ROLE OF EXERCISE THERAPY IN OSTEOPATHIC EDUCATION, TREATMENT AND MANAGEMENT

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DEDICATION

This PhD thesis is dedicated with love to the memory of my mother, Patricia Dear (1945-2004) who is sadly not with us to see a promise fulfilled.

ABSTRACT

Exercise based interventions are common in the treatment of musculoskeletal disorders. These interventions have been investigated in other manual therapy disciplines, but little empirical data exists about osteopathic approaches to exercise. There is a need to examine the role of exercise in osteopathic undergraduate education and the osteopathic treatment and management of patients in order to identify, clarify and develop upon educational and professional needs of the practising osteopath. The aims of this thesis were to explore the integration of exercise therapy in the undergraduate osteopathic curriculum, gain an understanding of the interpretation and uses of exercise therapy in osteopathic practice and explore potential concordance between education and practice.

To provide context for the studies in the thesis, preparatory work included examining the historical and philosophical developments within osteopathy and the utilisation of exercise therapy and physical activity in wider health care provision.

Curriculum evaluation of the intended (content analysis of course documents) delivered (faculty member perspective) and received (student perspective) undergraduate osteopathic curricula revealed the idiosyncratic and sporadic nature of documented and delivered exercise content. The intended curriculum was seen to pertain to academic education whilst the delivered and received curriculum was reflective of clinical education. There was evidence of shared desires from osteopathic students and faculty members who

suggested that they would welcome a standardised, experiential, patient centred approach to exercise therapy. The interview study with practitioners revealed a patient centred approach to the use of exercise therapy. However there remains some confusion over the use and understanding of exercise terminology. Paradoxically with the stated patient centred approaches practitioners expressed exercise delivery using paternalistic language. Favoured modes of exercise showed common trends with other manual therapies such as the use of “core stability” programmes, but bore little resemblance to those delivered during undergraduate education.

Exercise therapy and its potential for use is a substantial issue for osteopaths and for education providers in the UK. There is some dissonance between clinicians reported patient centred care approaches and actual delivery of exercise advice. Exercise education in osteopathy and clinical practice are not concordant and clinical aspects of undergraduate education are not documented clearly and are largely opportunistic. There is a need for further consensus about the role of exercise therapy in osteopathic practice and this should be a driver for a more coherent approach across education and practice.

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PREFACE

I have been working in osteopathic education and research since 1998. Having completed a Sports Science degree at Chelsea School, University of Brighton in 1996, I went on to study for an MSc in Exercise and Health Behaviour at City University, London. I began work at The British School of Osteopathy in 1998 as Dissertation Coordinator, and over the last decade my role has gradually developed to encompass Head of Postgraduate Studies and Senior Research Fellow.

In my role as Dissertation Coordinator and Supervisor, I found myself advising both students and staff on the use of exercise therapy and physical activity in osteopathic practice. In addition, my role also required a working knowledge of curriculum design and development and so this thesis has effectively combined my interests in exercise, education and osteopathy. As a direct result of the work I have completed to date, I have been involved in the design and development of Bachelors, Masters, Undergraduate Masters and Professional Doctorates in osteopathy.

All of the work contained in this thesis was developed with the guidance and support of my supervisors at the University of Brighton and an osteopathic advisor who is based at The British School of Osteopathy. This work was funded by The British School of Osteopathy and I have been fortunate to have one-day study leave per week for the duration of my doctoral studies. Results from the study of the intended osteopathic curriculum have been published in the International Journal of Osteopathic Medicine (Zamani et al, 2007), whilst

other studies contained within the thesis have been presented as either platform presentations or posters at International conferences (refer to section 8.7 for full details).

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In addition to the source of funding for this work, I would like to acknowledge the following individuals for their contribution to this thesis:

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- Grateful thanks are extended to all UK osteopathic education providers and their faculty members and students who have contributed to the studies within this thesis. Thanks also to those practitioners who volunteered to take part and have shown an interest in my work over the last six years.

AUTHORS DECLARATION

Declaration

I declare that the research contained in this thesis, unless otherwise formally indicated within the text, is the original work of the author. The thesis has not been previously submitted to this or any other university for a degree, and does not incorporate any material already submitted for a degree.

Signed:

Dated:

DEFINITIONS & ABBREVIATIONS

AOA	American Osteopathic Association
BCNO	British College of Naturopathy & Osteopathy
BCOM	British College of Osteopathic Medicine
BNA	British Naturopathic Association
BNOA	British Naturopathic & Osteopathic Association
BOst	Bachelor of Osteopathy
BOst. Med	Bachelor of Osteopathic Medicine
BSO	British School of Osteopathy
CCE	Clinical Competency Examination
CIDO	College Internationale d'Osteopathie
CNAA	Council for National Academic Awards
COET	College of Osteopaths Educational Trust
CPD	Continuing Professional Development
EFO	Ecole Francaise d'Osteopathie
ESO	European School of Osteopathy
GCRO	General Council and Register of Osteopaths
GOsC	General Osteopathic Council
HEFCE	Higher Education Funding Council for England
LCOM	London College of Osteopathic Medicine
LSO	London School of Osteopathy
METS	Unit if Metabolic Equivalent
MOst	Undergraduate Masters degree (Osteopathy)
NCOR	National Council for Osteopathic Research
NESCOT	North East Surrey College of Technology
NHS	National Health Service
NICE	National Institute of Clinical Excellence
OBU	Oxford Brookes University
OEI	Osteopathic Education Institution
OSCA	Osteopathic Sports Care Association
OSCE	Objective Structured Clinical Examination
OUVS	Open University Validation Services
PPP	Professional Profile and Portfolio

QAA	Quality Assurance Agency for Higher Education
RCT	Randomised Controlled Trial
ROM	Range of Movement
RPE	Rating of Perceived Exertion
RQ	Recognised Qualification Status
S2K	Standard of Proficiency
SED	Self Evaluation Document
SIOM	Surrey Institute of Osteopathic Medicine
SPSS	Statistical Package for Social Sciences
UK	United Kingdom
UK BEAM	United Kingdom, Back Pain, Exercise, Active Management and Manipulation
USA	United States of America
WHO	World Health Organisation

CHAPTER 1: THESIS RATIONALE

1.0 RATIONALE

The motivation for this thesis originates from the perceived gap in knowledge of exercise therapy and physical activity experienced by undergraduate and practising osteopaths in the UK. Controlled trials investigating the use and efficacy of exercise for musculoskeletal disorders are numerous; however few have investigated the efficacy of exercise when used as an adjunct to osteopathic treatment. The physical activity and exercise message is now one that is at the heart of many public health interventions and this is evident in the increase in the number of exercise-based interventions available throughout the UK.

British osteopaths, despite incorporating exercise into their treatment plans, have limited formal training in the use of exercise. There is therefore a need to examine the role of exercise in osteopathic undergraduate education and the osteopathic treatment and management of patients in order to identify, clarify and develop the educational and professional needs of the practising osteopath. This thesis comprises a number of integrated phases of investigation focussing on an exploration of exercise content in the undergraduate osteopathic curriculum and the potential for exercise therapy's integration into professional practice. Thesis aims are presented in section 4.4.

1.1 OVERVIEW OF THE THESIS

The process of completing the studies contained within the doctorate was a dynamic progression involving changes in direction and modification of methods applied. Initial ideas at the proposal stage of development have evolved continually resulting in the studies featured in this thesis. Chapters two, three and four provide context to the completed studies and to the thesis. Exploration of the history of osteopathy and the philosophy of the therapy provide an introduction to and overview of British osteopathy. The history of osteopathy and personalities driving the profession are intricately linked to the development and founding of many of the osteopathic schools in the UK and an exploration of these gives the reader some insight into not only the history of British osteopathy, but also the history of British osteopathic education. The studies detailed in chapters five and six of this thesis explore the inclusion, delivery and shared experience of exercise content in the undergraduate osteopathic curriculum. To put this study into context, a chapter detailing the history and development of osteopathic education in the UK in addition to the process of attaining RQ status awarded by the GOsC is also provided. The studies included provide an accurate, current picture of exercise content within osteopathic education in the UK. These studies have contributed towards the development of an exercise education conceptual framework and have been the cornerstone of recommendations made in the final chapter, aimed at integrating the theoretical and clinical foundations of exercise therapy into the osteopathic curriculum. Chapter

seven details qualitative work conducted with osteopathic practitioners exploring the potential use of exercise therapy in treatment and management. The findings of this study have similarly contributed to the practice-based recommendations made in chapter eight of the thesis.

Chapters outlining the history and founding philosophies of osteopathy provide a clear context to the later chapters exploring the osteopathic educational and practice developments in relation to exercise therapy. The role of the researcher in the development and completion of the doctorate has been a dynamic, reflective process characterised by maturity in the knowledge and skills developed. The researcher has continually appreciated the need for the recognition, and where possible the removal, of bias in the methods used. The development of new knowledge and skills has enabled the researcher to apply this foundation of expertise in her employment role and has seen her contribute to a number of educational projects based in the UK.

1.2 METHODOLOGICAL APPROACH AND ROLE OF THE RESEARCHER

The studies included in this thesis are a product of the research interests of the researcher. The combined fields of osteopathy and exercise therapy feature strongly in the educational and employment background of the researcher and have thus provided the ontological impetus for the thesis. Following both undergraduate and postgraduate degrees in Sport and Exercise Science and nine years in competitive international sport, the researcher moved into osteopathic education where she has remained for the last ten years. The researcher has regularly drawn on her background and experience in competitive professional sport and exercise science when working with osteopathic practitioners and students. It soon became evident that there is a need to explore further the perceived gap in knowledge and education of osteopathic practitioners and students in exercise therapy.

The researcher is not a qualified practising osteopath but has teaching and practical expertise in exercise therapy in further and higher education and in the exercise and fitness industry. The researcher has been aware of the limitations of not being an osteopath particularly in the clinical application of exercise therapy. These limitations have been offset by the presence of clinicians in the supervisory team.

Having an educational and experiential background in exercise therapy allowed the researcher to bring her expertise to this series of studies.

However, this may also have brought considerable bias to the research particularly in a manual therapy profession not known for its exploration and application of exercise therapy in education and clinical practice. On reflection, the researcher has attempted to take a neutral stance in the advocacy of exercise therapy in osteopathic education and practice to enable study participants to give honest and unbiased views on the uses and application of exercise therapy in osteopathy.

The researcher is an employee of one of the RQ education providers in the UK. This has proved to be an issue for consideration particularly when other providers were asked for access to course documentation. Students registering on osteopathic undergraduate courses have in the recent past privately funded their studies. This situation is gradually changing as more RQ providers are awarded HEFCE funding through partnerships with larger universities. Over the course of this doctorate, the shift from privately-funded to state-funded programmes has been evident, however the historical culture of protecting the material within a degree programme has meant that there remains some concern over the confidentiality of course materials. The diplomacy and assurance of confidentiality on the part of the researcher and supervisory team ensured that this obstacle has been successfully overcome. On reflection, the process of curriculum evaluation has fostered the instigation of future collaborative projects and contributed to encouraging cross-fertilisation of ideas amongst education providers. For example, disseminating the results of the studies featured in this thesis both in international

publications and conferences instigated considerable discussion amongst OEI's and practitioners.

Osteopathic philosophy has been seen to underpin both models of education and clinical practice. The philosophical frameworks adopted by the education providers are not necessarily the same and the potential for bias in the understanding and application of osteopathic philosophy and models of clinical practice as a function of being a member of faculty in one school has been noted. In the early stages of the thesis, the researcher spent time familiarising herself with a range of osteopathic philosophies and models of practice in an attempt to overcome the potential for bias.

Undertaking the studies and related work outlined in this thesis has ultimately allowed the researcher to broaden her knowledge base and in particular experience methodological approaches of which she was previously unfamiliar. On reflection, pursuing research focussed in part on the evaluation of educational design and development in a field of interest has consequently developed the researcher's employment role and allowed her to make contributions to general osteopathic educational developments and the process of degree validation.

Whilst the researcher is essential to the process, it was imperative that the researcher remained open to constructive criticism, potential changes in the direction of the research and removed from the potential for bias.

Throughout the process the researcher has re-evaluated both the doctorate as a whole and the interdependent studies completed. This has ensured that the research process and product has remained dynamic and is reflective of the current situation in osteopathic education and practice in the United Kingdom.

In order to provide context and background to the studies, the researcher explored historical, philosophical and professional development in osteopathy. This involved extensive research using archived material held at the British School of Osteopathy including texts written by the founder of osteopathy, Andrew Taylor Still. In addition, the researcher used professional documentation produced by the General Osteopathic Council, the regulatory body of British osteopathy. Throughout the research process the researcher searched and drew upon a wide range of peer-reviewed evidence and published documentation and texts. This was key to providing a clear rationale and informative background to every study featured in this thesis.

The methodological approaches featured within this thesis are key in defining the participant and researcher experiences of the studies (Maggs-Rapport 2001). The methodological background of the researcher lay firmly in the quantitative paradigm with very limited experience of qualitative or educational research. The studies in this thesis have embraced qualitative methodological approaches and the researcher has undergone a steep learning curve in undertaking

qualitative research. The use of focus groups and interviews in two of the three-featured studies were not tied to any one underpinning theoretical framework, however the most closely matched framework was an essentialist one where the research was based on the assumption that the participants had their own ideas, values and assumptions and that it was the researcher's role to elicit this information (Wilkinson 2008). This theoretical framework also drove the analysis of data, where the most appropriate method was thematic analysis.

Qualitative research has long been based on four levels of understanding these being: ontology; epistemology; methodology and methods (Maggs-Rapport 2001). The ontological dimension or subject matter of this thesis is based heavily on the researcher's own knowledge and experiences in exercise combined with her growing interest in osteopathy. As a result, it is reasonable to suggest that the researcher may bring an element of bias to the research and is an active element within the research setting. Indeed the researcher could be viewed as filtering data through her own philosophies and experiences. Viewing the researcher as an active part of the research setting is in agreement with the post-modern qualitative paradigm (Holliday 2007).

The epistemological level of the research addresses what counts as knowledge of the real world. In the context of this thesis, participant's views, beliefs and experiences are considered as knowledge of the setting in which they work and practise. Finally, by using a predominantly

qualitative approach through the methods of interviews and focus groups, the researcher sought to understand and collect data on the participant's experiences of their educational and practice settings.

The researcher was responsible for gaining access to the curricula documentation produced by UK osteopathic recognised qualification providers in order to analyse the exercise content evident within the documentation. In addition, the researcher developed the coding framework used to analyse the data, in collaboration with the supervisory team. The process of data collection extended to distribution and analysis of faculty questionnaires and leading focus groups and interviews during the exploration of the taught and received curriculum and when exploring practice-based issues with osteopaths. During the collection and analysis of the data featured within this thesis, the researcher has been exposed to a wide range of research methodologies, many of which she had not encountered practically before.

CHAPTER 2: HISTORICAL DEVELOPMENTS IN OSTEOPATHY

2.0 CHAPTER INTRODUCTION

The history of osteopathy and its guiding principles and philosophical framework are a rich source of evidence from which to begin an exploration of the therapy and its foundations. As illustrated in this chapter, the historical developments within the profession are intricately linked with both British and American osteopathic education. Although this thesis explores only British osteopathic education and practice, developments in America have contributed to the profession in the UK. The overview presented here will provide the reader with a greater insight into the foundations of modern osteopathy and its education providers, giving context to the following chapters that explore osteopathic education and practice in the UK. Osteopathic education providers must undergo a comprehensive review process driven by the Quality Assurance Agency for Higher Education (QAA) and the General Osteopathic Council (GOsC) when validating or renewing their recognised qualification provider status. An overview of this process is given in this chapter, giving context to curriculum design and development in undergraduate osteopathic programmes in the UK.

In preparing this chapter, the researcher explored both archive and current publications detailing the history and professional development of osteopathy. Much of the work included within this narrative review was sourced from the British School of Osteopathy, which houses the largest

collection of osteopathic literature in Europe. Additional material was sourced direct from osteopathic education providers and the General Osteopathic Council. It should be noted that the historical detail relating to the British School of Osteopathy constitutes a large proportion of the narrative included here and this is representative of the colourful and detailed history of the school and its development.

2.1 HISTORICAL PERSPECTIVES

2.1.1 Dr. Andrew Taylor Still

The American physician, Dr. Andrew Taylor Still, founded osteopathy in 1874. Still was born in Virginia, USA, in 1828, relocating and settling in Kirksville, Missouri where his father established a mission school for Native American Indians, combining religious ministerial work with medical practice. Eager to continue the family work, Still assisted his father in both missionary work and medical practices. During his adult years, Still obtained his medical education in Kansas and served as a major in the Union Army during the Civil War (Trowbridge 1991). Many who have written about Still have noted that his military service had a profound effect upon him, as did his religious beliefs (Trowbridge 1991; Collins 2006).

Medical practices of the day led Still to become disenchanted with orthodox practice culminating in the spring of 1864 when four of his children contracted meningitis and, despite conventional medical efforts, all tragically died (Handoll 1986). Personal tragedy for Still evoked his

interest in alternative medicine, and he devoted himself to the search for the remedy of disease. For the following ten years, Still developed his ideas until on the 22nd June 1874 he “flung to the breeze the banner of Osteopathy” (Still 1910). With the inception of osteopathy, he was seeking to find a way to improve patient treatment and management used in contemporary medical practices. The system of palpatory diagnosis and manipulation was the foundation on which the practice of osteopathy developed.

All patients who consulted Still after 1874 were treated by his hands according to his new theories, and his recognition spread. In 1892, Still opened his first school, the American School of Osteopathy, in Kirksville, Missouri (Trowbridge 1991). At that time, three main achievements were synonymous with the name of Andrew Taylor Still. Still noted the relationship of health to the structure and mechanics of the human body; he developed palpation as a means of diagnosing and treating mechanical faults of the body; and finally, he began a school that taught his methods. His only failure during that era of osteopathic development was his inability to convince medical colleagues of the true value of osteopathic medicine, perhaps a legacy that holds true today.

Deasen noted in his work that Dr. Still was seen as a non-conformist (Deasen 1934). In religion, politics, medicine, science and philosophy he was considered to be independent in his thinking, a trait mirrored in his inception of osteopathy. Despite the unique nature of osteopathy to the

time, Still studied the works of the era, including Huxley, Darwin and other European biologists (Trowbridge 1991). Many authors have noted that key works of these biologists are apparent in osteopathic medicine and informed Still's practice. From the four books authored by Still, the conclusion reads the same: Osteopathy is a science and a philosophy based upon biological principles limited only by the ability of the human intelligence to comprehend (Still 1910).

Much debate has been levelled at the philosophy of osteopathy and its origins. Kimberley (1986) suggests that Still took three known principles, added another of his own, and moulded them into the "philosophy of osteopathy". The three principles are:

1. The principle of body unity.
2. The principle of vis medicatrix naturae – the healing power of nature.
3. The principle of structure/function interrelationships (Kimberley 1986).

All of these principles had been discussed in medical literature of the time but Still added a further principle of his own, that deranged soma will result in altered physiology and/or chemistry of related tissues (Seffinger 2003). This change in structure is identifiable by palpation and occasionally by observation. This concept has been known by many names: bony lesion, osteopathic spinal lesion; osteopathic structural lesion; osteopathic lesion. Current terminology and practice favour

somatic dysfunction, which may be defined as; “Impaired or altered function of related components of the somatic (body framework) system: skeletal, arthrodial, and myofascial structures, and related vascular, lymphatic, and neural elements” (Seffinger 2003). Still amalgamated these four principles to form osteopathy.

2.1.2. Development of Osteopathy in the UK 1902 – 1986

Graduates of the first osteopathic schools in the USA brought osteopathy to the UK. The first arrivals to the UK were J. Dunham in 1902 and in 1903 L. Willard Walker and Franz Joseph Horn. The first attempt at formal organisation was the formation of the British Osteopathic Association in 1911 whose membership was confined to graduates of the American osteopathic schools practising in the UK. The turning point for British osteopathy was the return to England in 1913 of Dr. John Martin Littlejohn (Handoll 1986; Collins 2006).

2.1.3 Dr. John Martin Littlejohn (1865-1947)

John Martin Littlejohn was born in Glasgow in 1865; his father was a probationary preacher. Following education in Scotland (Arts & Theology; anatomy and physiology) he, like Still, entered the church. Following a period of ill-health Littlejohn was advised to seek a warmer climate and in 1892, he emigrated to the USA. It was during his stay in the USA that he consulted Dr. Still for a throat condition. So impressed was he by Still’s work that he enrolled to study osteopathy. Littlejohn graduated and gained his diploma from the American School of Osteopathy where he

also accepted a teaching post and in 1900 founded the second school of osteopathy in Chicago, which he called the American College of Osteopathic Medicine and Surgery (Handoll 1986; Trowbridge 1991; Collins 2006). In 1898, Littlejohn was invited to speak at the Society of Science, Letters and Art in London. His lecture entitled “Osteopathy in line of apostolic succession with medicine” was the first recorded formal lecture in osteopathy given within the UK. So successful was this inaugural lecture that Littlejohn was invited back to the Society the following year, to speak about osteopathy as a science (Collins 2006). In 1903, Littlejohn visited Europe and contacted the already established American graduates Horn and Walker to discuss the possibility of a school in England. In 1913, Littlejohn returned to England to settle and it was at this time that he set about founding a school in London. On the 7th March 1917, the British School of Osteopathy (BSO) was founded in London. It was first located in Vincent Square, then Abbey House, and Victoria Street and in the early 1930s moved to Buckingham Gate. In 1980, the BSO moved to Suffolk Street and then in 1997 moved south of the Thames into Southwark. Dr. Littlejohn ran the BSO on a basis of pure altruism. It had no state aid. It was non-profit making and all the fees paid by students went into the funds of the school, from which Littlejohn received no salary (Collins 2006). Until 2004, the BSO received no government funding. During this time the largest financial contribution made to the school came from the general clinic that is open to the public and student fees. In 2004, the BSO secured funding by entering a partnership with the University of Bedfordshire (formerly University of

Luton). This partnership sees students receive funded places at the BSO, significantly reducing tuition fees and widening participation and access to osteopathy in British higher education.

It should be noted however that Littlejohn's association with British osteopathy has not been without criticism. In 1935 Littlejohn and the BSO received criticism relating to the provision of education from the House of Lords Select Committee, which was considering the Osteopaths Bill. Littlejohn fought the criticism and continued to have an active role in the development of the BSO until 1940 when due to ill-health he ceased all teaching duties. This remained the case until his death in 1947. Littlejohn has been recognised as having a major influence on both osteopathic education in the UK and in the USA and as contributing to the introduction of osteopathy to the UK (Handoll 1986; Collins 2006).

2.2 PROVISION OF OSTEOPATHIC EDUCATION IN THE UK

Inclusive of the BSO founded by Littlejohn, there are currently nine osteopathic schools in the UK that have been awarded recognised qualification status (RQ) by the General Osteopathic Council (GOsC). These are: The British College of Osteopathic Medicine; The European School of Osteopathy; The London College of Osteopathic Medicine; The London School of Osteopathy; The College of Osteopaths Educational Trust; The Surrey Institute of Osteopathic Medicine; Oxford Brookes University; Leeds Metropolitan University and The British School of Osteopathy.

2.2.1 The British College of Osteopathic Medicine

The British College of Osteopathic Medicine (BCOM) changed its name from the British College of Naturopathy and Osteopathy (BCNO) in 2003. In 1945, the British Naturopathic Association (BNA) was founded as a result of a merger of the Nature Cure Association of Great Britain and the British Association of Naturopathy. The BNA had its own premises in Hampstead in 1954 but in 1961 the BNA became the British Naturopathic and Osteopathic Association (BNOA) and its college, the British College of Naturopathy, incorporated osteopathy to become the BCNO. The first students were enrolled onto the course on the 5th January 1949 with teaching taking place in the rooms of the principle, Stanley Lief, in Park Lane, London. With a move to Lancaster Gate in 1951 and then to Hampstead, BCOM finally moved to its present address in Finchley (Collins 2006).

BCOM currently offers two undergraduate programmes, the Bachelor of Osteopathic Medicine (B.Ost Med) a 4-year full time course, and a 5-year Masters in Osteopathic Medicine for those students who achieve a 2.1 (Upper second) or higher upon completion of the third year of the B.Ost Med programme (British College of Osteopathic Medicine 2008). Both programmes include the award of Diploma in Osteopathy and Diploma in Naturopathy, professional awards denoting competence, and are GOsC and GCRN-accredited enabling professional registration. BCOM also offers a nine-month academic conversion degree allowing previous

graduates with a Diploma in Osteopathy to convert to BSc (Hons) status. All programmes are validated by the University of Westminster. However in April 2008 BCOM announced that they are to enter a funding and validation partnership with London Metropolitan University subject to ratification from the GOsC and HEFCE. This will mean that all BCOM students from September 2008 will receive public student funding and that all programmes will be validated by London Metropolitan University (British College of Osteopathic Medicine 2008).

