not be provided with advice regarding therapeutic exercise
10. Providing therapeutic exercise advice during an osteopathic consultation is integral to osteopathy
11. There is no place for providing therapeutic exercise advice within osteopathic philosophies and principles
12. I do not provide therapeutic exercise advice to because I don’t have confidence that I have the skill to provide therapeutic exercises
13. The therapeutic exercise advice I provide in clinical practice is based on my anatomical knowledge
14. The therapeutic exercises advice I provide in clinical practice are based on the functional changes I want to make in people
15. The therapeutic exercises advice I provide in clinical practice have mostly been developed after graduation from my osteopathic training
16. Osteopaths should use the best evidence available to guide the advice they provide regarding therapeutic exercise
17. Best evidence should be used for therapeutic exercise advice regardless of which discipline it comes from
18. Performing therapeutic exercises as advised will undo the benefits of receiving osteopathic manual therapy
19. Providing therapeutic exercise advice to people encourages a sense of ownership over their treatment
20. There is no benefit to providing therapeutic exercise advice whilst patients are receiving osteopathic manual therapy
21. Providing therapeutic exercise advice is very time consuming
22. I do not provide therapeutic exercise advice because they are very time consuming
23. My time as an osteopath is better spent treating the person with osteopathic manual therapy than providing therapeutic exercise advice
24. Providing therapeutic exercise advice should not be part of osteopathic management
25. Therapeutic exercises can be provided by other health care practitioners therefore osteopaths do not need to provide therapeutic exercise advice
26. Providing therapeutic exercise advice will reduce the number of treatment sessions needed and therefore saves the person money
<table>
<thead>
<tr>
<th>Positive Phrasing</th>
<th>Negative Phrasing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical activity advice</strong></td>
<td></td>
</tr>
<tr>
<td>As a health practitioner, I have a personal responsibility to maintain a healthy lifestyle including regular physical activity</td>
<td>I have no responsibility as a health care practitioner to maintain a healthy lifestyle myself including regular physical activity</td>
</tr>
<tr>
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<td>Osteopaths do not have a professional responsibility as health care practitioners to provide lifestyle modification advice</td>
</tr>
<tr>
<td>The osteopathic consultation provides an excellent opportunity to address people’s lifestyles</td>
<td>‘The osteopathic consultation does not provide an opportunity for addressing people’s lifestyles</td>
</tr>
<tr>
<td>Typically I provide physical activity advice to all my patients</td>
<td>‘Typically I do not provide activity advice to any of my patients</td>
</tr>
<tr>
<td>Osteopaths do not need to be further educated to give lifestyle modifications such as physical activity advice</td>
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</tr>
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</tr>
<tr>
<td>Therapeutic outcomes of osteopathic treatment are mostly dependent on people with persistent pain adhering to lifestyle modifications such as physical activity modifications</td>
<td>Therapeutic outcomes of osteopathic treatment are not dependent on people with persistent pain adhering to lifestyle modifications such as physical activity advice</td>
</tr>
<tr>
<td>Osteopathic management is not complete without the inclusion of lifestyle modification such as physical activity advice</td>
<td>Osteopathic management does not require the inclusion of lifestyle modifications such as physical activity advice</td>
</tr>
<tr>
<td>Performing some form of physical activity at the recommended level (30 minutes of moderate intensity exercise 5 days per week) is necessary for good health</td>
<td>There is no need to perform physical activity to the recommended level (30 minutes of moderate intensity exercise 5 days per week) to maintain good health</td>
</tr>
<tr>
<td>People who are performing some form of physical activity in a safe way to the recommended level are less likely to develop musculoskeletal problems compared to people who have a sedentary lifestyle</td>
<td>Performing some form of physical activity to the recommended level does not decrease the likelihood of developing musculoskeletal problems compared to people who have a sedentary lifestyle</td>
</tr>
<tr>
<td>People should be provided with physical activity advice when they seek osteopathic manual therapy</td>
<td>People seek osteopathy to receive osteopathic manual therapy therefore they should not be provided with physical activity advice</td>
</tr>
<tr>
<td>People who perform some form of physical activity in a safe way to the recommended level have better therapeutic outcomes from osteopathic manual therapy</td>
<td>The performance of some form of physical activity in a safe way and to the recommended level will not improve therapeutic outcomes from osteopathic manual therapy.</td>
</tr>
<tr>
<td>People who perform physical activity in a safe way to the recommended level will maintain positive therapeutic benefits gained from osteopathic manual therapy</td>