2.2.2. The European School of Osteopathy

The origins of the European School of Osteopathy (ESO) lie in physiotherapists being taught osteopathy at École Française d'Ostéopathie (EFO) Paris in 1951 guided by Paul Geny. As a consequence of the legal prohibition of osteopathic practice in France, the EFO was forced to close and its principal, Paul Geny, was subsequently imprisoned for illegally practising as an osteopath (Collins 2006). However, in 1965, the EFO, once more under the leadership of Paul Geny, along with 16 undergraduates, relocated to London. The EFO rented rooms from the BCNO but remained an independent school. The French school expanded and continued to attract European physiotherapists who followed a 5-year part time course delivered in French. In 1969, the EFO became the educational department of the Maidstone osteopathic clinic and in 1974; the EFO expanded to include British students as well as welcoming students from other European countries to include Swiss, Spanish, Portuguese and Belgian nationals.

Consequently the school became known as the European School of Osteopathy (ESO). The ESO was founded on the total lesion concept of Fryette and its teachings encompassed the Littlejohn philosophy of total body adjustment, as well as the specific adjustment technique, an elaboration on the work of the chiropractor Parnell. To accommodate the influx of English speaking students, the course became a 4-year full-time course, taught solely in English. The school became a registered charity and was incorporated as a company limited by guarantee relying on income generated by student enrolment. In 1978, the ESO moved to Tonbridge Road, but students still undertook their clinical training under the guidance of John Wernham at the Maidstone osteopathic clinic. However this partnership ended in 1981. 1982 saw the school successfully gain accreditation from the General Council & Register of Osteopaths (GCRO) and an ESO clinic was established in 1983, though for a short time ESO students worked out of the BSO clinic. In 1983, students became eligible for membership to the GCRO and the University of Wales validated a BSc General degree with Honours in 1993. In 1996, the degree was updated to full honours with immediate effect with the first cohort of students graduating in that same year. The ESO currently offers a 4-year full-time BSc (Hons) Osteopathy degree validated by the University of Greenwich (The European School of Osteopathy 2008).

The ESO retains strong links with a number of osteopathic schools in Europe and in 1995/1996 the Collège International d'Ostéopathie (CIDO) requested to be included in the ESO's degree accreditation as a partner

in a partial franchise partnership. Under this agreement, students enrolled with CIDO completed their first two years of osteopathic education in France with their final two years being completed in the UK as students at the ESO. This partnership ensured that French students gained their clinical education and overcame the legal prohibition of osteopathic practice in France. To date, this partnership still exists, however the agreement may come under some scrutiny in the coming years once legislative changes and their impact upon osteopathic education in France have become clear (The European School of Osteopathy 2008).

With the continuing expansion of the school, the ESO bought Boxley House in 1996. This building was to house many of the administration and teaching rooms whilst the main teaching clinic remains in Maidstone, thus retaining strong access links for prospective and current patients. The new millennium has seen the ESO validate the first full-time 1-year MSc course in Osteopathy currently validated by the University of Wales and recognised qualification status was granted to the ESO in 2000 (The European School of Osteopathy 2008).

2.2.3 The London College of Osteopathic Medicine (LCOM)

London College of Osteopathic Medicine (LCOM) was the intended college of the British Osteopathic Association (BOA), based upon the American model of education and practice (Collins 2006). In 1927, the BOA opened a charity clinic in Vincent Square to bring osteopathy to those in the community with limited incomes. Osteopathic physicians in

the UK campaigned to raise money to found a recognised osteopathic college of medicine and surgery in Britain. Due to the war and financial constraints the proposition became unrealistic. In 1946, the London College of Osteopathy opened to offer a one-year course in osteopathy to medical graduates. By 1950 it had graduated ten students and in 1955 was recognised by the GCRO. Between the years 1975 and 1978, the college closed due to financial constraints but reopened in 1978 in smaller premises in Boston Place under the name LCOM (The London College of Osteopathic Medicine 2008).

2.2.4 The London School of Osteopathy (LSO)

The LSO began as the Croydon School of Osteopathy and taught a combined course of naturopathy and osteopathy founded by the Natural Therapeutic and Osteopathic Society. In 1977, the school became a sole osteopathic course and in 1980-1982 the curriculum was revised. During 1982 the school moved from premises in the Kings Road to Putney but by 1992 the school had moved again, this time to the Docklands area of London. Anglia Polytechnic validated the BSc degree in 1993 with the school's first cohort graduating in 1998. In 2001, the LSO moved premises again this time to the East End of London, a short walk from the Mile End Road. The undergraduate course at the LSO is a 5-year part-time programme validated by the University of Brighton since May 2002. LSO also provides an Accelerated Learning Pathway (3 years, part-time) designed for doctors and physiotherapists committed to training as osteopaths (London School of Osteopathy 2008).

2.2.5 College of Osteopaths Educational Trust (COET)

COET is a recent addition to the list of RQ education providers in osteopathy, with its status being granted in 2000. The school began as early as 1948 with informal study groups establishing themselves as the Fellowship of Osteopaths in 1960. A two-year diploma course was established in 1961/1962. In 1974, The College of Osteopathy and Manipulative Therapy emerged, later to become the College of Osteopathy in 1979. In 1997, Middlesex University validated the COET degree. COET is an independent charitable trust based in Borehamwood, Hertfordshire offering a five-year part-time degree course leading to a BSc (Hons) Osteopathy. In collaboration with Keele University, the college now offers a similar programme based in Staffordshire. The first cohort of students enrolled in September 2005 (The College of Osteopaths Educational Trust 2008).

2.2.6 Leeds Metropolitan University

The four-year full-time BSc (Hons) Osteopathy programme at Leeds Metropolitan University is the most recent addition to the RQ providers and hopes to welcome its first cohort of students in September 2008 (Leeds Metropolitan University 2008).

2.2.7 The Surrey Institute of Osteopathic Medicine (SIOM)

The Surrey Institute of Osteopathic Medicine (SIOM) is based at The North East Surrey College of Technology (NESCOT) in Epsom. The

institute offers a 4-year full-time degree programme (BSc (Hons) Ost Med) validated by the Open University. A degree in Veterinary Osteopathy is also in development (Surrey Institute of Osteopathic Medicine 2008).

2.2.8 Oxford Brookes University

Oxford Brookes University (OBU) is a recent addition to the recognised osteopathic education providers in the UK. The five-year part-time programme leading to a BSc (Hons) Osteopathy is the first course to be delivered and incorporated into mainstream higher education. OBU offers fifteen weekend class tutorials and two residential weeks per year. Academic study and practical application of osteopathic techniques accounts for much of the student contact hours. Students also complete 1500 hours of supervised clinical practice in a purpose-built clinic in Oxford. The undergraduate degree was validated by Oxford Brookes University in 2002. A more recent introduction for the University is the development of the four-year full-time BOst (Hons)/MOst which heralds the introduction of the first undergraduate Masters qualification in osteopathy (Oxford Brookes University 2008).

2.2.9 The British School of Osteopathy (BSO)

John Martin Littlejohn's frequent visits to the UK in the early 20th century heralded the inception of British osteopathic education. Littlejohn visited Europe in 1903 calling at hospitals in France, Germany and Austria where he treated a number of patients. During this time, Littlejohn also

visited Britain which heralded his first discussion regarding establishing a school of osteopathy in Britain. Some ten years later, Littlejohn returned to the UK to reside permanently and in 1913 he resumed talks regarding the establishment of an osteopathic school. March 1915 saw the first attempt to incorporate the British School of Osteopathy, however, due to the war effort at that time, the Treasury refused to sanction the organisation of any body involving a significant amount of capital which was not directly associated with the war. This date is still noted in historical documents as being the actual date relating to the foundation of the school (Handoll 1986; Collins 2006). During the war, the school developed through clinical education. A clinic was established in Southend, the first ever building being dedicated to the sole use of osteopathy built by the students of the school. The clinic relocated to Central Hall, Kiln Road, Thundersley, Essex and whilst the clinic was running successfully here, a new centre was opened in Enfield. During the two-year period 1915-1917, approximately 30-50 patients were treated on a weekly basis. The incorporation of the school was limited by the war effort and the foremost condition of establishing the school was that not more than two shares, each to the value of £1, be issued whilst the country was at war. As governing directors, the shares went to Littlejohn and F. J. Horn (Collins 2006). From 1917, the school was housed across two London sites with the main school being situated in Littlejohn's consultancy rooms at 48, Dover Street, whilst the clinic remained in Enfield. Patients at the clinic ranged from individuals unable to pay full fees to volunteers who had been enlisted in war service. The

student body mainly comprised individuals who had found considerable benefit from osteopathy themselves and thus decided to dedicate their career to practising osteopathy.

Following the end of the war, the ban on shares ceased and one share was sold to the British Osteopathic Association. This was to have repercussions for osteopathy in later years when the therapy sought regulation. On obtaining the one share the BOA insisted on ownership of the school with a view to developing British osteopathic education based on the American model. This was consequently refused and relations between the BOA and the BSO became strained. In 1921, Littlejohn completed the organisation of a four-year course in osteopathy, in the role of administrator and teacher for which he received no salary. The course was to combine both theoretical and practical work based on the guidelines of the Associated Colleges of Osteopathy in the USA. First and second years of study were devoted to fundamental subjects such as the basic sciences taught at Chelsea Polytechnic, Sheffield University or King's College London. The final two years of the course were used to develop osteopathic practice and principles (Collins 2006).

Due to expansion, the school moved to Vincent Square which was given to the BSO rent free for some two years by its co-founder, F. J. Horn. It was at Vincent Square in 1925 that the first Diploma was awarded to the first British Osteopath graduating from a school in the UK, Elsie Wynter Wareing. The school was to move again in 1927, this time to Abbey

House, Victoria Street, Westminster where the demand for osteopathic treatment could be adequately met. In 1929, over 200 patients were treated per week in this new location. In 1930, the school moved again this time to 16, Buckingham Gate, SW1. The initial lease was for 21 years with a further lease being issued in 1949. Buckingham Gate was to be the home of the BSO for some 50 years until its move to Suffolk Street in 1980.

The 1930s saw the BSO prosper with the course increasing in popularity and the curriculum and clinical education becoming established. However, it was also a time of great change with the debate surrounding the Osteopaths Bill in 1935 in which Littlejohn and the BSO were severely criticised for providing a level of education regarded as sub-standard by the medical profession and the General Medical Council. However, the GCRO was formed and as a result of discussion and improving relations with the BOA, Jocelyn Proby, a key figure in the BOA along with other notable osteopaths, became members of the BSO Board and external examiners.

After a buoyant decade, which heralded great change for the BSO and British osteopathy, the 1940s saw the Second World War. A number of faculty and students were called up and the BSO's survival during this time was uncertain. The teaching faculty was further weakened by the resignation of Edward Hall and with the deterioration in the health of Littlejohn, his teaching duties ceased. Clem Middleton and Shilton

Webster–Jones (a future principal of the school) took over the day-to-day running of the school but it was slipping further into financial crisis.

After the end of the war, the school sought to rebuild but this was overshadowed by the death of Littlejohn in 1947. Webster-Jones became Principal in 1948 and remained so for some 20 years. 1950 saw a major revision of the curriculum with its move away from Littlejohn's classical osteopathy towards a more mechanistic approach. For some faculty this was deemed inappropriate, including notably John Wernham, who left the school and later established the Maidstone College of Osteopathy. Part of the curriculum change saw a move towards differential diagnosis requiring palpation, observation and examination of both passive and active movements. Audrey Smith, the member of staff responsible for osteopathic diagnosis, also encouraged students to consider lifestyle, occupational and emotional factors in their diagnosis as potential predisposing and maintaining factors and compensatory mechanisms. In direct opposition to classical osteopathy where general osteopathic treatment is offered to the patient, the BSO supported diagnosis determining the treatment. Another osteopath who changed the way technique was taught at the BSO was Clem Middleton. He taught in a step-by-step approach, breaking techniques down into their individual components thus complementing the teaching of diagnosis by Smith. Middleton has since been heralded as the osteopath who laid down the foundations for the teaching of technique over the last 50 years (Collins 2006).

The 1960s saw a downturn in the fortunes of the BSO with financial crisis beckoning as student numbers dwindled to a mere 29 in 1966. The school sought alternative accommodation but nothing in Central London could be found that the school could afford and so in 1965 the lease on Buckingham Gate was renewed. In 1968, the BSO welcomed a new Principal, Colin Dove. He was a firm supporter of osteopathic research and sought to put the profession on a sound, rational foundation. Dove remained as principal at the school for only nine years but during this time encouraged postgraduate education and extended the osteopathic course from three years to four years.

In 1977, the first non-osteopath became Principal, Stanley Bradford. This was not a choice welcomed by the profession and he reigned as Principal for a mere five years. Yet during this time the BSO relocated once more to Suffolk Street, close to Trafalgar Square, a most prestigious location. This was a massive financial gamble for the BSO. Despite this, it led to a surge in student numbers. This time also saw the BSO turn its attention to converting its course to a degree award. Initial discussions with the Polytechnic of Central London broke down but the appointment of Sir Norman Lindop as Principal was seen as advantageous, particularly since he had been knighted for his part in founding the Council for National Academic Awards (CNAA). The BSO decided to work without a collaborating institution but with the support of the Princess Royal as Patron, the CNAA approved the proposal for a BSc degree in 1989. In

1991 under the guidance of Clive Standen, the school survived another financial crisis but with the demise of the CNAA, the school sought another validation body in the form of the Open University in 1993. Due to the continuing financial crisis and the escalating cost of the building in Suffolk Street, the BSO accepted a bid from the University of Notre Dame for the premises and agreed to vacate in December 1996. The BSO struggled to find accommodation in Central London and was forced to put back its relocation until July 1997 when the school moved south of the river Thames to Borough High Street in Southwark. With a new location came a new Principal. Dr. Martin Collins took over in February 1998 and his position as Principal ended in April 2006. Charles Hunt was appointed as Chief Executive and Principal with effect from May 1st 2006.

In 1998 an application was made to the General Osteopathic Council to be granted Recognised Qualification (RQ) status as a provider of osteopathic education. In May 1999, the BSO was granted RQ status after a series of General Osteopathic Council (GOsC) visits and the submission of extensive documentation. Degree validation by the OUVS was delayed until 2000 when the BSO introduced its radical curriculum change in the shape of the Bachelor of Osteopathy degree (BOst), the first of its kind. Today, the BSO is working in collaboration with the University of Bedfordshire and has recently announced a further change to undergraduate provision with the introduction of the MOst, a four-year undergraduate Masters qualification. The school continues to expand with the opening of a new £5.2 million clinic situated five minutes from the

academic centre in Southwark Bridge Road, SE1 (The British School of Osteopathy 2008).

2.3 DESIRE FOR RECOGNITION AND REGISTRATION

The first strides towards recognition of osteopathy and the profession's desire for registration began during 1924-1925 with the founding of the Osteopathic Defence League by Williams Streeter. The aim of this group was to alter the law in order to place osteopathy on a footing of legal equality with orthodox medicine but also to make more widely known the guiding principles of osteopathic practice.

Parliamentary debate ensued with Arthur Greenwood MP suggesting the introduction of legislation to ensure the recognition and registration of practising osteopaths in the UK. The then Secretary of State for Foreign Affairs, Austen Chamberlain, stated that before a register could be successfully founded, osteopaths in the UK must develop colleges and schools of their own rather than educating osteopaths in America. With these suggested changes it was felt the osteopathic curriculum would conform to something approaching "the normal curriculum in this country" (Collins 2006). The desire to reform and improve osteopathic education in the UK was a policy of the British Osteopathic Association (BOA) in 1928. The BOA continued to strive to bring osteopathy before parliament with a view to recognition and the establishment of an independent osteopathic school with an educational status equivalent to existing medical teaching establishments. In 1930 the BOA sought to obtain a Royal Charter to

incorporate it as a legal entity. It was hoped such status would allow the BOA to give registration and protection to the title of osteopath. A total of six counter-petitions to the motion were lodged and so the application failed in 1931. Despite the disappointment, the application had not only raised awareness but had also provoked heated debate and in 1935, as the culmination of years of hard work, the Select Committee of the House of Lords met to discuss the Registration and Regulation of the Osteopaths Bill.

The aim of the Osteopaths Bill was to authorise the establishment of a state register for osteopaths, with a designated qualifying education and standard of proficiency. Evidence was to be heard over a total of twelve days with the main parties supporting the Bill being The Osteopathic Defence League, the BOA, the BSO and the Incorporated Association of Osteopaths. During the course of the proceedings, Dr. William Kelman MacDonald, on behalf of the BOA, cast doubt upon osteopathic education in the UK. During MacDonald's evidence he stated:

> " the BSO has been conducted by Dr. Littlejohn and we all admire his effort. It is an individual effort and it has not yet been enabled to bring its educational standard up to level at which we would like it. We do not regard the diploma obtained by study at the school as a satisfactory standard."

The Bill failed on three key points. Firstly, a satisfactory definition of osteopathy had not been offered throughout the hearing. Secondly, the practice of osteopathy at that time was carried out by some 2-3,000 practitioners of whom only 170 could claim to be qualified and thirdly, the

only osteopathic educational establishment in the UK (the BSO) was described during the course of the hearing as being of negligible importance, inefficient for its purpose and in dishonest hands. The findings of the Select Committee were a severe blow to Littlejohn, the man considered to be the founder of British osteopathy. A response to the criticisms of the Select Committee by Littlejohn and his colleagues at the BSO was published in the Journal of Osteopathy. Littlejohn fervently disputed the claims of William Kelman MacDonald and believed that passing the Bill, and therefore registering and recognising the profession, would rectify the shortcomings in the standards of education at the BSO (Collins 2006).

The harsh criticisms of the Select Committee had stalled the profession's drive for recognition and registration, so a voluntary register was formed. In 1936, the General Council and Register of Osteopaths (GCRO) were incorporated as a company limited by guarantee providing several levels of membership. Full membership was permitted to graduates of US colleges, and, after some later amendments to the course, to graduates of the BSO. Associate membership was granted to those lacking specific academic qualifications but who had been practising osteopathy for a reasonable period of time. After the criticisms of Littlejohn and the BSO by the Select Committee, the BOA wanted to distance itself from the BSO in the hope that such a move would help the progress of any future legislative procedures. The BOA effectively controlled the voluntary register, and thus restricted membership for BSO graduates. It was not

until 1938 that the BOA agreed that graduates of the BSO after being examined by an external examiner could be admitted to the voluntary register.

Discussion regarding recognition and registration continued until 1989, when a working party (King's Fund) was established to discuss the scope of legislation to regulate the practice of osteopathy. Contained within the legislative documentation were a draft osteopaths bill and the framework for the General Osteopathic Council (GOsC), the body responsible for the development, promotion and regulation of the profession. The Privy Council was responsible for the appointment of the first professional and lay members. Applicants for registration were given a period of two years in which to submit the relevant documentation to the Council in the form of the Professional Profile and Portfolio (PPP). After this period, registration would only be granted to those holding a Recognised Qualification (RQ) from an accredited osteopathic school in the UK. Non-registered practitioners could not then legally call themselves osteopaths. Following a number of lengthy hearings in the House of Commons and the House of Lords, the Osteopaths Act was finally given royal assent on the 1st July 1993.

2.4 GENERAL OSTEOPATHIC COUNCIL

The GOsC began work in 1997 drafting documents for the process leading to RQ status for osteopathic schools in the UK. Thirteen institutions expressed an interest in being recognised providers of

osteopathic education in the UK. To date, nine institutions have been successful in their quest. In 1998, the GOsC published the Standard of Proficiency (S2K). This document outlined areas of proficiency in osteopathic practice and education. The Quality Assurance Agency in September 2007 published the subject benchmark statement for osteopathy. The subject benchmark statement has provided a means for the academic community to describe the characteristics of programmes in osteopathy and is an important external reference point for institutions reviewing and developing programmes thus helping in the drive for quality assurance. The subject benchmark is not however, a definitive osteopathic core curriculum and should be viewed as a point of reference rather than a definitive specification for programmes. The subject benchmark statement was developed in collaboration with the GOsC, representatives from RQ providers and the BOA (The Quality Assurance Agency 2007). The draft benchmark statement was available for consultation in early 2007, and the author was able to contribute to the statement during the consultation phase.

The GOsC continues its work to unite and regulate the osteopathic profession. Following a number of years of disquiet amongst osteopaths anxious about the trials and tribulations associated with the registration process and the Professional Profile & Portfolio (PPP), osteopathy is finally working towards a bright future as an integral part of British healthcare.

2.5 ATTAINING RECOGNISED QUALIFICATION (RQ) STATUS IN OSTEOPATHY

The GOsC has a legal obligation to ensure that education providers who offer undergraduate programmes in osteopathy are meeting the Standard of Proficiency (S2K) requirements. This has meant that the GOsC has had the duty of reviewing and monitoring all pre-registration courses in the UK and for those meeting the required standards, awarding Recognised Qualification (RQ) status. Over recent years, the GOsC has been responsible for the organisation and management of the RQ process. The educational provision review begins with the supply of a self-evaluation document (SED) by providers wishing to offer a course in osteopathy. This is followed by an institutional visit by GOsC-appointed "visitors" lasting between two to three days. Typically the review process would be completed within four to six weeks. Based on the findings of the visitors (two osteopaths and one lay member) recommendations are made to the GOsC about the standards of provision. With effect from January 2005, the GOsC appointed the Quality Assurance Agency for Higher Education (QAA) to conduct reviews of programmes of study and the institutions that provide them (General Osteopathic Council and The Quality Assurance Agency for Higher Education 2005). The GOsC undertakes, via the QAA, the review process and retains the right to appoint visitors. The visitors as in the previous review process prepare a report for the GOsC on which they make their own recommendations for awarding qualification status. The QAA manage the review process for the GOsC, basing it upon the principles and style adopted in other QAA

review methods (General Osteopathic Council and The Quality Assurance Agency for Higher Education 2005). All QAA reviews of osteopathic educational provision and providers are to fulfil all of the requirements of the GOsC, its Education Committee and the standards of the QAA (General Osteopathic Council and The Quality Assurance Agency for Higher Education 2005). The QAA currently manage three types of review for the GOsC, these being:

- "recognition review" – initial recognition of a qualification or award.
- "monitoring review" – a mid-cycle review.
- "renewal review" – renewal of recognition.

(General Osteopathic Council and The Quality Assurance Agency for Higher Education 2005).

Reviews are led by a Review Coordinator who is contracted by the QAA and is accompanied by GOsC visitors (osteopaths and lay members). The visitors are responsible for making recommendations to the GOsC and go through a period of training by the QAA in preparation for their role. As in the previous RQ process, providers are required to produce a SED in addition to providing course documentation and/or programme specifications. This documentation is submitted no later than eight weeks before the start of the review. The review process includes a period of discussion between visitors in response to the submission of the SED and course documentation, a visit to the education provider lasting a number of days, further meetings of the visitors and finally oral feedback given to the provider. The QAA and GOsC have set out a number of

criteria against which the provider is reviewed in both the submitted documentation and during the visit. These include documents relating to assessment, achievement, teaching and learning, student progression and governance and management of the institution (including finance and risk management).

As with other QAA reviews, those carried out on behalf of the GOsC use a set of nationally agreed reference points known as the Academic Infrastructure to consider quality and standards in higher education (General Osteopathic Council and The Quality Assurance Agency for Higher Education 2005). Visitors to osteopathic education providers consider during their review the Framework for Qualifications of Higher Education, the subject benchmark statement in osteopathy, guidelines for preparing programme specifications, and the Code of Practice. Based upon the findings of the review, visitors make formal recommendations to the GOsC. This can be expressed as either approval without conditions; approval with conditions; or approval denied. Recommendations are then passed to the Education Committee for discussion within the GOsC. The GOsC can either accept or reject the findings of the review panel and will report these to the Privy Council for approval. The first provider reviews under the management of the QAA took place during the academic year 2005-2006.

The curricular documentation provided by osteopathic education providers directs institutional review in the absence of a definitive

osteopathic core curriculum. The desire to continue to develop the osteopathic curriculum is evident in the subject benchmark statement published in 2007 (The Quality Assurance Agency 2007). To supplement this information, education providers and practitioners often seek out educational and practice-related evidence from other health care professions. In this way, evidence from professions such as physiotherapy has directed the use of exercise therapy in osteopathic practice and undergraduate education.

CHAPTER 3: EXERCISE AND PHYSICAL ACTIVITY IN HEALTH CARE

3.0 CHAPTER INTRODUCTION

The driving force behind the studies contained within this thesis is the understanding and interpretation of exercise therapy in osteopathic education, treatment and management. Before any conclusions can be drawn regarding the application of exercise in osteopathic clinical and educational settings as detailed in later chapters, it is important to have an understanding of the founding principles of exercise and have an awareness of the theoretical underpinning of exercise prescription.

Much of the work outlined in this chapter originates from the theory driving the application of exercise and physical activity not only in clinical and health care settings but also in relation to recreational and performance sport and exercise. When considering the possible implementation of exercise therapy in educational and clinical settings, it is important to have an understanding and appreciation of the current work outlining the relative efficacy of a variety of modes of exercise. This chapter, whilst discussing the principles of exercise prescription, will also provide an introduction to some important points that need to be considered when deciding on the efficacy and clinical applicability of certain modes of exercise. There has been much discussion surrounding the clinical content, validity and applicability of modes of exercise currently featured in randomized controlled trials and practice guidelines, and this chapter will outline some of the key discussion points

surrounding the difficulties in clinical decision-making in light of the current published evidence. Some of the issues raised in this chapter have been identified as key in the potential for exercise therapy implementation by educationalists, students and clinicians in the chapters to follow.

Individual understanding and interpretation of the terms exercise and physical activity can be as different as the physiological and psychological responses to undertaking the variety of activities defined as exercise and physical activity. These terms are often perceived and interpreted differently by people according to gender, class, and sociocultural factors (Tudor-Locke, Henderson, Wilcox, Cooper, Durstine and Ainsworth 2003). It is also realistic to suggest that professionals entrusted with delivering the physical activity message interpret this terminology differently. It is important to be clear about what we mean and understand by exercise and physical activity, particularly when as in the case of osteopaths, they interpret the exercise intentions of their patients and may consider the use of a range of activities as treatment and management strategies. Throughout this chapter and thesis the terms exercise and physical activity will be used in the context of clinical and academic osteopathic education and will refer to specific regimes and activities aimed at improving a wide range of patient outcomes and goals.

3.1 PHYSICAL ACTIVITY

Physical activity can be defined as any body movement produced by muscular contraction that leads to a substantial increase in the individual's energy expenditure (Shephard 1994). Physical activity can be further categorised to include occupational activities and leisure time activity. Leisure time activity means time that is discretionary to the individual, time that is free from work and occupational activities. Activities pursued have been seen to include walking, jogging, swimming, cycling, dancing and exercise within the home (Lan, Chang and Tai 2006). The extent and degree of leisure time afforded to each individual is dependent upon the time spent at work, travel time, and division of work within the home. It is reasonable to assume therefore that the amount of leisure time an individual has at their disposal is dependent upon the variables outlined here. What a person does with their leisure time is an individual choice although there are activities such as those outlined in the work of Lan et al. (2006) to include brisk walking, swimming and cycling that can be taken which will increase energy expenditure significantly.

The importance of engaging in a physically active lifestyle has been the focus of national and international public health guidance materials. In the last decade, the Department of Health has published two key reports outlining the evidence for the benefits of physical activity for health and recommendations for those responsible for implementing policy and programmes aimed at increasing physical activity via exercise, sport and

travel (Dubbert 2002; Department of Health 2004a; Department of Health 2004b). The impetus for the change in policy and increase in guidance materials associated with raising the levels of physical activity amongst both the adult and adolescent population of the UK has been the increasing evidence linking the contribution of increased physical activity to disease prevention and management. Reports published on behalf of the Chief Medical Officer suggest that the estimated cost of inactivity in England is £8.2 billion annually. These figures do not take into account the cost of obesity which alone costs some £7.4 billion (NICE Public Health Collaborating Centre - Physical Activity 2006). Results from The Health Survey for England published in 2003 suggest that physical inactivity is a real problem in the adult population with approximately six out of ten men and seven out of ten women so inactive that it affects their health (Department of Health 2003). Age, gender, social class and ethnicity have all been reported as factors impacting physical activity levels, as well as reported trends of a reduction in walking and cycling as a means of transportation (NICE Public Health Collaborating Centre - Physical Activity 2006).

To date there has been only limited research exploring the impact of national and international physical activity guidelines and the response of the population to recommendations. In Australia, Merom et al. (2006) have published the results from the combined cross-sectional National Health Surveys from 1989-1990,1995-1996 and 2000 exploring the long-term population responses to the physical activity recommendations

made in 1996 (Merom, Phongsavan, Chey and Bauman 2006). In contrast to the current baseline trends reported by the Department of Health in the UK, it appears that Australian adults have increased both leisure time walking and other forms of moderate intensity activity resulting in a 2% increase in the population attaining the physical activity recommendations of five weekly sessions of moderate intensity activity. As with other studies concerned with exploring physical activity levels, this study relied upon the two-week activity recall of respondents and noted that those members of the community regarded as disadvantaged did not alter their levels of physical activity. Valid and reliable measurement of physical activity within the population remains an issue (Keim, Blanton and Kretsch 2004) and more importantly those charged with the role of delivering the physical activity message need to look more carefully at encouraging physical activity in those members of the population for whom activity may have the greatest health benefits and who are currently not being affected by public health messages.

In recent years there has been some discussion about who is responsible for reversing the trend of rising sedentary behaviour in the United Kingdom. Much of the research in this field has focussed on the delivery of the physical activity message from within primary care services. Smith (2004) in a review of the impact of physical activity interventions in primary health care services noted that interventions which yielded a short term improvement in physical activity ranged from brief General Practitioner advice about this single risk behaviour supported by written

materials to more lengthy counselling sessions. What is evident in this review is that successful physical activity interventions often involve major resource and system changes. The time pressures on General Practitioners during the consultation time available to them often impacts the quality and quantity of physical activity advice they can give (Smith 2004). Time as a barrier to assessing and advising patients about physical activity has also been reported in adult nurse practitioners (Burns, Camaione and Chatterton 2000). A primary health care-based counselling intervention has also been seen to have a positive impact upon physical activity levels, using a Physical Activity Specialist to deliver the activity message through the medium of motivational interviewing (Hardcastle, Taylor, Bailey and Castle 2008). Both Smith (2004) and Brown (2006) begin to explore the role health professionals can have in delivering the physical activity message. From an Australian perspective, Brown (2006) suggests that considering the large proportion of Australians who currently report chronic inactivity health-related problems, it would be appropriate from a public health perspective to have every health professional giving basic exercise and physical activity advice (Brown 2006).

This argument is also a persuasive one in the context of UK health care. Delivering the activity message to those who are currently inactive will ultimately have the greatest impact on public health. Osteopaths as health professionals are in a prime position to undertake this role, finding out what their patients would like to do and then addressing the challenge

of behavioural change and maintenance. In light of the overview of definitions of exercise and physical activity, to advise patients on the use of a more generalised approach to exercise, effectively removing the preconceived notions and concepts associated with the terms sport and exercise might be more palatable to those individuals who are not familiar with maintaining an active lifestyle. In support of the concepts outlined here, the General Osteopathic Council in their Standard of Proficiency state that osteopaths should be able to give exercise and lifestyle advice to patients (General Osteopathic Council 1998). It seems appropriate then, that in addition to developing and advising on specific, regional exercises appropriate to the patient's presenting condition, osteopaths might also advise on general exercise in the context of both short- and long-term management. Although this appears to be a general recommendation based on evidence, little research has explored whether osteopaths are indeed reacting to the evidence presented and incorporating it into their practice. It is intended that the studies contained within the body of work presented in this thesis will contribute to the exploration of general and specific exercise advice in osteopathic education, treatment and management.

3.2 AEROBIC CONDITIONING/LEISURE TIME PHYSICAL ACTIVITY/SELF-EXERCISE

National guidelines for general health suggest that five 30-minute sessions of moderate intensity physical activity per week should be a reasonable recommendation (Department of Health 2004b). Typical modes of exercise aimed at improving aerobic conditioning include

aquatic exercise (swimming), brisk walking, jogging, circuit training, aerobics or calisthenics and the use of static gymnasium equipment including treadmills, cycle ergometers, cross trainers and rowing ergometers. Research has suggested that aerobic exercise can produce analgesia through endogenous opioid mechanisms (North, McCullagh and Tran 1990). This type of physical activity is often self-rated and includes non-occupational activity quantified by hours spent engaging in physical activity. It is a useful regimen for all patients, particularly those with limited access to facilities or those previously considered sedentary. Of particular interest is that leisure time physical activity often includes walking, possibly the most accessible form of activity for the majority of the population.

3.3 EXERCISE

The use of the term exercise to describe an activity undertaken during leisure time implies that the activity is being undertaken for a specific purpose such as improvement in health or fitness (Shephard 1994). Exercise can however also be used in a therapeutic sense with the exercise specialist, physiotherapist or osteopath using exercise in a relatively prescriptive way in order to achieve defined goals and treatment outcomes. In some cases, and often dependent upon the presenting patient, the exercise specialist or therapist will specify a mode, intensity and frequency of activity and the duration for which the activity should be performed. The terms exercise and sport are often used interchangeably, but often sport gives connotations of competitive activities that can provoke a range of psychological reactions including anxiety and

excitement (Shephard 1994). The professional prescribing exercise advice should bear in mind the possible interpretations of the term sport and the meanings assigned by individuals. It is inherently difficult to anticipate and interpret individuals' meanings, however some indication of the motivation behind their health-seeking behaviours can be given during the initial contact between patient and practitioner. The information given during the initial stages of interaction can prove to be clear indicators of an individual's meanings and interpretations and their intention to begin or continue with particular activities or exercise regimes. The use of behaviour change theories such as the Transtheoretical Model of Behavioural Change can help a health professional to make decisions about prescribing exercise or advising on changes to levels of physical activity based on the information given during the consultation with the patient (Kim 2006). Evidence suggests that theory-based interventions are often associated with longer-term benefits for the patient (Hillsdon, Foster and Thorogood 2005). It would be inappropriate and unsafe to prescribe exercise, for example, to a previously sedentary, obese individual who shows no intention of adopting a physically active lifestyle: the success of the prescription could be undermined by lack of patient compliance (Fallon, Hausenblas and Nigg 2005). What might be more appropriate here is to educate the patient in the benefits of exercise and physical activity with a view to monitoring their intention to alter their behaviour and exploring the prescription of exercise at a more appropriate stage in their treatment and management (Fallon et al. 2005). Subgrouping patients upon their self-

reported stage of behavioural change has been the focus of recent research (Kim, Hwang and Yoo 2004). Acknowledging the need for homogenous subgroups in tailored exercise interventions, Norman and Velicer (2003) have begun to examine a typology of motivational patterns which may be responsive to different types of strategies and interventions in exercise adoption and maintenance (Norman and Velicer 2003). The six clusters identified in the study (disengaged, immotive, relapse risk, early action, maintainers, and habituated) need to be empirically tested and their clinical applicability explored prior to widespread use in manual therapy. More recent evidence has however called into question the applicability of theory-driven physical activity interventions for perceived at-risk groups. Kinmonth et al. (2008) suggest in their paper that a theory-based, facilitated behavioural intervention for patients considered to be at risk from Type 2 diabetes was no more effective than a physical activity advice leaflet (Kinmonth, Wareham, Hardeman, Sutton, Prevost, Fanshawe, Williams, Ekelund, Speigelhalter and Griffin 2008).

3.4 PATTERNS OF ACTIVITY & EXERCISE

Clear distinctions can be made between exercise and physical activities dependent upon the physiological loading placed on the body and the nature of the activity including the time taken to participate. It is important to understand the distinctions between intensity, frequency and duration, as these parameters are often key in the prescription of exercise advice.

3.4.1 Intensity

Intensity of exercise is expressed in performance parameters as the absolute work rate, often described as either external power output or oxygen consumption (Astrand, Rodahl, Dahl and Stromme 2003). Oxygen consumption as a measure of intensity is the preferred expression in performance paradigms as this eliminates problems associated with the quantification of mechanical efficiency and the variation of interpreting intensity based on the size of the individual. There are of course inherent difficulties in quantifying intensity in these ways for the practitioner in the clinical setting. Practitioners very rarely have the specialist equipment to quantify activity intensity at their disposal. It would also be reasonable to suggest that to quantify the intensity of an activity in either the terms of power output or oxygen consumption would prove meaningless to the majority of presenting patients.

A convenient and more globally meaningful way of classifying the intensity of a given activity is to refer to the oxygen cost of the task per unit of body mass (ml/kg.min). This information can be expressed as ratios of resting metabolism (METS) and has been a popular way of expressing the intensity of set tasks particularly in a rehabilitation setting (Ainsworth, Haskell, Leon, Jacobs, Montoye, Sallis and Paffenbarger 1993; Shephard 1994; American College of Sports Medicine 2000). In physical activity and exercise settings, expressing the observed intensity of an activity as relative to the individual's maximal aerobic power, observed heart rate relative to the peak value (%HR max) or rating of

perceived exertion is favoured. What should be remembered is that expressing intensity as a function of measured peak values varies depending upon the task performed (variation between values achieved in cycle ergometry and treadmill running) and that transient illness or injury can adversely affect peak values relative to the figures measured. Differences in measured physiological workloads at the same rating of perceived exertion have been noted when using different exercise modes (Thomas, Ziogas, Smith, Zhang and Londeree 1995). For example, exercising on a treadmill at a rating of perceived exertion 13 is equivalent to 85% of maximal heart rate. In contrast, working on a cycle ergometer at the same RPE (13), is equivalent to 69% of maximal heart rate (Thomas et al. 1995; Zeni, Hoffman and Clifford 1996; Moyna, Robertson, Meckes, Peoples, Millich and Thompson 2001).

Of use particularly for those practitioners who intend to personally supervise exercise is the Borg scale or the rating of perceived exertion (RPE). This scale was developed in 1971, with perceived exertion ranging from 6 units at rest to 18-20 units indicating extremely hard work. The rating of perceived exertion is widely viewed as a tool that can effectively regulate exercise intensity. More recently, literature has suggested that using the rating of perceived exertion enables patients to ultimately become better perceivers of exertion and to accurately, confidently and autonomously control exercise intensity (Buckley 2003). Perceived exertion can however be influenced by factors other than physiological workload. Medication, muscle mechanics, physical

environment and psychosocial factors such as limited experience of fatigue will inflate effort ratings (Buckley 2003) and so perceived exertion as a measure of exercise intensity should be used appropriately and in some cases, with caution. Evidence for the use of these measures of intensity in a therapeutic setting is limited with cardiac rehabilitation notably using these measures during aerobic and conditioning phases (Coats, McGhee, Stokes and Thompson 1995). The clinical applicability of these measures in manual therapy and osteopathy may be limited by the use of exercise therapy with individuals rather than groups of patients and the focus on anaerobic, strengthening and mobilising exercise rather than aerobic exercise.

The measures of intensity outlined here relate directly to those instances where the exercise being utilised is aerobic in nature. Aerobic exercise is quantified by aerobic power or maximal oxygen uptake, which represents the upper limit of aerobic exercise tolerance and the proportion of exercise attributable to aerobic metabolism (Astrand et al. 2003). Intensity as a factor in prescription should also be considered when utilising other modes of activity including strength and resistance work. The rapid rest-to-exercise transitions sometimes performed at high intensities are characteristic of anaerobic exercise such as resistance-type work. The intensity of this type of work can be expressed as power output and variations in intensity can be achieved through using increased resistance or in some cases by moving the given load at a faster rate. The closer the load is to the maximal achievable velocity, the greater the intensity and

resultant training effect on the musculature being worked (Fleck and Kraemer 1987).

3.4.2 Frequency and Duration of Exercise

Exercise frequency relates to the stated number of exercise sessions completed or prescribed over a determined period of time. Practitioners may wish to elicit frequency information from patients and in this case the patient is often asked to recall how often they have exercised during one week. In some cases, it is appropriate to ask the patient to recall information over a longer period of time; however it is worth remembering that asking for longer periods of recall can introduce inaccurate assessments of activity (Merom et al. 2006). There has been some discussion in recent years over the recommended frequency of exercise sessions for health gains in the general population. The Department of Health in their paper entitled “At least five a week” suggests that five 30-minute sessions of moderate intensity activity are sufficient for gains in general health, reducing the risk of premature death from cardiovascular disease and some cancers whilst significantly reducing the risk of type 2 diabetes and improving psychological well-being (Department of Health 2004b)**.** The frequency with which an individual might exercise is often dependent on their stated goals and the general aims of the exercise sessions. Exercising aerobically at a moderate intensity five times per week might be appropriate for general health gains but for some individuals who wish to improve strength or flexibility, the frequency of the prescription and indeed the duration of the exercise bout will vary (Astrand et al. 2003). Duration can either be expressed as a measure of

time (seconds or minutes typically) or as a repetition. Very rarely are exercises used in the context of a sole repetition. This might only be the case where the individual is concerned with giving some indication of maximal power output as can be the case in resistance work. More often than not, exercises are prescribed in sets, whereby a number of repetitions, as determined by the practitioner or exercise specialist, contributes to a set.

The intensity, frequency and duration of any exercise or the regime in which it is contained will contribute to the physiological response (Astrand et al. 2003). The result or outcomes of any exercise regime can be quantified in terms of general or specific physiological gains. For example, the outcome of a regime of increased aerobic work might be a general improvement in fitness whilst a specific, tailored regime of strengthening and flexibility might result in improved function and range of movement at a specific joint. The gains and adaptations seen as a result of increased activity or exercise, whether it is specific or general, is often referred to as the dose-response relationship (Shephard 1994). This suggests that the response to exercise is proportional to the dose (in this case the frequency, duration and intensity of the exercise or prescription). It is however, feasible to assume that there is a threshold above which no further adaptation or physiological gains can be made, and in some extreme cases, excessive exercise can lead to extreme fatigue, poor compliance and injury. For the practitioner, the balance between the dose of exercise and the desired response/outcome is an important one, and

when giving exercise advice the practitioner should always bear these factors in mind.

3.5 THERAPEUTIC EXERCISE

Therapeutic exercise is used frequently by health professionals with the aim of improving physiological well-being, functional ability and capacity, mobility and sometimes pain relief. The aim of the exercise prescribed is often dependent upon patient diagnosis and the goals of the patient and practitioner. Schnieders et al. (1998) confirm in their work that therapeutic exercise is a common treatment modality used by physiotherapists and Heale suggests that chiropractors utilise exercise within their treatments (Heale 1998; Schnieders 1998). More recently, a prospective study investigating outcome differences between chronic back pain patients treated with group exercise, physiotherapy or osteopathy has identified exercise as a potential therapy for inclusion within the osteopathic consultation (Chown, Whittamore, Rush, Allan, Stott and Archer 2008). The use of exercise outside the immediate treatment environment has also been investigated with home exercise programmes featuring in physiotherapy research (Kolt 2003). Exercise in a community setting developed and delivered by physiotherapists was included in a large randomised controlled trial looking at the effectiveness of physical treatments for back pain in primary care (UK BEAM Trial Team 2004). The type of exercise advice given by manual therapists ranges from activity recommendations (Frost 2004) to progressive general exercise (Frost 1995) to more specific exercise interventions including stretching (Bendix, Bendix, Labriola, Haestrup and Ebbehoj 2000; Chown et al. 2008) range of motion activities (Deyo 1990) and stabilisation exercises

(Byrne, Doody and Hurley 2005). There is a wealth of literature detailing the uses of therapeutic exercise in a clinical setting with some of the most common aims of a therapeutic exercise prescription being to:

- Increase or maintain range of movement (ROM).
- Increase muscular strength.
- Increase muscular length.
- Reduce pain.
- Improve physiological parameters to include power and endurance.
- Improve stability.
- Improve flexibility.
- Facilitate behavioural change to improve well-being and self efficacy. (Geffen 2003; Everett 2005; Zakas, Balaska, Grammatikopoulou, Zakas and Vergou 2005).

Outlined in the following sections are some of the more frequently used therapeutic exercise approaches selected by the practitioner to fulfil specific patient aims.

3.5.1 Range of movement

Range of movement can be defined as the functional component of movement at an individual joint (Everett 2005). Of particular concern to the health care professional considering the use of therapeutic exercise is the observation of the joint and the identification of abnormal limitations to the range of movement. Causes of abnormal limitations can include injury

or disease to the structure, surface or surrounding soft tissues and the effect of decreased range of movement should be considered in light of the role and importance of the joint in functional daily activities. Upon identification of the cause of the abnormal limitation, treatment can be tailored to impact on the changes which have been seen to limit the range of movement. Therapeutic exercise aimed at increasing range of movement at a limited joint should also attempt to strengthen and stabilise (Everett 2005). Both passive and active movements are commonly used in the treatment approaches to increase range of movement. Passive movements are those that are produced by an external force and can include stretching, manipulation and relaxed passive movements. In contrast, active movements are those within the unrestricted range of a joint produced by an active muscular contraction and include active assisted exercise and free exercise (Everett 2005). Therapeutically, active movements are often performed in the form of exercise and this may be with the assistance of the health professional or as active exercise undertaken solely by the patient. In contrast, passive movements can include stretching which by taking movement at the joint beyond the abnormal available range should result in a change in the length of soft tissues crossing the joint and increase or regain available range of movement (Everett 2005). Recent research with a group of élite athletes (water polo) has shown that a manual therapy intervention which included passive stretching at the hip significantly increased rotational range of movement and had a minimal effect upon pain (Mosler, Blanch and Hiskins 2006).

3.5.2 Flexibility

Flexibility has been defined as the range of movement of a single joint or at multiple joints (Holland, Tanaka, Shigematsu and Nakagaichi 2002) with flexibility exercises being used both in the prevention of injuries (predominantly used in athletic populations) and in the restoration of normal joint movement. A reduction in flexibility has been seen to contribute to reduced joint range of movement, mobility, balance and also contribute to a decline in the ability to carry out daily activities to a desired level (Zakas et al. 2005). Graduated stretching over a period of time has been seen to increase the length of both the contractile and connective tissues contributing to the restoration of normal joint motion (Harvey-Sutton, Wilson and Geffen 1998). Flexibility has been seen to be effected by three modes of stretching these being static, ballistic and proprioceptive neuromuscular facilitation. Static stretching is often the mode of choice in a therapeutic setting due to simplicity and reduced risk of trauma and injury (Zakas et al. 2005).

3.5.3 Strengthening Exercises

Therapeutic strengthening exercise is commonly used to minimise disuse atrophy, increase circulation and maintain muscle condition. Isometric strengthening where the muscle contracts without movement is extremely useful in joint injury. Isotonic strengthening where muscle contraction takes the joint through the range of motion is useful where the range of motion is characterised as being pain-free. Isotonic strengthening often involves additional loading characteristic of typical resistance type work.

This is particularly useful in the development of functional strength and power (Geffen 2003). Research has shown that both pain tolerance and pain thresholds are increased following the utilisation of resistance and isometric exercise (Koltyn 2000). Strengthening exercises are the mainstay of a number of low back pain interventions with this mode of exercise being used as an integral part of a multimodal approach (Donchin, Woolf, Kaplan and Floman 1990; Hansen, Bendix, Skov, Jensen, Kristensen, Krohn and Schioeler 1993; Risch, Norvell and Pollock 1993; Bentsen, Lindgarde and Manthorpe 1997; Ljunggren 1997; Descarreaux, Normand, Laurencelle and Dugas 2002; Petersen, Kryger, Ekdahl and Olsen 2002; Aure, Nilsen and Vasseljen 2003; Friedrich, Gittler, Arendasy and Friedrich 2005). As is the case in exercise prescription for performance enhancement, exercise progression is a key element in any therapeutic programme. Progression may be achieved by gradual increases in loading utilising resistance equipment. For patients without access to such equipment, exercises that use the patient's own body weight as resistance can be used.

3.5.4 Proprioceptive training

Proprioceptive training aims to increase the speed and efficiency of muscular control to prevent re-injury (Geffen 2003). Proprioceptive training can include progressive static balance training (progression from firm to labile surfaces) and variation in the difficulty of balance and control exercises (increasing the speed required to complete a proprioceptive task) (Geffen 2003).

3.5.5 Spinal Stabilisation /core strengthening

This is a very specific therapeutic regimen designed to control pain through active segmental stabilisation protecting the spine from strain and re-injury (Sung 2003). The programme is based on theoretical knowledge with clear recommendations for exercise progressions once the stabilisation skill has been mastered. It involves co-contraction of transversus abdominis and multifidus but is reliant on highly-skilled exercise professionals or practitioners to teach the skill to the patient. Focused on pain relief through active segmental stabilisation, progressions associated with this mode of exercise are clearly defined, especially once the skill of co-contraction has been mastered (Jull and Richardson 2000).

3.6 THERAPEUTIC EXERCISE AND BEST EVIDENCE – CONSIDERATIONS FOR PRACTITIONERS

In the absence of research focussing on osteopathic practice, therapeutic exercise has been identified as a key tool used by physiotherapists to restore and improve patients' musculoskeletal health (Kerr 1999). A wide range of modes of exercise have been the focus of attention in randomised controlled trials and other studies looking for the best available evidence to support the use of exercise therapy in the treatment and management of musculoskeletal disorders. This evidence may in turn help us identify and interpret the modes of exercise used by osteopaths as revealed in the later chapters of this thesis.

The search for the “silver bullet” in the treatment of these disorders has in the last decade resulted in an unprecedented number of randomised controlled trials and systematic reviews investigating a number of interventions at the disposal of the physical therapist, including a range of modes of exercise (Delitto 2005). The observer would suggest that the physical therapy professions should welcome this focussed attention and look to this published best evidence to drive forward their clinical practice. It would appear that with such a wealth of evidence investigating a wide range of exercise modes that the clinician might simply look to the evidence to aid their clinical decision making. Making a decision based on the best available evidence would suggest that the clinician has an uncomplicated choice with a clear expectation of outcome following the use of the chosen exercise intervention and prescription. This however, is not the case.

To use low back pain literature as an example pertinent to osteopaths, research has systematically focussed on the use of exercise therapy as an intervention, yet there is evidence to suggest that practitioners are not reacting to the published guidelines and recommendations (Foster, Thompson, Baxter and Allen 1999; Armstrong, McDonough and Baxter 2003) and that shortfalls in the design of a number of the trials has left the practitioner unsure of the intervention’s true clinical efficacy or applicability.

Many of the studies included within systematic reviews of available evidence are undoubtedly methodologically sound and often patient-centred. The inclusion criterion of a systematic review often ensures this. There is the notion that for a trial to be included in a systematic review, it must be the best evidence available giving the intervention featured a level of endorsement. Although this may be the case for the trial methodology, closer scrutiny of the exercise intervention often leaves the clinician feeling that the approach and outcomes measures utilised resembles very little of real world clinical practice. This feeling is exaggerated in a holistic practice such as osteopathy, where the clinician spends time evaluating the patient in order to provide a treatment plan tailored to the individual (Seffinger 2003).