<td>The positive therapeutic benefits gained from osteopathic manual therapy will be maintained without performing physical activity in a safe way to the recommended level.</td>
</tr>
</tbody>
</table>

**Therapeutic exercise prescription**
<table>
<thead>
<tr>
<th>Statement</th>
<th>Counter-Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Osteopaths should only prescribe therapeutic exercise if they have</td>
<td>No specific training is necessary for osteopaths to prescribe therapeutic exercise</td>
</tr>
<tr>
<td>undertaken appropriate training</td>
<td></td>
</tr>
<tr>
<td>Other health care practitioners are better placed to prescribe therapeutic</td>
<td>Other health care practitioners are no better placed to prescribe therapeutic</td>
</tr>
<tr>
<td>exercise than osteopaths</td>
<td>exercise than osteopaths</td>
</tr>
<tr>
<td>Overall, people follow instructions regarding therapeutic exercise</td>
<td>Overall, people do not follow instructions regarding therapeutic exercise</td>
</tr>
<tr>
<td>People who engage in regular physical exercise are more likely to follow</td>
<td>People engaging in regular physical activity are no more likely to follow</td>
</tr>
<tr>
<td>instructions regarding therapeutic exercise</td>
<td>instructions regarding therapeutic exercise</td>
</tr>
<tr>
<td>People who ask for exercises are more likely to follow the exercise</td>
<td>Asking for exercises does not indicate an increased likelihood that people will</td>
</tr>
<tr>
<td>programmes provided</td>
<td>follow exercise programmes provided</td>
</tr>
<tr>
<td>While symptoms persist people are more likely to carry out a therapeutic</td>
<td>The persistence of symptoms do not increase the likelihood that people will still</td>
</tr>
<tr>
<td>exercise programme</td>
<td>follow a prescribed exercise programmes</td>
</tr>
<tr>
<td>Because people only follow instruction regarding therapeutic exercise for</td>
<td>Although people only follow instruction regarding therapeutic exercise for a</td>
</tr>
<tr>
<td>a short time period there is little benefit in prescribing it</td>
<td>short time period there is still benefit in prescribing it</td>
</tr>
<tr>
<td>Overall, I have found people can be encouraged to follow advice regarding</td>
<td>Overall, I have not found any ways to encourage people to follow advice regarding</td>
</tr>
<tr>
<td>therapeutic exercise</td>
<td>therapeutic exercise</td>
</tr>
<tr>
<td>People should be provided with therapeutic exercise advice when they seek</td>
<td>People seek osteopathy to receive osteopathic manual therapy therefore they should</td>
</tr>
<tr>
<td>osteopathic manual therapy</td>
<td>not be prescribed therapeutic exercise</td>
</tr>
<tr>
<td>Prescribing therapeutic exercise during an osteopathic consultation is integral to osteopathy</td>
<td>Providing therapeutic exercise during an osteopathic consultation is not integral to osteopathy</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Prescribing therapeutic exercise is in keeping with osteopathic philosophies and principles</td>
<td>There is no place for prescribing therapeutic exercise within osteopathic philosophies and principles</td>
</tr>
<tr>
<td>I am confident I have the skills to provide specific therapeutic exercise</td>
<td>I do not prescribe therapeutic exercise to my patients because I don’t have confidence that I have the skill to provide specific therapeutic exercises</td>
</tr>
<tr>
<td>Therapeutic exercises that have relevance to one of the patient’s daily activities increases the likelihood they will follow those instructions</td>
<td>Giving therapeutic exercises that have relevance to one of the patient’s daily activities does not increase the likelihood they will follow those instructions</td>
</tr>
<tr>
<td>The therapeutic exercises I prescribe in clinical practice are based on my anatomical knowledge</td>
<td>Anatomical knowledge is not the basis for the therapeutic exercises I prescribe</td>
</tr>
<tr>
<td>The therapeutic exercises I prescribe in clinical practice are based on the functional changes I want to make in people</td>
<td>The functional changes I want to make in people is not the basis for the therapeutic exercises I prescribe</td>
</tr>
<tr>
<td>The therapeutic exercises I prescribe in clinical practice have mostly been developed after graduation from my osteopathic training</td>
<td>The therapeutic exercises I prescribe have not been developed since I graduated from my osteopathic training</td>
</tr>
<tr>
<td>Osteopaths should use the best evidence available to guide their prescription of therapeutic exercise</td>
<td>Osteopaths should not use best evidence available to guide their prescription of therapeutic exercise</td>
</tr>
<tr>
<td>Best evidence should be used for therapeutic exercise prescription regardless of which discipline it comes from</td>
<td>Osteopaths should only use evidence for therapeutic exercise prescription derived from within the osteopathic profession</td>
</tr>
<tr>
<td>I think it is important to keep up to date with research regarding therapeutic exercise</td>
<td>I do not think it is important to keep up to date with research regarding therapeutic exercise</td>
</tr>
<tr>
<td>My knowledge about therapeutic exercise is based mainly on my empirical clinical experience</td>
<td>Empirical clinical experience has not developed my knowledge of therapeutic exercise</td>
</tr>
<tr>