The choice of outcome measures in a number of exercise trials has been questioned with changes in physical function rarely being related to improvement in symptoms such as pain (Klaber Moffett and Mannion 2005). McCarthy & Cairns (2005) suggest that we should question whether the outcome measures commonly selected have great enough content validity to encapsulate the effect of treatment. In most cases, the trials are powered enough to describe the change in only one outcome rather than the barrage of outcomes used to increase measurement validity (McCarthy and Cairns 2005). Failure to identify the specific effect of an exercise approach, which should ideally be clinically meaningful, renders it difficult for the therapist to make fully informed decisions about their choice of exercise mode for a specific presenting patient.

Typical of a number of the trials exploring the use of exercise is the “one size fits all approach” to exercise, with a regimen being given to patients without due consideration of clinical presentation (Delitto 2005). The immediate priority it seems for future trials is to address the notion of patient classification, particularly in low back pain, and this has been discussed in some detail within associated literature (Borkan, Koes, Reis and Cherkin 1998; McCarthy and Cairns 2005). A prospective cohort trial published by Hicks et al. (2005) has attempted to lay the preliminary foundations for developing a clinical prediction rule for determining which patients with back pain respond to a stabilisation programme of exercise (Hicks, Fritz, Delitto and McGill 2005). The predictors of benefit noted in this study were all collected at the time of clinical examination and although this might help practitioners to assess the relative cost-benefit ratio for the implementation of a programme of stabilisation with defined groups of patients, little emphasis can be placed on the trial because of the small sample size and limited outcome measure of disability.

It needs to be understood in the wider community that a patient’s classification during an episode of pain is ongoing and that the treatment and management approach can change over the process of care. This can have repercussions for the programme of exercise offered to the patient, with a variety of modes of exercise being employed at different stages, progressing at different rates during the treatment and management process (Jette and DeLitto 1997). It is important therefore

that practitioners are well versed and have the knowledge and ability to utilise a range of modes of exercise available to them and the patient.

There is no clear single mode of exercise that can be categorically viewed as the best possible mode of exercise for acute or chronic low back pain patients. Similar statements can be made in relation to other musculoskeletal disorders such as arthritis. Published trials have not helped in the identification of such a mode of exercise, as in most cases multiple co-interventions are included within a package of care, rendering it impossible to identify single intervention effect sizes. There is of course the argument that very rarely is a single intervention used in the treatment or management of musculoskeletal disorders and that the provision of a package of care to include exercise mirrors real world clinical practice more closely. It may be then that we have to realise that there will be limited returns on the trials that investigate sole interventions, and that we should focus more on research that reflects clinical practice even if it means we cannot categorically endorse one or more single modes of exercise.

There is the suggestion here that health professionals should be cautious with the evidence provided and be wary of forced implementation. This is not to say that it cannot inform or guide the evaluation of clinical practice. There are few national or international surveys of the actual implementation of exercise in the clinical setting. However, a small scale cross sectional survey of outpatient physiotherapists in a hospital setting

in the Republic of Ireland explored the use of exercise therapy for acute and chronic low back pain patients. The most popular exercise therapy for both acute and chronic low back pain was a programme of spinal stabilisation exercises, followed by McKenzie and abdominal exercises (Byrne et al. 2005). The popularity of these approaches in the clinical management of low back pain patients conflicts with the dated clinical guidelines and their use has been attributed to extensive provision of postgraduate courses and well-publicized positive evidence endorsing the use of these approaches (Byrne et al. 2005). To date, there have been no similar surveys exploring British osteopathic practice; however the qualitative work involving practitioners detailed in chapter seven of this thesis has provided scope for comparison between the therapies and chapter seven will explore whether osteopaths are utilising published evidence in their clinical practice and management.

Despite the outlined shortfalls in the published evidence, clinicians will undoubtedly continue to utilise exercise therapy in the treatment and management of their patients. Many of the published papers give an outline of the exercise interventions used, although much of the description and focussed research relating to the specifics of the prescription (intensity, frequency and duration) is often limited. This undoubtedly hampers the practitioner's ability to replicate the exercise interventions featured but some indication of the differing modes of exercise can be gleaned from reading the evidence. In addition to giving general exercise and physical activity advice, there are many modes of

exercise available to osteopaths and other physical therapists. The ultimate drive behind the selection of any exercise approach should be the envisaged patient outcome and goals (e.g. improvement in function, reduction in symptoms, pain relief, return to work, reduced dependence on medication) (Worsowicz, Brown and Cifu 1998; Hanada 2003; Fransen 2004; Stanos, Muellner and Harden 2004) and the specificity of the exercise approach. The short-term benefits of utilising an exercise approach should be considered and these might legitimately include overcoming activity limitations and restoration of activity levels (Waddell and Burton 2005). Long-term goals might include an overall improvement in fitness and encouragement in exercise participation as part of a healthy lifestyle. This in turn can have an impact on long-term disease progression and disability as well as reducing the risk of co-morbidities associated with a predominantly sedentary lifestyle (e.g. hypertension and obesity) (Fransen 2004). Rainville et al. (2004) more specifically suggest that therapeutic exercise can have an effect in three distinct areas specifically in low back pain, these being improvement of physical function, reduction in the intensity of back pain and reduction in disability (Rainville, Hartigan, Martinez, Limke, Jouve and Finno 2004). Each of these areas, either alone or in combination, might drive the practitioner's decision to utilise exercise as part of their treatment and management. As explored in chapter seven of this thesis, it is interesting to note how these factors have contributed to the decision-making process of practitioners in relation to exercise therapy.

It would also be feasible to suggest that, in the absence of endorsement of any one single approach by the evidence, the choice may be guided by patient and practitioner preference, the desired functional outcome for the patient and/or the economic constraints affecting the availability of specialist equipment or facilities (Rakel and Barr 2003; Klaber Moffett and Mannion 2005). As the evidence base continues to grow, practitioner choice will continue to increase and so does the importance of making an informed decision.

There is clearly a wealth of information that may influence a practitioner's decision to use exercise therapy. For the osteopath, there may also be due consideration of osteopathic philosophy and how exercise therapy fits into the osteopathic model of practice. The following chapter explores osteopathic philosophy and looks at the osteopathic evidence and rationale for the potential inclusion of exercise therapy in osteopathic treatment and management.

CHAPTER 4: EXERCISE AND OSTEOPATHIC CONCEPTS, PHILOSOPHY AND PRACTICE MODELS

4.0 CHAPTER INTRODUCTION

The nature of osteopathic philosophy, concepts and practice means that there are no true models of osteopathic treatment. The philosophy and concepts underpinning osteopathic practice give context to the osteopath's distinctive approach to health care. The underlying philosophy acts as a unifying set of ideas for the organization of scientific knowledge in relation to all phases of physical, mental, emotional and spiritual health, along with distinctive patient management principles. These concepts form the basis for practising osteopathy. Viewpoints and attitudes arising from osteopathic principles give osteopathic practitioners an important template for clinical problem-solving and patient education (Stone 1999; Seffinger 2003). It is within the philosophical paradigms of osteopathic practice that an osteopathic rationale for the implementation of exercise in the treatment and management of a patient may be provided.

The work and discussion contained in this chapter provides context for the findings in both the educational and clinical studies exploring understanding and decision-making processes associated with exercise therapy.

4.1 THE ORIGINS AND NATURE OF OSTEOPATHY

Andrew Taylor Still (1828-1917), the founder of osteopathy, was convinced that 19th century medicine and patient care were inadequate, so he aimed to improve all aspects of medicine and place them on what he viewed as a more rational and scientific basis. He created an innovative system of diagnosis and treatment with two major emphases. The first focussed on the treatment of disease whilst emphasising the normalization of body structure and function. Practitioners required a detailed knowledge of anatomy from which to base diagnostic and clinical work, most notably palpation and manipulative treatments. The second emphasis of practice was far broader, highlighting the importance of health and well-being and the avoidance of negative health habits (Seffinger 2003).

The origins of osteopathic philosophy can be traced back to the influential figures of Hippocrates (c.460BC-c.377BC), Galen (c.130-c.200) and Sydenham (1624-1689) who each criticized standard medical practices and focussed on the patient's natural ability to heal. Still envisaged osteopathic practice and care in a similar way and combined contemporary philosophical concepts and principles with existing scientific theories and accepted different aspects of these philosophies and judged which would work best for his patients and practice. Developing Still's initial thoughts on combining holistic practice with scientific theory, the Charter of the first osteopathic school stated that

their aim was to improve the current system of osteopathic medicine by introducing a more scientific and rational approach (Seffinger 2003).

Whether British osteopathy has truly achieved holistic practice integrated with scientific thinking remains to be seen and many British osteopaths would argue that such an aim is far removed from the original concepts envisaged by A. T. Still. James Jealous, an American practitioner, presents an argument for osteopaths to accept the death of osteopathy. Jealous (1999) claims that osteopathy in the USA is now no different to allopathic medicine and that the principles on which osteopathy were founded are gone. Jealous goes on to suggest that osteopathy is primarily an alternative to orthodox medicine and is concerned with finding the health in the patient rather than the disease (Jealous 1999). This may indeed be the case in the United States but it is clear that the traditional osteopathic principles still underpin education and practice within the UK.

Jealous' paper, presented at an American Osteopathic Association Convention in 1999, draws on one of the key osteopathic concepts identified by Still in his early work. This was that the practitioner does not cure disease, but is responsible for correcting structural disturbances and thus encouraging the patient to heal his or herself. Lesho (1999) also stated that osteopathic medicine is a therapeutic system based on the premise that the primary role of the physician is to facilitate the body's inherent ability to heal itself. Osteopathic philosophy maintains that the

structure and function of the body are inseparable and that the problems in one organ affect other organ systems (Lesho 1999).

In 1879, after practising combined orthodox medicine and osteopathy, Still became convinced that his approach to osteopathic medicine, focussing on the emphases of manipulation and promoting healthy living and well-being, achieved the same or better results than standard orthodox care which used predominantly medication. In the latter part of the 19th century, osteopathy was embraced as being not only a neuromusculoskeletal–oriented diagnostic and treatment system, but also a comprehensive and scientifically-based school of medicine that embraces a distinctive philosophy (Seffinger 2003).

Classic osteopathic philosophy can thus be organized in terms of health; disease and patient care as illustrated in Figure 4.1.

Figure 4.1: Classic osteopathic philosophy (Seffinger 2003)

Health

1. Health is a natural state of harmony.
2. The human body is a perfect machine created for health and activity.
3. A healthy state exists as long as there is a normal flow of body fluids and nerve activity.

Disease

1. Disease is an effect of underlying, often multifactorial, causes.
2. Illness is often caused by mechanical impediments to normal flow of body fluids and nerve activity.
3. Environmental, social, mental, and behavioural factors contribute to the aetiology of disease and illness.

Patient Care

1. The human body provides all the chemicals necessary for the needs of tissues and organs.
2. Removal of mechanical impediments allows optimal body fluid flow, nerve function, and restoration of health.
3. Environmental, cultural, social, mental and behavioural factors need to be addressed as part of the management plan.
4. Any management plan should realistically meet the individual needs of the patient.

4.2 EXERCISE AND PHYSICAL ACTIVITY WITHIN OSTEOPATHIC PHILOSOPHY

Osteopaths have long regarded patient care as the paradigm in which exercise and physical activity feature as part of treatment and management. In his early years of osteopathic practice, Still emphasised the importance of a comprehensive treatment plan for the patient. Although Still was heavily committed to the use of palpatory diagnosis and manipulative treatments, he acknowledged and continued with the many other aspects of patient care (Seffinger 2003). Still noted the importance of patient education and regularly added exercise as a behavioural adjustment to his management of patients. In his work, Osteopathy Research and Practice (1910), he noted the importance of giving hope to patients and, at the same time, providing them with a realistic approach to managing their own clinical condition (Still 1910). The emphasis of the patient as being in partnership with the practitioner and to some extent, responsible for his or her own long term health care, was a strong philosophical approach adopted by Still. It will be interesting to consider whether this philosophical approach continues to be adopted by contemporary osteopaths and chapters six and seven explore this further.

The American Osteopathic Association recently proposed the consideration of a number of key principles in patient care and whilst the patient is undoubtedly the focus for health care, they reiterate that the patient must take the primary responsibility for his or her health, adopting

a healthy lifestyle and adhering to any recommendations given to them by the osteopathic practitioner including recommendations for exercise and physical activity (Seffinger 2003). These recommendations although drawing on osteopathic philosophy are also reflective of orthodox standards of care. The osteopath's potential role in the promotion of healthy living, which undoubtedly includes the encouragement to participate in exercise and physical activity, has been viewed by a number of practitioners as image-enhancing. Health as described by the World Health Organization includes patients' physical, mental and psychosocial capabilities used in performing tasks demanded by their daily activities (Tones and Green 2004). An environment that emphasises specific interest in well-being is an important part of any health care plan. Physician attention to all components of health (including exercise and physical activity) should be included in the plan to advance osteopathy's image (Heath and Kelso 1999). Although similar guidelines for patient management and care are not widely seen in British osteopathic literature, The Standard of Proficiency (S2K) documentation written and provided by the General Osteopathic Council notes the importance of exercise in osteopathic management and even goes as far as stating that practitioners should be aware of the premise of exercise prescription and the usefulness it has for the patient.

To date, British practising osteopaths have provided only limited indirect evidence for including exercise as a fundamental adjunct to current osteopathic treatment. The work of Chown et al. (2008) details the nature

of an osteopathic consultation in the context of a prospective randomised trial of chronic low back pain patients to either group exercise, physiotherapy or osteopathy. The osteopathic consultation is seen to include stretching and exercise advice (Chown et al. 2008). Sandler (1991) provides a historical perspective to the osteopathic treatment approach stating that osteopathy is moving away from the narrow, structural, even reductionist basis of osteopathic education towards an integrated and deeper understanding of the potential contribution of osteopathy to patient health care. Perhaps this reflects broadening of treatment horizons and delving deeper into the treatment options available to osteopaths. However, there is limited documented evidence to show that osteopaths are including exercise in their treatment and management of patients.

At the time of writing, there is only one study which focuses on the osteopathic use of exercise in the management of British patients. Lloyd (1993) looked at the use of osteopathic maintenance treatment, which included the use of and recommendation of exercise by the practitioner. Osteopathic maintenance treatment is by no means a universal osteopathic policy, with some arguing against it on philosophical grounds (that it does not encourage patients to take responsibility for their own welfare, nor does it address psychological, social or environmental factors).

In the case of the work of Lloyd (1993), osteopathic maintenance treatment was defined to include self-help policies and assistance directed to other relevant factors. Additional to maintenance treatment, care for the patient also had to include some form of manual treatment. The study was implemented in 1991 as a retrospective study, whereby 5.3% of registered osteopaths (as of 1991) replied. Of this sample, 98.8% had used osteopathic maintenance treatment (as defined by Lloyd) at some point. Most of the osteopaths replied that the reason for the use of osteopathic maintenance treatment in their practice was due to personal preference of practice style and personal experience in practice (Lloyd 1993). Despite the widespread use of maintenance treatment, 96% of respondents reported that they did not monitor the results of the maintenance treatment given to the presenting patient. Utilisation of outcome measures in osteopathic practice is not widespread and the report that osteopaths do not monitor results of treatment is not surprising.

There were additional reasons for giving maintenance treatment as an adjunct to manual techniques, these being: where occurring, postural degenerative or abnormality considerations suggest relapse was likely; policy taught at undergraduate level or commended by a respected colleague; patient repeatedly re-presented; patient requested continuing care; theoretical conviction that the policy must be efficacious; policy was a mark of professional care and would enhance the esteem of the

profession; personal experience of spinal pain; placebo support of the patient (Lloyd 1993).

This study surveyed a rather small percentage of practising osteopaths registered in 1991 (5.3%), and although definitive conclusions regarding the use of exercise in osteopathic treatment cannot be made, it is clear that osteopaths are aware of alternative treatment options available to them. Of note in this study is the variety of reasons given for including maintenance treatment in the management plans of patients. These reasons appear to agree with the anecdotal evidence provided by current osteopaths who suggest that their reasons for using exercise in osteopathic management are varied and are dependent in the main on personal experiences both during osteopathic training and during their careers. Indeed osteopathic reasoning for the potential inclusion of exercise therapy is explored further in chapters six and seven of this thesis.

In the work of Lloyd, 96% of all respondents claimed that they did not monitor the results of maintenance treatment given to their patients. The argument for evidence-based medicine may mean that practitioners need to take a careful view of monitoring not only patients with regards to the exercises they prescribe but also the variety of other techniques they employ on a daily basis.

Basing treatment on evidence is an important focus for discussion in osteopathy. Heath & Kelso (1999) detail in their paper the progress the American Osteopathic Association (AOA) is making to replace opinion-based decisions with those based on evidence in health care delivery and management. They are now emphasising the need for practitioners to make decisions supported by an evidence base on patient evaluation, management and measuring health outcomes (Heath and Kelso 1999). This is in agreement with work in chronic pain suggesting core outcome measures encompassing the domains outlined by the AOA (Dworkin, Turk, Farrar and IMMPACT Team 2004). The achievement of this would undoubtedly contribute to the quality of evidence in the field, giving more influence to findings of treatment efficacy and ensuring that comparisons between trials and treatments can be made. Heath & Kelso (1999) stress that word-of-mouth and patient testimonials are no longer sufficient in 21st century health care and that patient satisfaction, improved health status and effectiveness in managing patient health problems must be documented. With the introduction and increasing importance of clinical governance in the UK, British osteopaths might find themselves under considerable pressure to alter the way in which they practise. However, arguments against adopting this might centre around the potential loss of the osteopathic heritage and the loss of the emphasis on restoring and maintaining neuromusculoskeletal functions and their relationships to health. US practitioners recognise this fact but also hold high regard for clinical governance. A recent US mission statement was written to include and acknowledge the osteopathic heritage but they also accept the need

for the osteopathic management of health care delivery to include publishing guidelines for health assessment procedures and measuring health care effectiveness (Seffinger 2003). Elements of an osteopathic health care plan need to address historical foundations improving the health of the presenting patient. This should include research on the effectiveness of manual treatment (interventions) used in general, specific or adjunctive care to include exercise prescription.

4.3 HEALTH PROMOTION IN OSTEOPATHIC CARE

In the original concepts of osteopathy written by Still, there is an expectation that the patient should adopt a level of self-care and become responsible for his or her own well-being. The World Health Organisation (WHO) has adopted a rather simplistic view of health, defining health as "a state of complete, physical, mental and social well-being and not merely the absence of disease or infirmity" (Tones & Green, 2004, p 14.). The WHO's somewhat dated definition of health (over 60 years old) has been described as idealistic as most people rarely achieve a complete state of well-being (Lucas & Lloyd, 2005). Despite this, the notion that health is much more than the absence of disease is a fundamental concept in health promotion. The osteopath could be regarded as contributing to the empowerment of the patient to act in his or her own interests – a common aim in health promotion. Such concepts in health promotion entail individuals being motivated to develop a concern for and an interest in their own health and then to work together with others on trying to improve matters. Tones and Green (2004) suggest that the

emergence of health promotion as a discipline was in direct response to the need to address both environmental and behavioural determinants of health and effectively to “make healthy choices easy choices” (Tones and Green 2004).

“Empowerment” came to be used to describe the process by which individuals acting in groups could develop sufficient resources to act in their own long-term interests. In the context of osteopathic practice, a useful definition of empowerment is offered in the work of Lucas and Lloyd (2005) where empowerment can be viewed as having control over one’s life, being able to exercise choice in terms of what one does and is, and allows scope for development (Lucas and Lloyd 2005). In practice this means that those health care professionals charged with promoting health may adopt broad strategies. This may mean the creation of an environment supportive to the achievement of health but of more significance to osteopaths, providing people with the information and skills required to make health decisions and mediation between groups to ensure the pursuit of health (Tones & Green, 2004).

Key to the success of health promotion is effective health education and healthy public policy. Ensuring that individuals are educated in making informed choices is essential to the success of health promotion strategies. Tones & Green (2004) also suggest that to achieve individual empowerment, the service providers and organisations responsible for promotion must go through a process of health education. This scenario

would recommend that osteopaths as health care professionals striving to educate and promote healthy behaviours and lifestyle choices should be well versed in appropriate education, be competent in communicating this information with patients and be aware of the health-promoting role of the osteopath and the General Osteopathic Council as the body responsible for professional issues. The work in chapters five, six and seven of this thesis will help to build a current picture of whether osteopathic educators and practitioners have undergone a process of health education and whether they are in fact in a position to promote healthy behaviours to their patient groups.

The role of the osteopath in facilitating individuals to feel empowered to make behavioural change needs careful consideration. There appears to be some consensus in the literature suggesting that there is often limited regard given to the notion that the way in which health care professionals would like to improve a patient's health is in fact of importance for the patient themselves (Lucas and Lloyd 2005). People make lifestyle choices for a variety of reasons. For some, the choice is limited and this can be a function of education, socialization, situational factors and goals and economic conditions. Even when an individual can be viewed as having an enhanced capacity, not always are the choices made healthy ones. Choices are rarely made for purely health reasons. Individuals may choose to adopt behaviour for economic reasons and in some cases the behaviours are considered to be unhealthy. Essentially the choice is driven by the individual's desire for and values associated with quality of

life. Raeburn & Rootman (1998) suggest that quality of life is often defined as a goal and that health decisions, whether considered healthy or not, are made to make a contribution to an individual's own quality of life. The term empowerment is often misconstrued and misunderstood by health care professionals and very rarely is the experience of empowerment investigated from the perspective of the patient. What has been revealed is that empowerment is the ability to define and express individuals' own needs rather than being directed by the health care professional. In turn, they may view themselves as experts about their own needs over and above the views held by their practitioner. This goes against the concept that the practitioner is the expert in the patient-practitioner relationship, and the need for the practitioner to be an active listener and respond to the desires and needs of the patient is paramount. There is evidence here then that patients should themselves inform the strategies for health promotion both in the context of national policy and personal treatment and management (Lucas and Lloyd 2005). By doing this, the practitioner should be aware that the desired behavioural outcome (adoption of an active lifestyle for example) may not be of importance to the patient and consequently the desired behavioural change may not be adopted. The important point here for practitioners is to be reflective listeners with their patients. Often patients will give clear indications of their exercise and physical activity intentions during the patient-practitioner interaction and it may be that the patient's own needs and goals in relation to exercise do not mirror those of the osteopath. To strive for a behavioural change that has little meaning or importance to

the patient will often result in poor concordance between the patient and health care professionals' perceptions (Horne 1998). The role osteopaths adopt in health promotion and behavioural change in relation to physical activity and exercise is explored in greater depth in chapter seven.

In summary, the paradigm of patient care has been regarded as the best place for exercise therapy and physical activity in osteopathy with A. T. Still, the American Osteopathic Association and to some extent British standards of osteopathic proficiency agreeing, by putting the patient in direct partnership with the practitioner over activity-based decisions. To date, there is limited research evidence for the use of exercise therapy in osteopathic practice, but with an increasing focus on the necessity for evidence-based practice, osteopaths find themselves looking to the evidence from other therapies to guide their decision-making processes.

In tandem with the osteopathic model of patient-practitioner partnership, osteopaths may also find themselves increasingly looking to models of health promotion and education in relation to exercise therapy and physical activity in osteopathic practice. In the context of wider health promotion, osteopaths could be viewed as enabling the empowerment of their patients in adopting healthy lifestyle choices to include the adoption and maintenance of physical activity. To complement this process, osteopaths could also be viewed as educators, providing their patients with the skills and knowledge necessary for behavioural change. An important conflict in this perceived health promotion and education role is

the understanding that since health behaviour selections are based on individual choice and circumstance, the choices made are not always healthy ones. This is an important conflict that the osteopath might need to consider and reflect on when offering exercise advice to their patients.

4.4 THESIS AIMS

The specific aims of the thesis were to:

- Explore the development of osteopathy in the United Kingdom and its paradigms, in order to contextualise the development of exercise therapy within the osteopathic framework of practice.
- Identify an accurate current picture of the inclusion of exercise in the United Kingdom undergraduate osteopathic curriculum to provide both context and background to the potential use of exercise in osteopathic practice and patient management.
- Explore the interpretation of the curriculum in the delivered and received osteopathic undergraduate programmes.
- Investigate the use of exercise therapy, physical activity and exercise adjuncts by osteopathic practitioners.
- Explore a model for integrating exercise therapy into the undergraduate osteopathic curriculum.

CHAPTER 5: ANALYSIS OF EXERCISE CONTENT IN THE UK UNDERGRADUATE OSTEOPATHIC CURRICULA

5.0 CHAPTER INTRODUCTION

The evidence presented in the previous chapters gives the reader a clear picture of the philosophy and practice of osteopathy. Chapter three focuses specifically on the theoretical underpinning and potential for the use of exercise therapy in a health care setting. The series of studies contained within chapters five, six and seven will explore not only the use of exercise therapy in a clinical setting but also the foundation for practice, osteopathic education. It was decided at an early stage in the research that an exploration and illustration of current practice would best be supported by studies focussing on the intended, delivered and received exercise therapy content in the undergraduate osteopathic curriculum. In achieving this, the thesis is the first in-depth exploration of all aspects of osteopathic education and practice in relation to exercise therapy.

Using content analysis, an accurate, current picture of exercise therapy in the intended curriculum has been identified. Analysis of curriculum documentation has been detailed in contemporary educational literature and findings from this work were used to drive the methodology of this study. This chapter details the process of deriving and developing a model of analysis for osteopathic curricula documentation and explores

how the researcher used evidence and models of analysis from other fields to drive forward the method.

5.1 AIMS AND OBJECTIVES OF THE STUDY

The aims of this study were to:

- Provide an accurate and current picture of exercise content in the UK undergraduate osteopathic curricula using content analysis.
- Distinguish between exercise content delivered in academic and clinical education through content analysis.
- Identify whether exercise can be regarded as a “hidden” element within the intended curriculum.
- Provide context to future studies exploring the delivered and received curriculum and the application of exercise therapy in clinical practice.

5.2 CURRICULUM EVALUATION – HISTORICAL AND METHODOLOGICAL PERSPECTIVES

Curriculum analysis or evaluation is by no means a new educational innovation. Initially in the USA in the 1930s and then in the UK during the 1950s, the demand for curriculum evaluation grew rapidly as social change intensified and the complexity of educational developments became apparent (Norris 1998). Over recent decades, the need to provide a transparent evaluation and analysis of curricula has been a priority in higher education. The drive in curriculum analysis is considered a direct result of the rapidly developing global education market,

increased competition between institutes of higher education, a “cult of efficiency”, the continued governmental drive towards mass higher education and concerns about educational standards and demands for public accountability (Leathwood 2000). Despite growing interest in curriculum analysis, this field of research still remains relatively underdeveloped in the UK.

Curriculum evaluation and analysis can be considered as neither simple nor uniform (Levine 2002). Analysis of curricula materials and content draws on the two very distinct fields of curriculum and evaluation for which there are no distinct definitions, approaches or methods. Quinn (2000) states that although curriculum theory is an established field of study within education, there is actually no agreed definition of what constitutes a curriculum (Quinn 2000). With the problems associated with defining the area of study, it is not surprising that Patton (1986) noted at least thirty different approaches to curriculum analysis, with no ideal, all-purpose approach to analysis that suits every curriculum (Patton 1986). Thain and Wyatt suggests that the diversity in curriculum definitions is mirrored in the diversity of models used to analyse the curriculum (Thain and Wyatt 2002). This is reflected in the number of analytical approaches outlined in the existing literature focussing upon individual education provider needs, thus reflecting a number of institutionally-driven considerations and philosophical and ideological perspectives (Nevo 1995).

Over recent years there has been a shift in the underlying paradigms of research methods and aims used in curriculum evaluation (Lincoln 1986). Evaluation now encompasses and combines multi-methods, multiple measures, multiple criteria, multiple perspectives, multiple audiences and multiple interests (House 1993). From its early origins in quantitative research methods, curriculum evaluation has now moved forward to also encompass qualitative methods ensuring that the multi-method approach to analysis is explored (House 1993).

The methodology chosen for curriculum analysis is often determined by how the curriculum to be analysed was conceived, how it is implemented on a day-to-day basis (Levine 2002), the definition of curriculum used by the school or field of study and the educational philosophy of the educational establishment (Thain and Wyatt 2002). This is appropriate when only one curriculum is to be analysed at any one time, but when several curricula featured within one educational discipline are to be analysed, the development and the structure of the model of analysis becomes more complicated. It is at this point that the multi-method approach to analysis becomes important and useful. The flexibility of qualitative research methods combined with the structure offered by quantitative methods ensures that the ensuing method of analysis is adaptable to a number of associated curricula. Pateman and Jinks (1999) note in their work that the quantitative approach to analysis is useful as an audit tool, but that qualitative approaches can provide insight to the

curriculum particularly if future educational developments are to be based upon the evaluation (Pateman 1999).

5.2.1 Definitions of Curriculum Evaluation

Ralph Tyler, an educationalist in the 1930s, offered one of the first definitions of curriculum evaluation, stating that it is a process of determining whether curriculum objectives have been achieved or not (Tyler 1949). The development of the model of analysis was termed the "objectives achievement model" and was refined further as an integral part of curriculum development. This concept was taken further and Alkin (1994) noted that analysis could focus upon the curriculum's adequacy by examining derived characteristics and describing appropriateness (Alkin 1994). By adopting this definition, evaluation not only relates to educational objectives as manifested in student achievements but also to a number of other curricular components, these being instructional material, instructional sequence, teacher manuals and student background variables. The logic of developing the meaning of curriculum evaluation to include a number of educational dimensions is clear when one considers that if a curriculum is a statement of educational intentions, then curriculum evaluation should ideally identify which of these intentions are realized in educational practice (Levine 2002). The realist would identify that in most cases intentions are not fully realised and thus many models of evaluation have included not only an exploration of the curriculum as it is intended but also the curriculum as it is experienced by the student cohort (Goodlad 1979).

5.2.2 Curriculum Evaluation

Curriculum evaluation can be regarded as a comparative process focussing on four key aspects of the curriculum. Analysis begins by looking at the planned curriculum, also termed the intended curriculum. Much of the information held within course documentation relates to the intended curriculum, as is the focus for the initial stage of evaluation as detailed in this chapter. The second aspect to consider relates to the taught or delivered curriculum and the interpretation of the intended curriculum by those faculty members conveying the educational message to the student body. The third aspect is often referred to as the received curriculum and this essentially is the student experience of the intended and delivered curricula (English 1988; Levine 2002; Wachtler and Troein 2003). The comparative process is completed when the ideal or "gold standard" curriculum is outlined and compared to that conveyed within the institution. An accepted definition of a good quality curriculum is when there is a high degree if convergence between all four key aspects within the comparative process (English 1988) and this has often been achieved using triangulation methods between the perspectives on which data has been collected (Wachtler 2003). However, the legitimacy of categorising a curriculum as "high quality" based upon the level of convergence between aspects of the curriculum is questionable. Very rarely is there perfect congruence between elements of the curriculum. Wachtler and Troein (2003), in their study mapping cultural competency in a medical curriculum, state that total congruency between perspectives is unrealistic but that is not to say that the inconsistencies cannot be balanced to make

the curriculum more functional. To judge a curriculum as incomplete based on levels of incongruity seems to suggest that very rarely is a curriculum a perfect one.

By collecting data from a number of different perspectives utilising a multi-method approach, the evaluator ensures that there is not a reliance on just a single data source, which in previous studies has proved to be unreliable and misleading (Wachtler and Troein 2003). Studies such as that published by McCaugherty in 1991 and Scholes et al. (2000) note limitations of documentary analysis suggesting that each curriculum conforms to recommendations and philosophies of the individual education providers (McCaugherty 1991; Scholes 2000). Evidence such as this provides further rationale for extending the analysis process beyond instructional and course documents to include a number of perspectives. Differences between curricula, which often make analysis difficult, are differences in unit/module formula and differences in how learning outcomes are detailed (Scholes 2000). It may be that initial analysis of the documentation suggests key educational differences between schools teaching the same subject area, yet when the taught curriculum is analysed areas of congruence are apparent. This may be the case in the osteopathic curricula considering the absence of a nationwide core curriculum.

It is clear therefore that the need for a multi-method approach to analysis encompassing the perspectives of the major stakeholders in the process

is key. By embracing this approach it is more likely that the evaluator will become aware of the reality of the curriculum and may highlight some aspects of the curriculum which are present but hidden, integrated in an unstructured way that is often described differently by teachers and students (Wachtler 2003). This aspect of the curriculum is often termed the “hidden curriculum”. The gap between what is intended, what is delivered and what the students experience is an area of concern in education (Ferguson and Jinks 1994). The “theory–practice gap” (McCaugherty 1991) has been noted in medical education where hidden aspects of the curriculum include communication skills, palliative care, professionalism and medical ethics (Wachtler 2003). The hidden curriculum is often characterised by curricula content, which is considered to be part of the peripheral curriculum rather than core to the subject area. Despite this, Wachtler and Troein (2003) clearly state that this material, regardless of its status within the curriculum, must be clear and should be documented if a realistic picture of the educational experience is to be achieved.

As with other healthcare professions, osteopathic education incorporates academic and clinical faculties. The two faculties and their social and value differences often provides a source for “hidden” material and Ferguson and Jinks (1994) actively encourage cross collaboration between the two faculties to prevent the development of the hidden curriculum (Ferguson and Jinks 1994). When considering that a proportion of delivered theoretical material is conveyed to the student

cohort during clinically-based tutorials, it is essential to include the perspectives of clinic-based faculty in any analysis of the osteopathic curricula.

5.2.3 Uses of Curriculum Evaluation

Judging the success of a curriculum upon evaluation is only one use of the analytical instrument. Shadish, Cook and Leviton (1991) identified three additional uses of curriculum evaluation - instrumental, conceptual and persuasive (Shadish 1991). Instrumental use of evaluation is where the findings are used to guide decision-making processes in relation to potential changes. This can be achieved both at the local level (within the school) and at the guiding authority level, where policy decisions are made applicable to all schools implementing a similar curriculum. This may be appropriate in osteopathic education where the General Osteopathic Council (GOsC) seeks to promote a core osteopathic curriculum. Conceptual use is where the evaluation is used to affect perceptions regarding the curriculum. Often when a curriculum is viewed as a continually evolving process, student and teacher beliefs continually change with the curriculum. Conceptual uses of curriculum evaluation allow the generation of understanding in relation to the continual changes associated with a continually evolving curriculum. Finally, a persuasive use of the evaluation is where the findings are applied to convince people that a position taken prior to initiating the evaluation is in fact correct. In this way a persuasive use of the analysis can be to legitimise decision-making or to change an element of the curriculum (Levine 2002).

The number of different approaches to curriculum evaluation is often determined by the definition of a curriculum, and the perceived outcomes of the analysis ensures that the evaluation process is flexible yet methodical, open yet directive, and respectful of the diverse opinions, beliefs and visions held within education (Levine, 2002). Curriculum evaluation often takes on different forms and different trajectories of meaning in different contexts and situations. The application of curriculum evaluation across osteopathic education providers in the United Kingdom has never been attempted. Osteopathic education is continually changing and developing as the profession tackles registration issues, and the use of exercise in osteopathic treatment and management and an exploration of exercise content in the osteopathic curriculum have yet to be tackled. To date, there have been no similar studies in osteopathic practice.

5.3 REVIEW OF CURRENT PRACTICE IN MANUAL THERAPIES – EXERCISE ADVICE

Incorporating exercise advice into patient management strategies has in recent years been the focus of considerable attention. The 2004 government White Paper “Choosing Health” (Department of Health 2004a) highlighted a number of key issues for health professionals including the importance of providing sound, realistic, generalised exercise advice to the population, and particularly to those who may be considered at risk from disease. Health care professionals and to some extent “exercise trainers” are currently viewed as the preferred vehicle for

this message and there is considerable emphasis on cascading lifestyle advice down to patients who consult practitioners day to day. Osteopaths are increasingly an integral part of the United Kingdom health care medium with over 4000 osteopaths registered to practise, resulting in approximately seven million consultations per year (General Osteopathic Council 2008). To this end, osteopaths are in a prime position to give advice on exercise and physical activity within the remit of the definitions offered in chapter three, both as an adjunct to treatment and in the wider remit of health promotion to their patients. The General Osteopathic Council, the regulating body for osteopaths in the UK, supports this. The Standard of Proficiency (General Osteopathic Council, 1998) states the importance of exercise in osteopathic management and notes that practitioners should be aware of the premise of exercise and the usefulness it has for the patient.

To date, there has been limited research which has identified whether osteopaths do in fact prescribe exercise to their patients and if they do, how they utilize exercise in the clinical situation. The work of Lloyd (Lloyd 1993) is currently the only paper examining osteopathic management and treatment which included the use of and recommendation of exercise by the practitioner as part of promoting a self-management strategy to the patient.

Physiotherapy literature has shown that a physiotherapist's treatment choices are informed by their original trainers' beliefs rather than by

critically appraising the available evidence (Turner and Whitfield 1999). Furthermore educational level and academic qualifications have also been seen to play a role in exercise-based treatment choices in physical therapy (Jette and Jette 1997). There is some indication here that the academic courses followed and the faculty members that deliver the academic programme may have some effect upon future practitioners and their decisions about including exercise as part of treatment and patient management, and this may also be mirrored in osteopathy. As suggested by Allan et al. (2004), an essential element to any healthcare system is the education of the future generation of practitioners, with current practice often reflecting education and curriculum content (Allan, Agar Barwick, Cashman, Cawley, Day and Douglass 2004).

The nationwide policy on increasing physical activity, the evidence advocating the recommendation of exercise and its potential for use in treatment and management and the limited evidence of the osteopathic use of exercise makes research in the field important. This study sought to provide an accurate, current picture of exercise content within UK osteopathic curricula.

The first stage of the study looked to examine course documentation to include module outlines for undergraduate osteopathic courses in the UK during the 2003/2004 academic year. In the absence of a defined and validated model of analysis applicable to the osteopathic curricula, a model was designed and piloted for use. An ethics committee was not

consulted as analysis was to be implemented on documentary evidence and not using human participants.

5.4 METHOD

5.4.1 Participants

Letters of invitation were sent to all UK osteopathic providers (as of the academic year 2003-2004) requesting access to curriculum documentation. Letters of invitation were sent to all Principals or Course Leaders where appropriate. Curricula were obtained from seven of the eight osteopathic education providers. One school declined to participate, as their curriculum was not documented. Complete documentation of the curriculum outlining both academic and clinical aspects of the undergraduate course was essential for this exploration of the intended curriculum.

Inclusion criteria for this study stated that each participant school must have RQ status from the GOsC. The curriculum documents analysed for this study represent the intended curriculum in UK undergraduate osteopathic education during the academic year 2003-2004. Definitive documents produced in line with the curriculum (i.e. student handbooks) were excluded as they did not in all cases directly pertain to the intended content of the stated curriculum. The schools/colleges, which agreed to participate in the study, were: British College of Osteopathic Medicine (BCOM); British School of Osteopathy (BSO); College of Osteopaths Educational Trust (COET); European School of Osteopathy; London

School of Osteopathy; Surrey Institute of Osteopathic Medicine (SIOM); Oxford Brookes University (OBU). The characteristics of the participating schools are outlined in table 5.1. The details given relate to the characteristics of the participant school as of the academic year 2003-2004.

School/College	**Location**	**RQ Designation**	**Validating Body**	**Award**	**Mode of Delivery**	**Length of Course**
British College of Osteopathic Medicine (BCOM)	London (NW3)	2000	University of Westminster	B.Ost Med BSc (Hons) Osteopathic Medicine	Full Time (FT) Full Time (FT)	5 years 4 years
British School of Osteopathy (BSO)	London (SE1)	2000	University of Bedfordshire	Batchelor of Osteopathy (BOst)	Full Time (FT) Mixed Mode (MM)[1]	FT – 4 years MM – 5 years
College of Osteopaths Educational Trust (COET)	Borehamwood, Herts	2000	Middlesex University	BSc (Hons) in Osteopathy	Part time (PT)	5 years
European School of Osteopathy (ESO)	Maidstone, Kent.	2000	University of Wales	BSc (Hons) Osteopathy	Full time	4 years
London School of Osteopathy (LSO)	London (E1)	2000	University of Brighton	BSc (Hons)	Part Time (PT) Accelerated Learning Pathway (PT)	5 years 3 years
Surrey Institute of Osteopathic Medicine (SIOM)	Surrey	2003	Open University	BSc (Hons) Osteopathic Medicine	Full Time (FT)	4 years
Oxford Brookes University	Oxford	2003	Oxford Brookes University	BSc (Hons) Osteopathy	Part time (PT)	5 years

Table 5.1: Characteristics of participant schools/ colleges

5.4.2 Pilot Study and Pilot Model Development

As previously noted in the review of current curriculum evaluation literature, the model of analysis used is often determined by the

[1] Mixed Mode Pathway is a five year course with the first three years of study being part time and the final two years as full time standard pathway students.

conception of the curriculum, the implementation of the course and the educational philosophy of the school or college (Levine 2002; Thain and Wyatt 2002). The pilot model developed was based upon the work of Michael Eraut (1976), who developed a five-point framework for curriculum analysis encompassing aims, objectives, content, pedagogy and assessment (Eraut 1976). Eraut suggested that each of these domains would, when considered together, constitute a curriculum strategy. For the purpose of this pilot study, Eraut's basic framework was applied to two osteopathic curricula with the objective of identifying exercise-related content within the course materials. The developed pilot model is contained in Appendix 1.

5.4.3 Model Rationale and Development

The pilot model of analysis was divided into sections, each section pertaining to data relating to specific elements of the curriculum. It was envisaged that this model could be applied to those units/modules, which specifically included exercise within the taught curriculum.

Section 1 of the model sought to identify the demographic characteristics of the course offered by each of the schools.

Section 2 enquired about the identification of specific or general exercise content included within the curriculum. This was based upon the GOsC Standard of Proficiency (1998), which clearly states that the osteopath should be able to demonstrate the ability to assist patients to undertake

and become committed to self-care activities including exercise and lifestyle adjustment. For those courses with module or unitised content, this section sought to provide concise and specific detail relating to the unit configuration.

Once exercise-related content had been identified within the curriculum, ***Section 3*** sought to provide more detailed information in relation to the content of the unit where exercise had been identified as being taught. Specifically the aims, objectives and learning outcomes relating to the exercise content of the unit were identified and noted.

Section 4 focussed upon the assessment of the exercise content within the unit. This included both theoretical and practical modes of assessment. Assessment was described in terms of the *types* of assessment used such as exams, projects, portfolios or viva and in terms of *dichotomies* such as formative/ summative.

Section 5 noted the teaching and learning methods explicitly contained within the course documentation. This section also enquired about the practical and theoretical aspects of exercise and how they were taught to the cohort.

5.4.4 Application of the pilot model of analysis

The pilot model was used by the researcher to analyse two curricula to ascertain applicability and validity of the model. It was the intention that

the model would be systematically applied (moving from section 1 of the pilot model through to section 5) to each of the units contained within the curriculum which purported to include exercise-related content. Exercise-related content was defined as either general or specific exercise advice in accordance with the definitions offered in chapter three. Following identification of those units, which included exercise-related content, the researcher systematically collected data relating to each of the five sections contained within the pilot model of analysis.

Initial findings following application of the pilot model to those units/modules with exercise-related content illustrated that exercise-related information within selected osteopathic curricula was sporadic and very rarely contained within specific, individual units. The applicability and validity of the developed model to identify exercise-related information within osteopathic curricula material was questionable in the absence of curriculum-wide dedication of specific units/ modules to exercise-related content. Application of the pilot model of analysis to two curricula identified the variation in content and volume of information intended for undergraduate degree programmes. The use of the developed model of analysis was limited and would not provide an accurate representation of exercise content contained within the intended curriculum. A more appropriate methodology was identified in content analysis (Cavanagh 1997). Using content analysis would allow for a greater exploration of the breadth and depth of the exercise content within the curricula, particularly when information is not confined to specific unit/ modules.

5.4.5 Content Analysis

The origins of content analysis lie firmly in journalism, where soon after the end of the Second World War content analysis was used to analyse documents, producing counts of words or phrases (Cavanagh 1997; Bos and Tarnai 1999). Key to this methodology is the separation of words or phrases into meaningful content-related categories. Based upon this categorisation of words, it is assumed that words or content grouped into the same category have the same meaning (Cavanagh 1997). Previous studies that have used content analysis have shown it to produce content that is symbolic, reliable and valid. Issues surrounding coding are often considered key to the success of content analysis. Identifying and modifying codes and themes within the document is central to ensuring that the framework applied gives a clear description of events within the text (Cavanagh 1997). For the purpose of this study the recommendations of Downe-Wamboldt (1992) & Weber (1990) were used as guidelines for the process of content analysis and the development of the coding framework (Weber 1990; Downe-Wamboldt 1992). Stage by stage development of the coding framework and data collection is detailed in Figure 5.1.

Figure 5.1: Development of the coding framework and data collection

Stage1:

Theoretical

Development of appropriate research questions, selection of the unit of analysis.

Stage 2:

Establishing categories

Creating and defining categories; pre-testing the category definitions & rules; assessing reliability; assessing validity.

Stage 3:

Pre Test

Revising code rules; pre-testing the revised category scheme.

Stage 4:

Data collection and evaluation

Coding data and application of appropriate statistical analyses.

Adapted from Downe-Wamboldt (1992); Weber (1990) & Bos & Tarnai (1999).

5.4.6 Selecting Unit of Analysis

In accordance with the stated aim of the study, the unit of analysis was the documented undergraduate curriculum of each of the participating osteopathic schools. Other definitive documents produced in line with the curriculum (e.g. management structures, student handbooks) were not analysed for exercise-related content, as they do not pertain to the intended content of the stated curriculum.

5.4.7 Design

As stated in the work of Cavanagh (1997), the primary aim of creating and defining categories is to provide a means of describing the events or phenomena to increase understanding and to generate knowledge. Both inductive and deductive methods of content analysis were applied when building the coding framework. That is, categories were derived directly from the text (inductive) and from a framework reflecting recommendations on the use of exercise in osteopathic and other manual therapy literature (deductive). This combination of inductive and deductive content analysis has been widely used in research and is considered as the most realistic form of analysis that uses theory and literature to drive the framework (Patton 2002). Following classification into categories, analysis of the derived data can range from quantitative to qualitative methods. The quantitative methods required the categories and their sub-themes to be scored where aggregated counts or frequencies were presented as a measure of category intensity within the

text (Weber 1990). Additional qualitative analysis explored the nature and omissions within the content.

5.4.8 Procedure

To analyse the exercise-based content of the curricula, a set of nine categories was developed. The categories were based upon a review of relevant literature. They were informed by an initial comprehensive review of all of the curricula by the researcher, noting any word or phrase associated with exercise, general or specific. The context of the cue word/phrase was also noted to aid with the refining of the coding framework. Upon completion of the initial documentation review, the cue words/phrases were grouped according to categories. The nine categories developed provided a broad umbrella term for the words/phrases seen within the text. Each category had a definition and was represented by cue words or phrases which featured within the documentation or text units in the curricula. Identification of the cue word/phrase signified the presence of the corresponding category in the text. However, to be included in the analysis the cue word/phrase identified within the text had to show contextual evidence of a link to exercise. Examples of the categories, definitions and cue words/phrases are given in table 5.2. The complete coding framework and instructions can be found in Appendix 2.

Two experienced coders were used for the study. Both had experience of content analysis and qualitative data analysis at postgraduate level. Each

of the coders was given explicit instructions on coding the documentation. Each category was defined and the cue words/phrases included within the category were detailed within a coding framework given to each coder. Stepwise instructions for the procedure to be followed were also included. Each coder was given a coding sheet on which to record their findings where space was given for the category and text unit including the cue word/phrase to be written. The documentation could be viewed as many times as was necessary to identify and record exercise content. Inter-coder agreement for content analysis (Krippendorff 1980) (agreement by two coders on derived categories and their definitions) was implemented on three of the seven curricula. Initial analysis noted that there were too few items to code on some curricula so three complete sets of documentation were coded. Discussion following blinded analysis (analysis completed independently) resulted in further modification of the framework used. Changes made include the removal of a treatment technique as a form of exercise; the cue word exercises being included in the exercise as a treatment-specific category; and collapsing two categories. Following these changes a further curriculum was assessed blind by the two coders where good agreement was achieved and errors of commission were discussed and agreement reached. The researcher coded the remainder of the curricula. The final stage of analysis was the tabulation of frequencies for each of the categories across all curricula to provide a guide of the extensiveness of exercise content. The nature of and omissions in the content were

explored using qualitative content analysis of the key words and phrases identified.

Table 5.2: Categories, definitions and examples of cue words/ phrases

Category	Definition	Example of cue words/phrases
Movement & muscular system.	Descriptors of movement and the muscular system which can be related to exercise.	Human movement, motion, muscle function, muscle contraction, muscle strength, muscle length.
Health Education.	Exercise as featured within health education and health promotion strategies.	Health promotion, health education, healthy living.
Descriptors of Exercise.	Terminology used in the text to refer to exercise activity (specific or general).	Sports, exercise, fitness.
Exercise as treatment-specific.	Terminology that refers to the use of specific modes of exercise that implies application.	Exercises, exercise prescription, home exercise programming, resistance exercises.
Exercise as treatment-general.	Refers to the use of exercise as part of a wider treatment programme.	Rehabilitative exercise, therapeutic exercise, sports osteopathy.
Principles of exercise.	Refers to the theory/knowledge of exercise principles. Does not necessarily imply practical application.	Exercise physiology, sports psychology, sports training principles, overtraining.
Response to Exercise.	Refers to measurable athlete or individual responses to exercise.	Sports injury, physiological responses to exercise.
Population & Environment.	Refers to exercise for named populations and awareness of osteopathic intervention in the sporting environment.	Athletes, competitive situation, playing field, sports arena.
Measures.	Physiological assessments associated with exercise.	Power tests, body composition, skinfolds, human movement analysis.

5.5 RESULTS

The content analyses of the osteopathic curricula yielded nine categories. The most frequently occurring categories across all of the curricula analysed were principles of exercise, response to exercise and movement and the muscular system (n=6). Exercise as treatment (general), exercise as treatment (specific) and descriptors of exercise featured in five of the seven curricula analysed. Explicit exercise content within the context of the Health Education category was noted in only one of the curriculum documents. Figure 5.2 illustrates the number of curricula that showed evidence of exercise content distinguished by category.