<td>The general societal attitudes to exercise at the time I trained most strongly influence my thinking about therapeutic exercise</td>
<td>The general societal attitudes to exercise at the time I trained had no influence on my thinking about therapeutic exercise</td>
</tr>
<tr>
<td>The opinions of my teachers during my osteopathic training were the strongest influence on my thinking about therapeutic exercise</td>
<td>The opinions of my teachers during my osteopathic training had no influence on my thinking about therapeutic exercise</td>
</tr>
<tr>
<td>The curriculum of the school at which I studied strongly influenced my thinking about therapeutic exercise</td>
<td>The curriculum of the school at which I studied had no influence on my thinking about therapeutic exercise</td>
</tr>
<tr>
<td>Many of my patients have benefited from therapeutic exercise</td>
<td>None of my patients have benefited from therapeutic exercise</td>
</tr>
<tr>
<td>I had limited education about therapeutic exercise during my pre-registration training</td>
<td>I had adequate education about therapeutic exercise during my pre-registration training</td>
</tr>
<tr>
<td>Performing prescribed therapeutic exercise will undo the benefits of receiving osteopathic manual therapy</td>
<td>Performing prescribed therapeutic exercise will not affect the benefits of receiving osteopathic manual therapy</td>
</tr>
<tr>
<td>Prescribing therapeutic exercises to people encourages a sense of ownership over their treatment</td>
<td>Prescribing therapeutic exercises to people does not encourage a sense of ownership over their treatment</td>
</tr>
<tr>
<td>There are many benefits to giving people therapeutic exercises whilst they are receiving osteopathic manual therapy</td>
<td>There is no benefit to giving people therapeutic exercises whilst they are receiving osteopathic manual therapy</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>I prescribe therapeutic exercises regardless of time constraints</td>
<td>I do not prescribe therapeutic exercises because they are very time consuming</td>
</tr>
<tr>
<td>Prescribing therapeutic exercise is not unduly time consuming</td>
<td>Prescribing therapeutic exercise is very time consuming</td>
</tr>
<tr>
<td>My time as an osteopath is better spent treating the person with osteopathic manual therapy than prescribing therapeutic exercises</td>
<td>My time as an osteopath is better spent providing therapeutic exercise than treating the person with osteopathic manual therapy</td>
</tr>
<tr>
<td>Osteopathic manual therapy alone is powerful enough that supplementary therapeutic exercise is unnecessary</td>
<td>Osteopathic manual therapy alone is not sufficient without providing supplementary therapeutic exercise is unnecessary</td>
</tr>
<tr>
<td>Performing therapeutic exercise is usually more important to peoples’ recovery than osteopathic manual therapy for people with acute pain</td>
<td>Performing therapeutic exercise is not more important to peoples’ recovery than osteopathic manual therapy for people with acute pain</td>
</tr>
<tr>
<td>Performing therapeutic exercise is usually more important for recovery than osteopathic manual therapy for people with persistent pain</td>
<td>Performing therapeutic exercise is not more important for recovery than osteopathic manual therapy for people with persistent pain</td>
</tr>
<tr>
<td>Prescribing therapeutic exercise should be part of osteopathic management</td>
<td>Prescribing therapeutic exercise should not be part of osteopathic management</td>
</tr>
<tr>
<td>Therapeutic exercises can be provided by other health care practitioners therefore osteopaths do not need to prescribe therapeutic exercise</td>
<td>Therapeutic exercises can be provided by other health care practitioners therefore osteopaths do not need to prescribe therapeutic exercise</td>
</tr>
<tr>
<td>Prescribing therapeutic exercise will reduce the number of treatment sessions needed and therefore saves the person money</td>
<td>Prescribing therapeutic exercise does not reduce the number of treatment sessions needed and therefore does not save the person money</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>People who undertake therapeutic exercise will need less osteopathic manual therapy</td>
<td>People who undertake therapeutic exercise does not affect the amount of osteopathic manual therapy they require</td>
</tr>
<tr>
<td>I think in the future, funding will be more likely targeted to those therapies that utilize active treatment programmes rather than passive treatment programmes</td>
<td>I think in the future, there will be no funding preferences to therapies that utilize active treatment programmes rather than passive treatment programmes</td>
</tr>
<tr>
<td>I am cognisant of the research around the effectiveness for treatment outcomes of active versus passive treatment for musculoskeletal conditions</td>
<td>I am not cognisant of the research around the effectiveness for treatment outcomes of active versus passive treatment for musculoskeletal conditions</td>
</tr>
<tr>
<td>I would like to continue further education into therapeutic exercise if it was available</td>
<td>I would not like to continue further education into therapeutic exercise if it was available</td>
</tr>
<tr>
<td>The availability of post-registration education into therapeutic education is sufficient</td>
<td>The availability of post-registration education into therapeutic education is insufficient</td>
</tr>
</tbody>
</table>