Figure 5.2

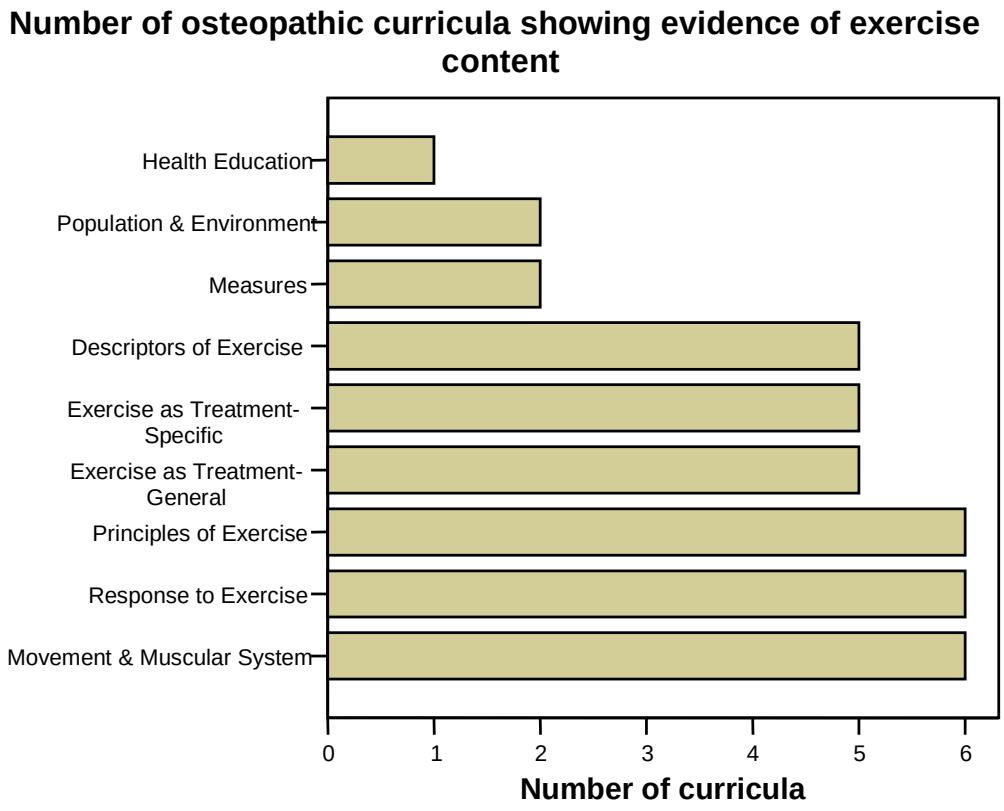

Figure 5.2: Illustration of the number of osteopathic curricula showing evidence of exercise content. Content described by category.[2]

Quantitative frequency counts of the cue words and phrases derived from the curricula can be used to explore the breadth of the content. The rationale for this type of analysis is supported as the curricula analysed form the total UK curricula and not a representative sample. Figure 5.3 illustrates the percentage of cue words/ phrases in each derived category

[2] Original in colour

noted across all osteopathic curricula. Movement and the muscular system yielded the most cue words and phrases, accounting for 22% (n=83) of the total cue words noted. Principles of exercise represented 18% (n=69) of the total followed by exercise as treatment-general (17%, n=63), descriptors of exercise (13%, n=50), exercise as treatment-specific (12%, n=45), response to exercise (9%, n=32), measures (5%, n=18), population and environment (3%, n=12) and finally health education (>1%, n =1).

Figure 5.3

Percentage of cue words/phrases across all curricula (n=7)

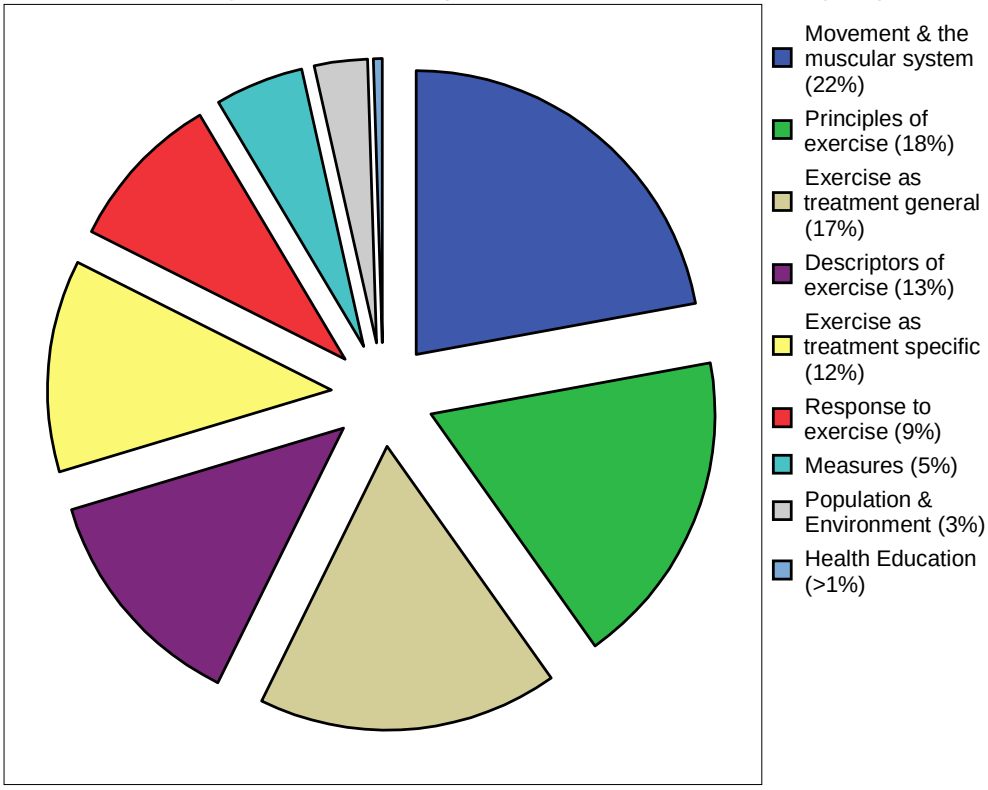

Figure 5.3: Illustration of the percentage of cue words/ phrases in each derived category noted across all osteopathic curricula[3]

Whilst frequency counts give some indication of content inclusion, they give little insight into the quality of content included. Discursive commentary is needed to illuminate the nature and omissions in exercise content.

[3] Original in colour

5.5.1 Qualitative Analysis of Curricula by Theme

5.5.2 Movement and Muscular System

This category was the largest and broadest of all with six curricula addressing this topic. Human movement as a generalised descriptor featured in the majority of curricula. This term was used to introduce content relating to the complex relationship between structure and function often featuring in anatomy and physiology modules in the earliest stages of osteopathic education. Muscle physiology and biochemistry also featured with some evidence of theoretical content describing physiological mechanisms of the different types of muscle contraction, in some cases applied to activity and specific osteopathic treatment techniques.

5.5.3 Response to Exercise

The response to exercise category included content that referred to measurable athlete or individual responses to exercise. Six of the seven curricula featured content within this category with much of the information relating to sports injuries. Almost all of the curricula addressed the osteopathic treatment, management and prevention of sports injuries with some mention made of the treatment considerations specific to patients presenting with this type of injury i.e. athletes. One curriculum addressed both the theoretical and clinical presentation of sports injuries explicitly. None of the curricula covered the measurement of physiological **responses** to exercise either theoretically or practically.

5.5.4 Principles of Exercise

Six curricula featured content relating to the theoretical principles of exercise. The introduction of the key aspects relating to exercise physiology featured in most documents. An understanding of training practices and principles and the physiological responses to training were detailed in five curricula. Some appreciation of the effects of overtraining was also noted. Two schools covered the theoretical principles of sports psychology but little mention was made of biomechanical theories relating to exercise or the principles of conditioning for exercise.

5.5.5. Exercise as Treatment General

This category included content that referred to the use of exercise as part of a wider treatment programme. The use of exercise within rehabilitation was addressed by four of the curricula. Much of their content explored how exercise and rehabilitation interventions may be integrated into osteopathic patient management. The role of the osteopath within sports care and medicine was also identified, with content detailing an introduction to the principles of sports medicine and the application of osteopathic technique in this context. The use of the terms “sports osteopathy” and “osteopathic sports medicine” featured in two curricula suggesting clear links being made between osteopathic practice and sport.

5.5.6 Exercise as Treatment-Specific

Five curricula addressed the use and application of specific modes of exercise as part of treatment. The three schools that included content on the knowledge and application of stretching techniques favoured stretching as a mode of exercise. Devising and implementing individualised exercise programmes were noted in four curricula but limited comment was made regarding the level of supervision that should be offered i.e. clinic/practice or home/gym-based exercise. One school mentioned the use of other modes of exercise such as resistance or strength-based activity as part of treatment.

5.5.7 Descriptors of Exercise

Descriptors relating to either general or specific exercise activity were found in five curricula. Exercise as an effective osteopathic management and treatment strategy was recognised by four schools. Issues related to sport in general (nutrition, ergogenic aids) were discussed in the wider context.

5.5.8 Physiological and Psychological Measures

Content specifying physiological measures associated with exercise and performance featured in two curricula. Physiological measures included tests of power, strength and flexibility in addition to the measurement of aerobic capacity. There was no clear indication as to whether this content was practical or theoretical in nature, nor in which environment this work

would take place e.g. classroom, laboratory, treatment room, or field-based testing.

5.5.9 Population and Environment

Osteopathy for athletes applied in the sporting environment was found in two curricula. Athletes and sports competitors were noted as being a population who warrant careful and considerate osteopathic management. Content was directed at physical examination and treatment in the sports arena or pitchside including some discussion of specialised osteopathic techniques that might be used in such situations. The use of exercise for other special populations was not addressed.

5.5.10 Health Education

Explicit exercise content linked to health education and health promotion strategies and programmes featured in a single curriculum. This outlined the role the osteopath has in helping the patient to make informed decisions about lifestyle choices including exercise. Although three other curricula listed content relating to advising and supporting the patient in undertaking health promotion strategies and programmes, there was no explicit reference made to exercise and physical activity. Considering the scope of health promotion, there could be no assumption that exercise would be included as part of the promotional or education programme taught.

5.6 CHAPTER DISCUSSION

The findings from this study suggest that exercise content is featured within undergraduate osteopathic education, but that it is sporadic and idiosyncratic, with the nature of the content being driven by the school and the faculty members providing the educational programme. It is apparent that not all education providers address the use and application of exercise within osteopathic practice and management. Whilst the Standard of Proficiency published by the General Osteopathic Council and the subject benchmark statement seek to outline the key skills, aptitudes and areas of knowledge required by UK osteopaths, there is little authoritative guidance offered on core and peripheral aspects of osteopathic education. It may be that curricular content reflects the views and interests of academics or clinicians developing courses. This has been shown to be the case in occupational therapy courses (McCluskey 2000), but cannot be confirmed in the absence of further discussions with teaching faculty.

Several studies looking at the education of health professionals have suggested that the undergraduate curricula must reflect current clinical practice to ensure that practitioners are adequately prepared to work within a dynamic health care system (Wittman 1990; McCluskey 2000). Similarly, it could be argued that trends in clinical practice simply mirror what is learnt during undergraduate education. The findings of this study could thus be interpreted in either of two ways. Firstly, it is possible that variation exists in practitioners' ability to utilise exercise in the clinical

environment or treat specialist sports populations. This variation would be a function of their osteopathic education. Secondly, it may be that these skills are not generic to all practitioners and educational content merely reflects current practice. Which of these explanations is the closer interpretation of this study's findings is unclear, as limited work has focussed on the use of exercise or the level of need to further education in this area in clinical osteopathic practice. Further profession-wide discussion and collaboration on core competencies and generic skills required by practitioners would illuminate not only the exercise argument but also the discussion on the scope of the osteopathic curriculum in general and osteopathic practice.

Using documentation as a sole means of gaining an insight into the curriculum has its limitations and this in itself might provide answers to the perceived variation in scope and depth of exercise content. Previous studies have suggested that analysis of documentation rarely gives a reliable and realistic view of the curriculum with institutions often having more in common than is first suggested (Scholes 2000). Similarly, differences in the ways in which content is described and documented by individual institutions have been seen to create divergence, yet in most cases the philosophical values which drive the curriculum share a common theme (Scholes 2000). Further examination and triangulation of the intended, delivered and received curricula may eradicate perceived problems with interpretation and note aspects of the programme which

are delivered but not documented by institutions, referred to as the hidden curriculum (Wachtler 2003).

Closer examination of the findings note that the exercise message depicted in the movement and muscular system category featured in almost all curricula. This is to be expected given that this category was the broadest, with much of its content relating to the complex inter-relationship of structure and function, one of the key osteopathic principles. Evidence of this type of content within basic physiology and anatomy modules suggests that osteopathic students are given a sound foundation of knowledge and understanding relating to movement and physical activity. However this type of knowledge is not being consolidated and developed further by all osteopathic schools. There is variation in the depth and breadth of the exercise content being explored by osteopathic schools, and this is evident when considering the nature of the content covered in the curricula.

Theoretical exercise content, particularly that relating to principles of exercise, addresses the physiological basis of exercise with a focus on training and the consequences of overtraining. This type of theoretical knowledge provides a sound basis for the treatment and maintenance of recreational and performance athletes, a specialist patient population. The appearance of content specific to sports injuries in general and the treatment of athletes and sports performers in particular suggest that most schools view this aspect of practice as important to the preparation

of future osteopaths. The relevance of this is supported by the establishment of a professional members' organisation, the Osteopathic Sports Care Association (OSCA) in 1995, which seeks to help osteopaths currently working in the field of sport. In collaboration with OSCA, postgraduate provision in this field has seen the introduction of an MSc Osteopathic Sports Care at Leeds Metropolitan University in 2004.

When considering specific exercise tuition, many of the schools advocate the use of stretching as a global therapeutic modality. This is generally inconsistent with research evidence. Other modalities including strengthening, range of motion and general exercise advice including aerobic conditioning are not as evident in the curricula. Although some mention was made of devising and implementing exercise programmes, little specific detail was offered limiting the interpretation relating to the nature of the content.

In most curricula there is acceptance of exercise as a therapeutic modality, but there is only limited evidence of its use as an intervention. Theoretical principles are explored and the appreciation of exercise as a potential modality is apparent, but whether this is developed further via practical application and instruction in a clinical environment is less clear. It may be that this more practically-based content falls under the remit of clinical education and is perhaps not as succinctly or easily documented as is theoretical, lecture-based material. Future studies investigating the delivered and received curriculum should explore this further.

The findings from this study illustrate the lack of explicit exercise content contained within the health education and promotion message delivered by osteopathic schools. Both government policy and the osteopathic Standards of Proficiency acknowledge the important role practitioners have in promoting and maintaining healthy lifestyles. It would appear from the findings of this study that education providers are not fully exploring this role nor are they providing future clinicians with the knowledge or skills with which to assess or change exercise behaviour. Educational preparation has been viewed as key in not only ensuring that practitioners are prepared to work in a dynamic health care system (Whitehead 2002), but that widespread health reform must be informed by practitioners confident in the knowledge and skills accrued during their time in education. It may be that, as in the case of nursing (Whitehead 2002), the role of the osteopath in health promotion needs further clarification and discussion. UK education providers may be best placed to drive forward such initiatives.

5.7 CHAPTER CONCLUSIONS AND APPLICATION

It is clear that the inclusion of exercise content in the documented undergraduate osteopathic curriculum is idiosyncratic and sporadic. There appears to be some evidence of shared content between the osteopathic schools but the osteopathic education provider drives the manner in which this is documented. The links between the inclusion of exercise in undergraduate osteopathic education and application in

clinical practice remain unclear. The next study detailed in chapter six explores the delivered and received curriculum. This study provides more information and context to the delivery of exercise content in academic and clinical education.

CHAPTER 6: EXPLORATION OF THE DELIVERED AND RECEIVED OSTEOPATHIC UNDERGRADUATE CURRICULUM – EXERCISE THEORY AND PRACTICE

6.0 CHAPTER INTRODUCTION

Previous chapters in this thesis have highlighted the continued focus on incorporating exercise advice into patient management and treatment strategies within manual therapy. Osteopaths can be regarded as health care professionals in a prime position from which to give advice on exercise and physical activity both as an adjunct to treatment and in the wider remit of health education and health promotion. The extent to which osteopaths are incorporating therapeutic or specific exercise prescription and physical activity advice into patient consultations is yet to be detailed in the literature but will be explored in chapter seven of this thesis.

There is a continued drive for health care professionals to be basing their treatment on the best possible evidence available. Literature suggests that staff educating physiotherapists can have an effect upon their students' treatment choices and that in not all cases is the best evidence critically appraised (Turner and Whitfield 1999). In addition to this, both educational level and academic qualifications have also been seen to play a role in exercise-based treatment choices in physical therapy (Jette and Jette 1997).

There is some indication here that the academic courses followed and the faculty members that deliver the academic programme may have some effect upon future practitioners and their decisions about including exercise as part of treatment and patient management, and this may also be mirrored in osteopathy. As suggested by Allan et al. (2004), an essential element to any healthcare system is the education of the future generation of practitioners, with current practice often reflecting education and curriculum content (Allan 2004). Chapter five in this thesis detailed a study utilising content analysis to explore the UK undergraduate osteopathic curricula.

Evidence from the work completed and literature reviewed to date provides a clear impetus for research exploring the delivered and received curriculum to gain a greater insight into both clinical and academic education where exercise may be taught but not documented. The delivered and received curriculum relates to the perspectives of both faculty members and students respectively. A similar situation where aspects of education are considered “hidden” has been noted in medicine (Wachtler 2003). It has been suggested that not always are course documents the most accurate descriptor of a course and triangulation between the intended, delivered and received perspectives often gives a more accurate understanding of the course and its content (Wachtler 2003).

This two-stage study explored further exercise content in the osteopathic curriculum by examining faculty and student experiences, identifying potential hidden aspects of the curriculum and building upon the findings of previous studies.

6.1 AIMS AND OBJECTIVES OF THE STUDY

The aims of this study were to further explore exercise content within the osteopathic curriculum. Specifically, this study sought to investigate the delivered and received curriculum from the perspectives of both faculty members and students attending the participant schools. By exploring these two aspects of the curriculum, it was envisaged that a more accurate and complete picture of exercise content included within the undergraduate curriculum might be achieved, in particular those aspects featuring within clinical education. By utilising questionnaire, interview and focus group methodologies, the aims of this study were to:

- Explore what faculty members and students understand and interpret as exercise therapy when utilised in osteopathic treatment and management.
- Gather opinions relating to exercise therapy and its role in osteopathic education.
- Gain insight into what is delivered and assessed and whether this is a satisfactory preparation for professional life.

A questionnaire to osteopathic faculty members investigated the faculty contribution made to academic and clinical education, specifically

identifying the delivery of educational experiences (clinical or academic) that included exercise content. Faculty members were defined as academics and/or osteopathic clinicians making a contribution to the delivery of the osteopathic undergraduate curriculum. Information relating to assessment, theoretical and practical delivery of exercise approaches and personal sources of exercise experience and knowledge was also collected. In addition, the questionnaire invited faculty members to contribute to an interview/ focus group study exploring the delivered exercise curriculum in undergraduate osteopathic education. The interview and focus group methods were also used with student members, exploring the received exercise curriculum.

6.2 METHOD

This study used a multi-method approach, using both questionnaire and qualitative interview and focus group methodologies to collect data from osteopathic school faculty members and pre-professional phase (final year) undergraduate students. The use of a questionnaire to faculty members in addition to an interview/focus group was deemed appropriate following consideration of the scope of osteopathic education. The prior study detailed in chapter five noted the variability of intended content relating to the clinical application and instruction of exercise content. In order to collect data that accurately represented current clinical and academic education; all clinical and academic faculty members were included in a sample population describing their contribution to exercise content in the osteopathic undergraduate curriculum. It was concluded

that a questionnaire was the most appropriate method for collecting this type of data from a relatively large sample population (Oppenheim 1999).

In addition to the questionnaire for faculty members, an interview/focus group study was used for both the faculty members and student populations. Initially, it was the intention to use only a focus group method when collecting data from both faculty member and student populations. After careful consideration and in response to the problems associated with implementing focus groups with a predominantly part-time osteopathic faculty who in addition have responsibilities in private practice, it was deemed appropriate that individual interviews would also fulfil the aims of this study. An option to participate in either a focus group or an interview with the researcher was offered to all faculty and students who volunteered for the study. These qualitative methodologies were deemed appropriate, as the primary aim was to build upon a foundation of work in this area and explore further clinical and academic osteopathic education in the use and application of exercise therapy.

Focus groups have been noted as the most appropriate method for work that is primarily exploratory in nature (Mortimer 2004), and Broom (2005) has recently suggested that qualitative interviews are a most powerful method in complementary and alternative medicines where the aim of the research is often exploratory in nature (Broom 2005). Focus groups are the most appropriate method when seeking to generate data from group communication (Kitzinger 1995). A simple definition offered in the work of

Krueger (1994) illustrates how the use of focus groups can be justified by their ability to use group interaction to elicit rich, experiential data;

> "the focus group interview taps into human tendencies. Attitudes and perceptions relating to concepts, products, services or programs are developed in part by interaction with other people. We are a product of our environment and are influenced by people around us."
>
> (Krueger 1994)

Group interaction, seen within a successful focus group, ensures that the participants are encouraged to talk and discuss ideas with each other rather than focusing on the facilitator as in the case of a one-to-one interview (Kitzinger 1995). Encouraging participants to have an active role in the discussion goes some way to focusing the exploration of key issues in the research with the facilitator asking questions, guiding the discussion, and encouraging the exchange of views and experiences (Webb 2001). This is of particular importance to this study, with focus groups being useful to explore participants' knowledge and experiences and particularly discovering in greater depth the reasoning behind their beliefs (Kitzinger, 1995). The flexibility inherent in focus groups can also be achieved through individual interviews. It was of importance in this study that those individuals who chose to be interviewed rather than partake in a focus group were able to express their opinions and experiences in a similar manner to those participants included within a focus group. A semi-structured interview style was selected for this purpose, ensuring that although the interview was guided by a schedule, a high degree of flexibility was retained in response to participants'

experiences (Broom 2005). In this way, the participant rather than a definitive research agenda guided the interview. Details relating to both the development of the faculty questionnaire and focus group/interview schedules can be seen in later sections of this chapter.

6.2.1 Ethical Issues

The primary ethical issue associated with interviews and focus groups is that of confidentiality. Confidential issues relating to curriculum design, development and assessment strategies were considered as confidential and the researcher was aware of the importance of maintaining confidentiality. This study ensured that all participants were made aware of the importance of confidentiality both in the information sheet and during the facilitator's introduction when the group and individuals met. During the focus group sessions, participants were made aware of their responsibility in respecting their colleagues' confidentiality and were assured that discussion and recorded dialogue were kept securely stored (in a locked cupboard on private premises) and password-protected when transcribed verbatim to Word documents. Throughout the process, the researcher was sure to reinforce the issue of confidentiality of curricula information, as this information may have been viewed as sensitive particularly when the researcher is an employee of one of the participant schools. The role of the researcher was to remain an impassive listener to dialogue and observer of interaction. Confidentiality of the discussion was further assured by allowing only the research team (researcher and supervisors) access to the audiotapes. In written documents, all

participants remained anonymous. All potential identifying information was removed from written documents, in the thesis and any resulting papers. All participants were made aware of the requirements of the study, explicitly stating time commitment and contribution to the discussion and member validation of the transcripts. The University of Brighton Ethics Committee approved this study in June 2005 (Appendix 3).

6.2.2. Participants

Participants included in this study were final year students and faculty members of UK osteopathic schools. Schools selected to take part in this study were based upon the findings of the study contained in chapter five. Not all schools included comprehensive exercise content in their curriculum, and in a study exploring this issue in clinical and academic education; it was deemed feasible to sample only those schools whose faculty members and students could contribute to a discussion of these issues. Considering that this study sought to explore this aspect of the curriculum further and in particular discover more detail about clinic- and education-based contents, it was deemed appropriate that those schools which demonstrated aspects of exercise content in their curriculum were explored further and in greater depth.

The primary inclusion criterion for education providers included within this series of studies was that osteopathic education providers must be recognized and accredited by the General Osteopathic Council (GOsC).

In recent years the number of schools awarded recognized qualification status has risen to nine. However, it became clear when reviewing the number of osteopaths graduating from each school that four schools contribute the greatest proportion of UK graduates. Recent GOsC figures suggest the British School of Osteopathy (52%), British College of Osteopathic Medicine (18%) and the European School of Osteopathy (17%) contribute the largest percentage of graduate osteopaths (General Osteopathic Council 2008). Findings of the prior content analysis study also noted Oxford Brookes University as educating undergraduate osteopaths in exercise theory and practice and so it was feasible to include this university in both the studies.

Schools included in this study were:

- The British School of Osteopathy (London)
- British College of Osteopathic Medicine (London)
- European School of Osteopathy (Maidstone, Kent)
- Oxford Brookes University (Oxford)

6.2.3 Procedure

Letters of invitation were sent to the designated osteopathic school contacts identified in the prior study detailed in chapter five. Upon agreement of participation, faculty members and students were recruited as detailed in section 6.2.4. Interviews and focus groups for faculty and student members were run independently. Each school hosted focus groups and interviews with participants and these were carried out at either the practitioner's private practice or at the participant schools. To

protect confidentiality within a focus group, only those faculty members and students attending the host school were included. There were no focus groups that had participants representing different osteopathic schools. This was to ensure that confidential curriculum material was protected. Homogeneity of the focus group population is widely recommended as this allows for shared experiences to be discussed (Kitzinger, 1995). This was of importance for the current study as to discuss exercise content within the osteopathic curriculum requires shared teaching and student experiences.

6.2.4 Participant Recruitment

Faculty and student members were recruited from each of the four osteopathic schools selected. A complete list of faculty (both clinical and academic) members was requested from Human Resources personnel in each of the four schools. An information sheet (Appendix 4) and short form questionnaire (Appendix 5) was sent to all faculty members via their school contact address. Consent to participate in the questionnaire arm of the study was assumed upon return of the questionnaire. Those faculty members who were willing to participate in either an interview or focus group noted their interest in the final page of the questionnaire providing contact details. Upon receipt of the short form questionnaire, the researcher contacted all those interested and provided further explanation and details relating to the group meeting or individual interview. The suitability of the participant was confirmed and the time, date and location of the focus group or interview were given to the

participant. For those that were able to take part, a consent form (Appendix 6) was sent prior to the focus group or interview for the participant to complete and return.

6.2.4.1 Student members:

Student members were recruited from each of the four osteopathic schools. On agreement of school participation, participants were recruited via posters and information relayed via the school intranet. Those interested in participating were provided with the contact details of the researcher. Upon initial contact and notification of interest, the researcher further explained the study. The suitability of the participant was confirmed and the time, date and location of the interview or focus group were given to the subject. For those that were able to take part, a consent form (Appendix 7) was sent prior to the interview or focus group for the participant to complete and return.

6.2.4.2 Inclusion Criteria

- Current faculty members of the host school to ensure that all participants could provide accurate and current information relating to the delivery of exercise content in the undergraduate curriculum.
- Faculty members who were willing to contribute to a discussion on exploring the exercise content in the osteopathic curriculum.
- Final year students to ensure that participants could provide accurate and current information relating to their experiences of exercise content in the undergraduate curriculum.

- Final year students who were willing to contribute to a discussion on exploring the exercise content in the osteopathic curriculum.

6.2.4.3 Exclusion Criteria

- Students other than final year students. Students only part way through their osteopathic education would not be exposed to the complete osteopathic curriculum.

6.2.5 Questionnaire Development and Pilot

The questionnaire used in this study was developed in order to gather information relating to faculty members' delivery of exercise content within undergraduate educational experiences and their own personal sources of knowledge and experience in delivering both practical and theoretical aspects of exercise therapy in osteopathy. A previously designed, validated questionnaire exploring exercise content in osteopathic undergraduate education was not identified, so a questionnaire was developed based upon exercise literature, findings from a prior study (chapter five) and educational models of analysis. ***Section 1*** collected information relating to the professional background of faculty members using in the main closed tick box format questions. Not all faculty members employed by osteopathic schools are osteopaths or clinicians. In order to gain as complete a picture as possible of those individuals contributing to osteopathic education, a tick box option for non-clinicians was given with space for an open text answer revealing the title of the course completed at the highest educational level. ***Section 2***

explored exercise content delivered within the undergraduate osteopathic curriculum. Respondents were reminded that in order to gain as full a picture as possible, replies were needed from those who do not have direct involvement in delivering exercise content as well as from those who do. Both practical and theoretical exercise content could be listed and examples of content were given in the section instructions. Respondents were asked to identify which aspect(s) of osteopathic education they contribute to (academic and/or clinical education) and whether they delivered exercise content in any aspect of the curriculum. Academic education was defined as educational experiences where the delivery was lecture-driven whilst clinical education was defined as educational experiences where the delivery was based in a clinical setting (general clinic, clinic tutorials, clinic supervision). The remainder of the section identified the nature of the exercise content delivered and allowed for the respondent to list up to five educational experiences which contained exercise content and to note in which academic year(s) they were delivered. The nature of the content was further explored with the respondent asked to state for each educational experience listed whether the material was compulsory, electives chosen by the student or informal/opportunistic content. The inclusion of the choice informal/opportunistic reflected the nature of content delivery during consultations with new and returning patients in both the general and specialist osteopathic clinics within the learning environment. Drawing on and utilising assessment terminology in education, respondents were asked to identify whether the exercise content they delivered was

assessed or not. This was provided for both theoretical and practical content. A number of different modes of assessment were given as tick box options. In order to gain a greater insight into the exercise approaches delivered in both practical and theoretical osteopathic education, respondents were asked to identify whether they delivered either practically or theoretically a number of different exercise approaches. The list of different exercise approaches used in the questionnaire was based upon the results of the previous study in chapter five, which showed that the five listed approaches stretching; core stability; strength/resistance; flexibility and general aerobic conditioning were those featuring most often in the written documentation. In a similar way, the questionnaire asked respondents to identify their level of involvement in the delivery of a number of different exercise content areas identified in the osteopathic curriculum. The content areas were generated in the study of the intended curriculum and provided some detail for triangulation of results between the intended and delivered osteopathic curricula. ***Section 3*** of the questionnaire sought to identify faculty members' sources of exercise experience and knowledge. This section provided an insight into the level of contribution to the delivery of exercise content of a variety of sources of knowledge. ***Section 4*** of the questionnaire provided explanation about the qualitative study giving space for respondents to offer contact details if they wished to volunteer. Both those faculty members who contributed to the delivery of exercise content and those who did not were informed about the focus group/interview study and given an invitation to volunteer. At the end of

the questionnaire respondents were thanked for completing the study, requesting that they return the completed form in the stamped addressed envelope provided by a designated date (Marshall 2005).

The questionnaire used a range of different question types including closed and open format, questions where the response is expressed as a quantity, list and ranking scale format questions (Boynton and Greenhalgh 2004; Marshall 2005). The order of the questions used ensured that the easy-to-answer questions relating to professional background were at the beginning of the questionnaire followed by a clear filter question which instructed the respondent not to continue with the questionnaire if they did not deliver exercise content in the academic or clinical osteopathic curriculum. The questionnaire was presented with adequate space for answers to open questions, giving the respondent explicit instructions about what was required. In accordance with recommendations from methodology literature, pages were clearly numbered with **PTO** on every page with the questionnaire thanking respondents for their contribution (Marshall 2005). Clear instructions for the return of the questionnaire were given including a designated date for return and a stamped addressed envelope. Every return envelope was given a code number on a corresponding database to identify those respondents who had returned a completed questionnaire. Upon return, the questionnaire and envelope were separated with the code number removed from the database. Non-responders were sent another pack of information including an information sheet, questionnaire and stamped

addressed envelope after the designated date of return in an attempt to improve the response rate further.

The questionnaire was piloted with faculty members from each of the participant schools in July 2005. Faculty members were randomly selected (using a random number generator provided by www.random.org) from the complete faculty lists provided by each school. 10% of the total number of faculty listed by each school was sent an information sheet and pilot questionnaire. Participants were asked to return the questionnaire in the pre-paid reply envelope by a designated date. In addition to completing the questionnaire, participants were asked to comment on the clarity of the instructions, questions and layout of the questionnaire. Faculty members were asked how long it took to complete the questionnaire and finally whether there were any areas vital to this study about which they were not questioned.

Pilot respondents agreed that the questionnaire instructions, questions and layout were clear. Estimations of time to complete the questionnaire ranged from 1-10 minutes. Respondents did not suggest any further areas of interest to be included in the study. Minor alterations were made to the questionnaire as a result of pilot work. Question 11 required the respondent to detail the educational experiences in which they delivered exercise content and to indicate the academic year of delivery. This section was re-formatted to ensure that faculty members could easily list the educational experiences they delivered. In addition, a series of

options was given for each educational experience delivered which identified year of delivery in a tick box format. Respondents were instructed that they could tick more than one option indicating that the educational experience was delivered across a number of academic years. The final format questionnaire is contained in Appendix 5.

6.3 ANALYSIS OF QUESTIONNAIRE DATA

Analysis of questionnaire data was completed using SPSS (Statistical Package for the Social Sciences) Version 14.0. Data was illustrated using descriptive and inferential statistics including tests of association (Chi square and Cramer's V) and difference (Mann Whitney U following Shapiro Wilk test of normality to determine if the data conformed to parametric assumptions).

6.4 FACULTY QUESTIONNAIRE RESULTS

Two hundred and sixty nine questionnaires were sent to faculty members at the four participant osteopathic schools. The response rate for the questionnaire was 44% (n=118) following a second mail shot to non-responders. Four questionnaires were returned after the initiation of data analysis and so were not included in the final analysis.

Table 6.1: Response Rates from Participant Schools

School	*Number responding*	*Percentage responding*
BCOM	19	40%
BSO	62	60%
ESO	21	22%
OBU/OSU	12	55%

BCOM = British College of Osteopathic Medicine; BSO = British School of Osteopathy; ESO = European School of Osteopathy; OBU/OSU = Oxford Brookes University.

Of the total respondents to the questionnaire (n=114), 94% (n=108) were registered practising osteopaths; 2% (n=2) were registered non-practising osteopaths; 2% (n=2) were clinician non-osteopaths and 2% (n=2) were non-clinicians. This information is depicted in figure 6.1 overleaf.

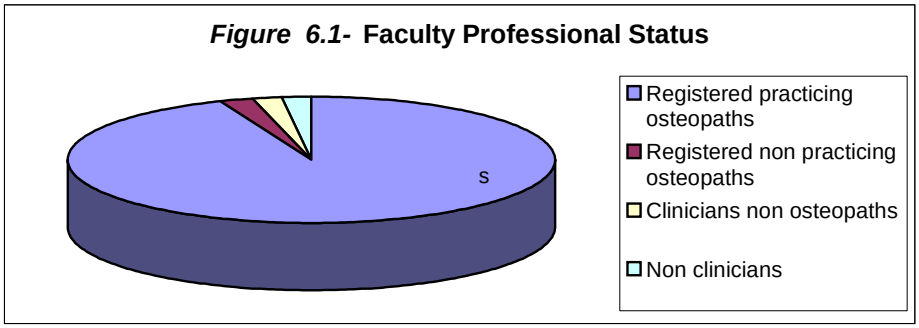

Figure 6.1: Faculty Professional Status[4]

[4] Original in colour

Table 6.2: Gender of faculty from participant schools

Gender	*Total*		*BCOM*		*BSO*		*ESO*		*OBU*		*Other*	
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Male	75	66	8	50	35	63	16	80	6	54	10	91
Female	38	34	8	50	20	37	4	20	5	46	1	9

Table 6.2 illustrates the gender of faculty members from participant schools. Of the total questionnaire respondents (n=114), 66% (n=75) were male. A Chi square test of association illustrated that there was no significant association between gender and osteopathic school (χ^2 (4) = 7.427, p>0.05). A Cramer's V test showed a weak relationship between the variables (.256).

In response to the highest educational level achieved in any subject area (figure 6.2), 48% of questionnaire respondents had achieved an Honours degree (n=55) whilst 22% (n=25) are educated to Diploma level.

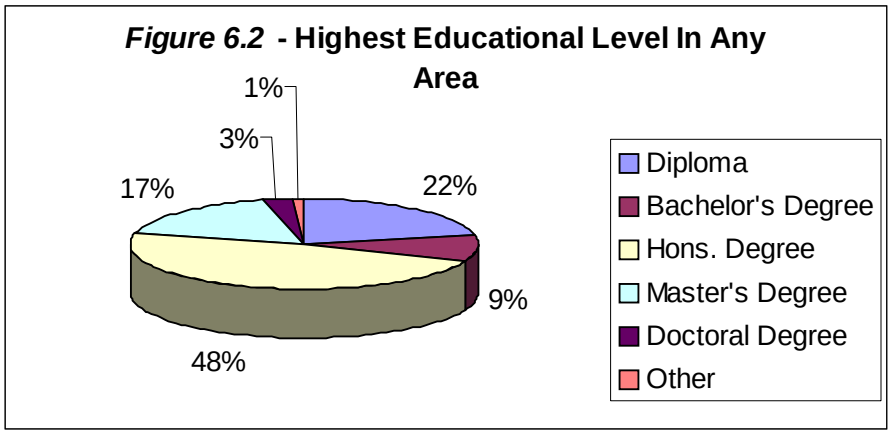

Figure 6.2: Highest educational level in any area[5]

[5] Original in colour

When split by gender, 68% (n=51) of male faculty members had achieved an Honours degree and above, whilst 74% (n=28) of female faculty members had achieved similar educational status. A Chi square test of association illustrated that there was no significant association between gender and highest educational level achieved (χ^2 (5) = 1.185, p>0.05). A Cramer's V test showed a weak relationship between the variables (.102).

Of the total number of respondents (n=114), 59% (n=67) were educated at the BSO; 20% (n=23) at BCOM; 15% at ESO; 2% at OBU and 5% at other osteopathic education providers. This is depicted in figure 6.3.

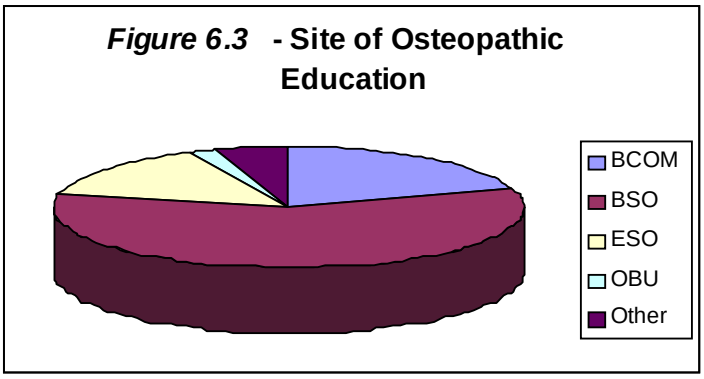

Figure 6.3: Site of osteopathic education[6]

A Chi square test of association showed a significant association between site of osteopathic education and the school at which the respondent was a faculty member (χ^2 (16) = 147.176, p<0.05). A Cramer's V test showed a moderate relationship between the variables (.568).

[6] Original in colour

For those respondents who were practising osteopaths (n=109), the mean number of years since professional training was 13.3 ± 9.9 years. The mean number of years since professional training by those faculty members employed at BCOM was 8.31 ± 4.4years; BSO 15.1 ± 10.6 years; ESO 13.3 ± 12.3 years; OBU 9.8 ± 6 years and Other 14.5 ± 7.8 years. A Shapiro Wilk test of normality yielded a significant probability value (p=0.00) suggesting that the data is not normally distributed indicating the use of non-parametric Mann Whitney U test to identify statistically significant differences in the number of years since professional training between male and female faculty members across all schools. The Mann Whitney U test showed no significant difference (U = 1200, p=0.533).

Table 6.3: Aspect of undergraduate education delivered

Aspect	*Total*		*BCOM*		*BSO*		*ESO*		*OBU*		*Other*	
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Academic	*39*	*34*	*7*	*44*	*18*	*32*	*9*	*45*	*3*	*27*	*2*	*18*
Clinical	*40*	*35*	*3*	*19*	*27*	*48*	*5*	*25*	*3*	*27*	*2*	*18*
Both	*35*	*31*	*6*	*37*	*11*	*20*	*6*	*30*	*5*	*46*	*7*	*64*

Table 6.3 illustrates that thirty four percent (n=39) of respondents stated that they contributed to the delivery of academic education whilst 35% (n=40) and 31% (n=35) contributed to clinical and both academic and clinical aspects respectively. Of the total respondents, 68% (n=77) stated that they did deliver exercise content within the undergraduate osteopathic curriculum. Of the 32% (n=37) of respondents who did not deliver exercise content, 22 respondents delivered formal academic

education, 10 in clinical education and 5 within both aspects of the curriculum. A Chi square test of association illustrated a significant association between teaching exercise content in the undergraduate curriculum and aspect of undergraduate education delivered (χ^2 (2) = 16.494, $p<0.01$) suggesting that faculty are less likely to deliver exercise content if they are predominantly involved in academic education. A Cramer's V test showed a moderate relationship between the variables (.380). A Chi square test of association illustrated no significant association between gender and aspect of undergraduate education delivered across all schools (χ^2 (2) = .167, $p>0.05$). A Cramer's V test showed a very weak relationship between the variables (.038).

The questionnaire respondents listed one hundred and twenty eight educational experiences that included exercise content. Sixty one per cent (n=79) of these experiences were based in clinical education with the remaining 39% (n=49) featuring in academic education. Clinic tutorials and treatment supervision as a clinical tutor accounted for 86% of the total clinical education experiences. In contrast, osteopathic technique accounted for 20% of the academic educational experiences that included exercise content. Fifty nine percent (n=75) of the total number of educational experiences listed were delivered in years 3, 4 and 5 of the undergraduate curriculum. Of these experiences delivered in years 3, 4 and 5, 68% (n=55) were delivered as part of clinical osteopathic education.

Table 6.4: Number of academic and clinical educational experiences listed by faculty at each school

Number of Educational Experiences listed	*BCOM*	*BSO*	*ESO*	*OBU*	*Other*
Academic	11	17	6	9	6
Clinical	10	37	12	9	11

A Chi square test of association illustrated no significant association between type of educational experience delivered (academic or clinical) and school (χ^2 (4) = 4.121, p>0.05). A Cramer's V test showed a weak relationship between the variables (.179).

For the educational experiences containing exercise content, respondents were asked to identify the types of assessment used. Seventy one percent (n=56) of the clinical experiences and 43% (n=21) of the academic experiences listed were not assessed. Of those experiences that were assessed, 9 academic (18%) & 9 clinical (11%) experiences were assessed practically whilst 6 of the academic experiences (12%) were assessed via written examination (case reports, essay). For those practical elements of the curriculum that were assessed, academic experiences were assessed using a viva (8%; n=4) and other undisclosed methods (18%; n=9). For the assessment of practical elements contained within clinical education, clinic tutor reports (19%; n=9) and other undisclosed methods of assessment (9%; n=7) were used.

Respondents were then asked to identify whether the experience in which they delivered exercise content was a compulsory, elective or opportunistic element of the curriculum (table 6.5).

Table 6.5: Type of educational experience

Type of Experience	*Compulsory*		*Elective*		*Opportunistic*	
	n	*%*	*n*	*%*	*n*	*%*
Academic	*34*	*69*	*6*	*13*	*9*	*18*
Clinical	*17*	*23*	*6*	*7*	*56*	*71*

Sixty nine percent (n=34) of the academic experiences were considered to be compulsory elements of the curriculum. In direct contrast, 71% (n=56) of the clinical experiences were considered to be opportunistic elements of the curriculum. A Chi square test of association illustrated a significant association between type of educational experience delivered (academic or clinical) and whether the experience was considered to be a compulsory, elective or opportunistic element of the curriculum (χ^2 (2) =34.516, $p<0.05$), suggesting that clinical experiences were more likely to be opportunistic elements of the undergraduate osteopathic curriculum. A Cramer's V test showed a moderate relationship between the variables (.519).

When asked how the compulsory, elective and opportunistic elements of the curriculum containing exercise content were assessed, 85% (n=55) of the opportunistic elements were not assessed. Seventy one percent

(n=36) of the compulsory elements were assessed using a range of formative, summative, academic and practical assessments.

6.4.1 Delivery of Exercise Approaches

Respondents were asked whether they delivered either practically, theoretically, both or not at all, five different exercise approaches. The choice of exercise approaches included in this section of the questionnaire was based upon findings from the study in chapter five of this thesis.

Forty six percent (n=34) of respondents suggested that they did not deliver general aerobic conditioning at all in the curriculum whilst 20% (n=15) reported that they delivered only theoretical material associated with this exercise approach. In contrast, 50% (n=37); 36% (n= 27); 41% (n=31) and 45% (n=35) reported that they delivered practical material associated with flexibility exercise, strength/resistance exercise, core stability and stretching exercise respectively. A notable percentage of respondents also reported that they delivered both practical and theoretical material associated with these exercise approaches (flexibility: 34%; strength/resistance: 35%; core stability: 34%; stretching: 46%). Figure 6.4 illustrates the percentage of respondents indicating modes of delivery across the five different exercise approaches.

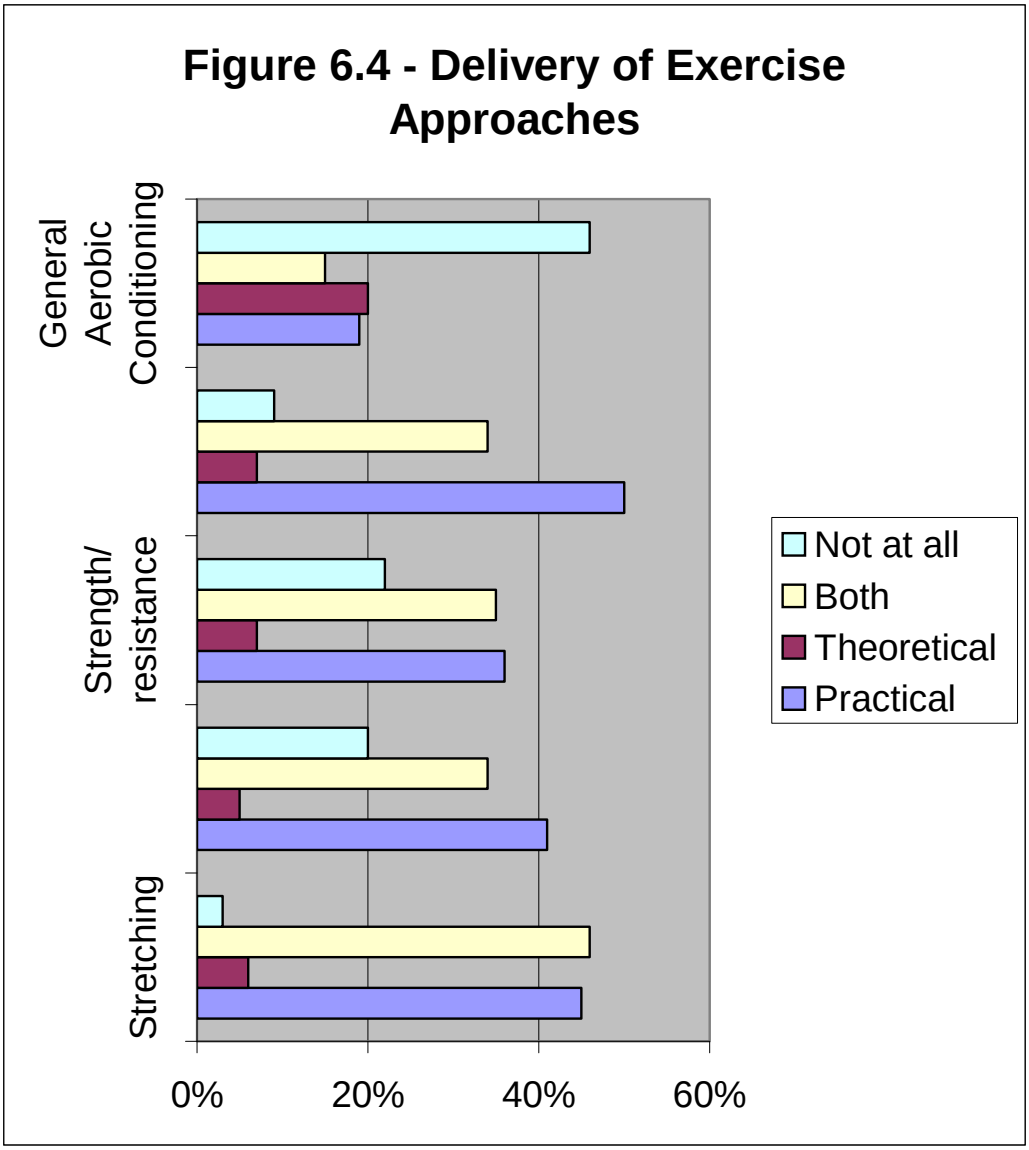

Figure 6.4: Delivery of exercise approaches[7]

[7] Original in colour

Respondents who reported that they did contribute to the delivery of exercise content in the curriculum were requested to indicate the extent to which they were involved in teaching the stated exercise content areas. Respondents were required to indicate their extent of delivery using a Likert scale with answers ranging from Not at all to Very much. The content areas listed were identified in a previous study detailed in chapter five. Outlined in table 6.6 are the median scores for each content area for the total population contributing to the delivery of exercise content (n=76), males (n=54) and female (n=21; 1 missing value) faculty members.

Fifty eight percent (n=44) of respondents stated that they delivered muscle physiology a little or not at all; 50% (n=38) delivered health education a little or somewhat; 54% (n=41) delivered health promotion a little or somewhat; 68% (n=52) delivered principles of training and performance a little or not at all; 73% (n=56) delivered exercise physiology a little or not at all; 62% (n=47) did not deliver sport psychology at all; 39% (n=30) delivered biomechanical principles a little or somewhat; 47% (n=36) delivered exercise as rehabilitation a little or somewhat; 42% (n=32) delivered exercise prescription a little or somewhat; 49% (n=37) delivered sports injury treatment a little or somewhat; 51% (n=39) delivered sports injury management a little or somewhat; 76% (n=58) did not deliver tests of maximal aerobic capacity, power and strength at all; 58% (n=44) delivered contraindication to exercise somewhat or quite a bit and 30% (n=23) delivered exercise progression a little in the undergraduate curriculum.

Mann Whitney U tests were applied to identify potential significant differences in delivery of exercise content areas and gender; osteopathic education provider and faculty members delivering in academic/clinical education. There was a statistically significant difference in delivery of biomechanical principles between male (median = 3) and female (median = 2) faculty members suggesting that male faculty members are more likely to deliver this content area ($U = 373$, $p<0.05$). Examining delivery of content areas between osteopathic education providers, a Mann Whitney U test identified a statistically significant difference in the delivery of Sports Psychology between faculty at BCOM (median = 1) and BSO (median = 2) suggesting that BSO faculty are more likely to deliver sports psychology content in the undergraduate curriculum ($U = 136$, $p<0.05$). No statistically significant differences were found in the extent of delivery of the stated content areas between those faculty members employed in academic osteopathic education and those in clinical education.

Exercise Content	Median* Score Total Population	Median* Score Male Faculty	Median* Score Female Faculty
Muscle Physiology	2	2	2
Health Education	3	2.5	3
Health Promotion	3	3	3
Principles of training & performance	2	2	1
Exercise Physiology	2	2	1
Sport Psychology	1	1	1
Biomechanical Principles	3	3	2
Exercise as part of Rehabilitation	3	3	3
Exercise Prescription	3	3	3
Sports Injury treatment	3	3	2
Sports Injury management	3	3	2
Tests of maximal aerobic capacity, power and strength.	1	1	1
Contraindications to exercise	3	3	3
Exercise Progression	2	2	2

Table 6.6: Calculated median scores for delivery in each area

* Median score calculated on the respondent agreeing with the question statement:

“I am involved with the delivery of (exercise content): Not at all (1); A little (2); Somewhat (3); Quite a bit (4); Very much (5)”.

The final section of the questionnaire explored the sources of exercise experience and knowledge of the faculty respondents. Osteopathic degree, diploma and Continued Professional Development (CPD) courses made a moderate contribution to exercise knowledge gained, with 54% (n=42) of respondents stating that an osteopathic degree, and 49% (n=37) that osteopathic CPD courses make a contribution to their exercise knowledge. Ninety two percent (n=71) of those respondents delivering exercise in the undergraduate curriculum noted that knowledge gained through osteopathic clinical experience and practice contributed to their knowledge base whilst 75% (n=58) suggested that knowledge and experience gained via non-osteopathic routes contributed to the knowledge they have in exercise delivery. Finally, 78% (n=60) stated that access to published evidence in peer-reviewed journals contributed to their delivery of exercise in the undergraduate curriculum.

6.5 FOCUS GROUP/ INTERVIEW SCHEDULE - DEVELOPMENT, PROCEDURE AND PILOT

6.5.1 Development of the Interview Schedule

The interview guide (see Appendix 8) for the focus group and individual interviews were developed based upon exercise literature reviewed and the findings of the previous study (chapter five) examining exercise

content in osteopathic course documentation. The key issues explored during the group and individual discussions are contained in appendix 8. In the instances where a focus group was used, the facilitator encouraged the group to “self manage” and in addition move from general to specific questions, the purpose of this being to encourage all participants to take part in the discussion from the very start (Kingry 1990).

Each host school was invited to run two independent focus groups, one including faculty members and the other for final year students. Each group ran in a relaxed atmosphere, in a comfortable setting with participants seated in a circle to encourage interaction. The maximum number of participants recruited to take part in the focus group was eight with the session lasting between one and two hours (Kitzinger, 1995). The facilitator (JZ) outlined the aim of the focus group and encouraged the group to interact with each other rather than address the facilitator when responding to questions or discussion points. The facilitator attempted to encourage the group to “self manage” (Morgan 1988) suggesting that:

- It was legitimate for the group members to manage the discussion themselves.
- Not to worry if they ran out of things to say but to remember that the study was interested in exploring exercise in the osteopathic curriculum and that we were interested in hearing as many different views as possible.
- Encouraged participants to ask questions themselves.

- Encouraged participants to share their experiences.

In addition to the focus groups, a number of individual interviews were also implemented with both faculty members and students. Faculty member interviews were held in either osteopathic schools or in the private practice of the faculty member. Student interviews were held in the osteopathic school attended. The interview schedule was developed in the same manner as that used in the focus groups, using a semi-structured approach recommended in related literature (Broom 2005). The facilitator retained a flexible approach to the interview allowing the interview schedule to adapt to each respondent. In this way, the interview schedule adapted to the emerging themes and the facilitator took time to re-visit the schedule after every interview.

A pilot focus group was organized and completed in June 2005 with a pilot interview being completed in January 2006. This was in accordance with the recommendations of Silverman (2001) who suggests that thorough pre-testing of interview schedules and training of the facilitator will have some bearing on the reliability of the data collected (Silverman 2001). Final year students from the BSO (completion of degree June 2005) were invited to volunteer for the pilot focus group study. Four students volunteered. Two faculty members from the BSO were recruited for the pilot interview. The discussion was transcribed immediately following completion of the focus group and interview in order to identify potential coding schemes and resultant themes emerging in the data.

Minor changes were made to the wording of prompts used. The content of the interview schedule remained unchanged.

6.6 ANALYSIS OF INTERVIEW & FOCUS GROUP DATA

The analysis of the focus group and interview data was guided by the stepwise procedure for qualitative data recommended by Krueger (1997). Dialogue from the focus groups and interviews was audio-taped and then transcribed verbatim and supplemented with the notes made from an initial review of the recording.

Initial stages of data analysis included the sorting and categorization of the data. This process began during the data collection stages, with ongoing analysis shaping future data collection. This method has been shown to contribute to high quality qualitative data (Ezzy 2002). All transcripts were read through prior to analysis in order for the researcher to familiarise herself with the dialogue. Employing the technique of open coding where the margins of the transcripts were used to note areas of interest aided the researcher in beginning to conceptualize the data (Ezzy 2002). Thematic coding was based on evidence gathered from previous literature, findings from the parallel study looking at curriculum documents for exercise content (chapter five) and the data collected during both the focus groups and interviews. Themes were updated and restructured through retrospective analysis of all the transcripts. Themes that emerged across the transcripts were noted. The themes were then represented in a comprehensive framework to aid organisation of data (Miles and

Huberman 1994) which was then cross-referenced with the full transcripts to identify common topics, strength of feeling and singularities in data (Krueger 1997; Mortimer 2004). This sequential analysis ensured that questions could be refined throughout data collection as themes emerged (Pope, Ziebland and Mays 2000). Thematic analysis has given a complete and current picture of delivered and received exercise content in the osteopathic curricula from the perspectives of faculty members and students.

Another coder was used to assess the data to ensure consistency of data and themes generated (Higginbottom 1998). Following blinded analysis of 10% of the transcripts, the coding framework and resultant themes were agreed with no alterations. To enhance the quality of the study, some effort has been made to triangulate the data (Silverman 2001). Triangulation of data has occurred as the data collected from the focus groups was compared and contrasted to that generated in the content analysis of curricula documentation in order to build a current picture of exercise education in osteopathy.

The process of qualitative data analysis is outlined in the flow chart below:

Stage 1: Initial read through of all transcripts to aid familiarisation.

*Stage 2:*Transcripts read for a second time using open coding. Margins used for notes relating to early conceptualisation of data.

Stage 3: Initial thematic coding of all transcripts.

Stage 4: Thematic coding updated and restructured through retrospective analysis of all transcripts.

Stage 5: Comparisons in thematic coding across transcripts noted.

Stage 6: Thematic coding represented in a framework to aid organisation.

Stage 7: Framework cross-referenced to all transcripts to identify common topics, strength of feeling and singularities in data.

Stage 8: Continued refinement of questions throughout data collection as thematic codes emerged.

Stage 9: Another experienced postgraduate coder used to ensure consistency of data and thematic coding:

Blinded analysis of 10% of transcripts.

Discussion of thematic codes and coding framework.

An audit trail highlighting direct quotes from the transcripts and how these relate to thematic codes generated can be found in Appendix 9.

6.7 FACULTY MEMBER INTERVIEW RESULTS

Faculty participants (n=9) all chose to be interviewed rather than take part in a faculty member focus group. Reasons for this included being unable to attend the host school on the designated focus group dates and lack of time due to clinical practice. The interviews took place in either a host osteopathic school or private practice. The coding framework outlined in table 6.7 was generated using a content analysis and constant comparison approach to data analysis whereby explanatory themes and concepts were generated from the data. Initial coding including the analysis of the transcripts by sentence fragment derived a set of themes that contributed to the overall emergence of a conceptual framework. The coding framework derived was agreed in principle by a co-coder and both used the framework to analyse a transcript independently. The themes and corresponding verbatim quotes were discussed by the co-coders until the themes presented could be collapsed into meta themes based on which an inter-relating framework could be developed. The coding scheme focussed on ten themes, summarised in table 6.7.

Theme	*Scope of Theme*
Aims of Exercise therapy	Osteopathic aims when using exercise therapy to include educating, empowering, reinforcing, maintenance.
Exercise therapy in osteopathic care/management	To include the use of lifestyle advice, decision-making, adaptation of exercise, rehabilitation, home-based exercise.
Exercise therapy approaches	Osteopathic approaches to exercise therapy to include strengthening, stability, proprioception, stretching, endurance, flexibility, and referral.
Exercise therapy as treatment	Issues to consider when giving exercise therapy as treatment to include compliance, relevance, motivation, patient understanding and setting.
Core Practice Elements	Reasons why exercise therapy may be viewed as fundamental to osteopathic practice to include scope of practice and standard of proficiency.
Role of the osteopath	Role undertaken by the osteopath when utilising exercise therapy to include educator, demonstrator, motivator.
Other professionals	Professionals utilised by an osteopath when considering the use of exercise therapy to include physiotherapist, personal trainer.
Education – Delivery	Delivery of exercise therapy in undergraduate academic and clinical education. Academic education may include technique and lecture-driven material. Clinical education to include tutorials, treatment supervision, demonstration clinics, observation and problem-based learning. Also to include where exercise therapy is not delivered and the reasons for this; ad hoc, faculty teaching styles and values; institutional drive, professional resistance.
Education – Assessment	Modes of assessment, problems with assessment; implicit delivery, prioritisation (core vs periphery); faculty awareness.
Education - Desires	Standardisation of the learning experience, multidisciplinary learning and sharing, patient-centred approach broaden understanding and application.

Table 6.7: Qualitative Data Faculty Coding Framework

All of the faculty members included in this study were practising osteopaths and clearly distinguished between their personal uses of exercise therapy in the osteopathic clinical setting and their role in

osteopathic education. Themes are presented in the text below with corresponding quotes from participants interwoven in the narrative.

6.7.1 Aims of Exercise Therapy

All of the faculty members, who were also clinicians, spoke at length about the aims of exercise therapy in osteopathic practice. There was no clear delineation between the specific aims of exercise therapy when used during treatment and management but all interviewees spoke globally, outlining four key aims. Clinicians explored education, empowerment, reinforcement and maintenance as key aims when using exercise therapy in the osteopathic clinical setting.

> "I suggest certain exercises to hopefully maintain any improvement or any changes we have been able to achieve in the treatment."
>
> Ost F2

6.7.2 Exercise therapy in osteopathic care/management

Faculty members explored the role of exercise therapy in osteopathic care and management suggesting that they use exercise therapy in the context of rehabilitation or devising specific programmes. Clinicians also commented on the scope of exercise therapy suggesting that they may also find themselves offering exercise in the context of lifestyle advice.

> "We do talk about lifestyle factors as well so I like to think we are fairly broad in our outlook."
>
> Ost F2

A number of faculty members went on to explore their role in decision-making in the context of giving exercise advice as part of lifestyle advice particularly when addressing exercise therapy in the management of a

patient. Faculty members suggested that this type of advice might be focussed on home exercise or activity outside the treatment consultation. They suggested that not only did they have to consider the nature of the prescription (specifically timing, simplicity of the exercise and potential for adaptation) but also they felt that they should only use exercise therapy when they considered it safe to do so.

6.7.3 Exercise therapy approaches

Faculty members suggested a range of exercise approaches that they might use as part of their individual approach to osteopathic treatment and management. The approaches used included strengthening and stability exercises, exercises to increase range of movement, mobility and proprioceptive exercises, exercise to increase endurance and flexibility and stretching exercises.

> "Other exercises say maybe strengthening exercises to stabilise, stretching exercises to improve say segmental function between the vertebrae in the back."
>
> Ost F1

> "Types of stretches. Well I use a lot of muscle chain stretches."
>
> Ost F3

Clinicians did suggest that they would consider referring patients to other professionals when they were unable to deliver the exercise approach either because of a lack of facilities or a lack of experience/knowledge. Faculty members suggested that they would refer to professionals who could deliver approaches such as yoga or Pilates.

6.7.4 Exercise therapy as treatment

Faculty members chose to express their concerns about using exercise therapy rather than explore the positive aspects of using therapeutic exercise. Their concerns related predominantly to the issue of patient adherence with prescribed exercise and the problems associated with this. The issue of patient understanding and motivation was raised with some faculty members suggesting that the patient needs to gain kinaesthetic awareness of the exercise approach with the practitioner present in order to give feedback. Clinicians ultimately felt that this approach might aid adherence.

> "I think I would try and give them, show them the exercises there within the actual treatment room and get them feeling them so that they could actually feel what it is they are meant to be doing and feel the benefits of it."
>
> Ost F4

Of particular importance to faculty members was that the patient should be aware of the relevance of the exercise being given as they felt that this could influence adherence positively.

6.7.5 Core Practice Elements

All of the faculty members agreed that exercise therapy is fundamental to osteopathic practice.

> "But it (exercise) is a fundamental part of practice really."
>
> Ost F5

> "I think that's (exercise) a core element of osteopathic practice especially when you are dealing with existing situations."
>
> Ost F4

One participant suggested that in order for them to clarify whether exercise therapy is part of osteopathic scope of practice that they should refer to classic historical texts and the documentation produced by the General Osteopathic Council.

6.7.6 Role of the osteopath

Participants suggested that the role of the osteopath in the context of using exercise therapy in treatment and management was to educate and motivate the patient. In addition, they thought they could possibly have a role in reinforcing the exercise message. In tandem with the issues raised relating to exercise adherence, the participants felt that when giving exercise therapy to their patients they should demonstrate the exercise to the patient in the treatment room encouraging the patient to demonstrate the exercise back to the practitioner. In this way, the practitioner felt that they could give the patient adequate feedback.

> "I will be demonstrating the exercise first then secondly I will ask them to do the exercise and I will go through (it) and give them some feedback."
>
> Ost F4

6.7.7 Other professionals

Faculty members spoke about their willingness to use other professionals particularly in the delivery of specific modes of exercise. Two of the participants had the ability to refer to other professionals because of the location of their osteopathic practice.

> "Set up an appointment with one of the personal trainers here, if they are members (the patient), so that we can work out a proper programme."
>
> Ost F5

One participant suggested that she would use other professionals because of the time constraints in the treatment session.

> "If I feel they have got a big problem actually doing the exercises, I haven't got enough time in treatment to spend a long time and we have a set-up here where we have specialists in exercise therapy."
>
> Ost F3

6.8 EDUCATION – DELIVERY

The education–delivery theme split into three inter-related themes - academic education, clinical education and obstacles to delivery.

6.8.1 Academic education

Participants spoke about two strands of academic education where exercise content was being delivered. Faculty members suggested that there was evidence of delivery of exercise within osteopathic technique and that on occasions there were lecture-driven classes that focussed directly on the application of theory in context. One faculty member noted that he delivered exercise content in a workshop format to encourage experiential learning.

> "I will get them (the students) to demonstrate in their groups, they try out some stretches at the front (of the classroom), we demo them. So it is all done by demo and experience."
>
> Ost F6

6.8.2 Clinical Education

Faculty members spoke at length about their delivery of exercise content in a clinical context. Participants stated four modes of delivery that contained exercise content in clinical education. These were observation of other practitioners (student or osteopath), demonstration clinic, treatment supervision and clinic tutorials. Observation of other practitioners, students or osteopaths, provided an opportunity for the delivery of exercise content during clinical education. This type of observation is often contained within treatment supervision and clinic tutorials.

> "Most of my teaching of anything exercise-based will be in clinic, Clinic-oriented, in the treatment room."
>
> Ost F1

Demonstration clinics give the students an opportunity to observe a practitioner providing treatment in a clinical setting. Demonstration clinics are often specialist clinics offered on a weekly basis.

The nature of the learning experience in a clinical context was raised by a number of faculty members. It was felt that during treatment supervision, students had the opportunity to clinically apply the exercise knowledge they had but faculty members suggested that these educational experiences were opportunistic and offered the student a non-standardised approach to exercise education.

> "It's (exercise education) not very structured."
>
> Ost F5

Similar observations were made about the exercise content delivered in clinical tutorials. Once again, these educational experiences were opportunistic and exploratory in nature. Faculty members felt that the non-standardised approach to exercise in clinic tutorials and treatment supervision did not provide the student with adequate preparation for professional life or equality in learning experience. The limited preparation for professional life meant that inter-professional working relationships could be difficult with their limited understanding of certain exercise-related concepts and approaches.

The non-standardised approach to exercise education was raised again when faculty members talked about the issue of using current students as resources to guide tutorials or expand on their delivery of exercise. With the increasing number of exercise professionals entering osteopathy, faculty members often found themselves drawing on the expertise of their students to supplement tutorials and consequently guiding the exercise content being given to undergraduates. Although it was felt that this type of practice helped with students' synthesis of knowledge and autonomy of learning, it was also felt that this would contribute to a non-standardised approach to delivery.

In the context of delivering exercise content in a clinical setting, it was felt by one faculty member that encouraging the delivery of exercise through problem-based learning could help the students to develop their clinical reasoning skills. In addition, it was also felt that exercise education could

contribute to the development of clinical competency and help the student identify the potential for referral to other professionals.

6.8.3 Obstacles to delivery

Participants raised a number of issues that they believed were obstacles to the delivery of exercise in the undergraduate curriculum. Two faculty members suggested that exercise delivery is poor in the undergraduate curriculum.

> "I think unfortunately it's (exercise education) not done well."
>
> Ost F1

The ad hoc nature and the non-standardised approach to delivery were raised, linking these factors with the style and values of faculty teaching in the schools. Not all faculty members responsible for the delivery of undergraduate education express a desire to explore exercise therapy either because of a limited knowledge base or their values in relation to this aspect of practice. This meant that the exercise therapy education given to undergraduates was largely dependent on the faculty member teaching during a particular session, and so ensuring that exercise therapy education is both ad hoc and non-standardised.

> "I think most students just pick it up erm as sort of ad hoc because different osteopaths teach in the clinic and use exercise in different ways and in different levels."
>
> Ost F1

There was some discussion of where exercise therapy is viewed in relation to the core curriculum. Faculty suggested that with a curriculum that is so full, exercise therapy might be viewed as a peripheral subject

area and so not regarded as core to an undergraduate's osteopathic education. Resistance from within the profession to adopting exercise as part of the undergraduate curriculum was suggested as an obstacle to delivery as was osteopathic dogma. Professional resistance was linked to the use of exercise therapy in, for example, physiotherapy and the desire to be different from other professions and professionals.

One participant did suggest that the drive and infrastructure of the institution providing the programme of education could be viewed as an obstacle to delivery because of bureaucracy and resistance to change. This was viewed by the participant as being particularly frustrating.

6.9 EDUCATION – ASSESSMENT

Of the exercise experiences that are assessed, the faculty members suggested that assessment modes such as Objective Structured Clinical Examination (OSCE), case report/essay, clinic tutor reports and technique exams were currently being used. In relation to clinical education, participants felt that experiential learning was very important but rarely assessed and this may be a function of the implicit delivery at undergraduate level. Faculty did suggest that assessment of exercise content should be tackled using a fully-integrated approach. This might be achieved via the clinical competency examination (CCE), the presentation of a hypothetical patient or an assessment where the student is required to demonstrate and advise a patient on exercise.

> "I mean if there were say theoretical explanations of what certain exercise modalities were meant to achieve then you could almost have a written paper on it. Or a hypothetical patient you know presentation which may be of value."
>
> Ost F2

A number of faculty members did say that assessment of exercise content is problematic. In particular, when the faculty member had to prioritise content to deliver to undergraduates, exercise therapy was viewed as peripheral to the more core elements in the curriculum. The quality of students entering osteopathy was noted as being problematic with the priority being to impart key academic and clinical skills rather than focussing on exercise therapy which may not be viewed as important by the student, faculty members or the educational institution.

> "Assessing exercise is probably down our list of priorities unfortunately – I think it is partly down to student quality."
>
> Ost F1

They suggested that assessment is limited by the implicit approach to delivery and aired concerns that students could use exercise therapy in assessments to hide their clinical weaknesses. Students may utilise exercise therapy to cover their difficulties in differential diagnosis and focus purely on the inclusion of exercise into their treatment and management plan.

> "I think what I would hate to see is exercise therapy being taught and then the weaker students hiding their inability to differentially diagnose and come up with an effective treatment plan by just jumping straight from symptoms and collection of clinical data straight to oh let's do some exercise therapy."
>
> Ost F1

A limitation to assessment was also levelled at faculty members whose knowledge may not be current or evidence-based. Similarly, those faculty members who took little interest in exercise therapy would not be likely to introduce assessments in the subject area.

6.10 EDUCATION - DESIRES

Faculty members clearly expressed their desire to improve delivery of exercise education in the undergraduate curriculum. All faculty members stated standardisation of the learning experience as an important area for improvement. In particular, clinic tutorials were focussed on with the desire to provide a more equal learning experience during this aspect of clinical education.

> "I think that is probably one area (tutorials) that we are looking to have a bit more standardised so that students receive a more equal erm tutorial experience within the clinic."
>
> Ost F1

Faculty members felt that experiential learning had an important role in osteopathic practice and that an integrated approach to exercise delivery should be encouraged. In addition to this, faculty members spoke about equality in provision of exercise experiences in both clinical and academic education.

Participants felt that they would like to broaden their own understanding and application of exercise therapy and felt that this could be achieved within an osteopathic framework. It was clear that participants felt that for exercise therapy to be delivered in the curriculum, the education provider

needed be proactive in their support and help them explore initiatives for innovative integration. All participants expressed a desire for multidisciplinary collaboration as a way to improve osteopathic education. They felt that by collaborating with other professions they could both appreciate their own practice and educational strengths and also realise their weaknesses.

Collaboration was also viewed as a way to challenge osteopathic dogma, which two members of faculty viewed as a significant obstacle to incorporating exercise therapy into the undergraduate curriculum.

> "I think it is a good thing to be inclusive rather than exclusive. I think it is a good thing to have our ideas, our dogma challenged because often there isn't a basis for it."
>
> Ost F1

Finally, all participants expressed the desire to incorporate exercise therapy into patient-centred care and essentially do what is right for the patient. There was some appreciation here that not always is exercise therapy the way forward and that the appropriateness of using exercise therapy should be assessed on the basis of the presenting patient.

6.11 FOCUS GROUP /INTERVIEW RESULTS – STUDENTS

The students who volunteered for this study (n=11) were included in either a focus group session or individual interviews. All of the focus groups/-interviews took place at the host schools. The coding framework outlined in table 6.9 was generated using the procedure detailed in section 6.6. Analysis of the data was approached in an identical way to that for the faculty member interviews.

Theme	*Scope of theme*
Aims & Benefits of Exercise therapy	Osteopathic aims when using exercise therapy to include educating, empowering, reinforcing, improvement in well-being. Benefits of exercise – long-term and short-term changes.
Exercise therapy in osteopathic care/management	To include the use of lifestyle advice, decision-making, adaptation of exercise, rehabilitation, home-based exercise.
Exercise therapy as treatment	Issues to consider when giving exercise therapy as treatment to include compliance, relevance, motivation, patient understanding and setting, timing of the intervention and goal setting. To include reasons why exercise therapy should not be used.
Core Practice Elements	Reasons why exercise therapy may be viewed as fundamental to osteopathic practice to include scope of practice and standard of proficiency.
Education – Delivery	Delivery of exercise therapy in undergraduate academic and clinical education. Academic education may include technique and lecture-driven material. Clinical education to include tutorials, treatment supervision, demonstration clinics, observation and problem-based learning. Self-directed learning. Also to include where exercise therapy is not delivered and the reasons for this; ad hoc, faculty teaching styles and values; institutional drive, professional resistance, lack of resources, limited contact time. Preparation for professional life.
Education – Assessment	Modes of assessment, problems with assessment; implicit delivery, prioritisation (core vs periphery); faculty awareness. Problems associated with assessment, importance of assessing for safety.
Education - Desires	Experiential learning, broaden understanding and application, multidisciplinary collaboration, timing of education.

Table 6.9: Qualitative Data Student Coding Framework

Themes are presented in the text below with corresponding quotes from participants interwoven in the narrative.

6.11.1 Aims and Benefits of Exercise Therapy

The aims of exercise therapy expressed by students were very much focussed on the utilisation of exercise for the global improvement of well-being and function.

> "I think exercise is vital in promoting well-being on a personal level."
>
> S4

One student felt that exercise therapy could be used osteopathically to aid patients in their ability to overcome daily stresses.

> "I think exercise alongside osteopathic treatment is vital because it does help the muscular system, place demands on the muscular system to help that patient overcome their daily pressures."
>
> S4

Confidence-building and enabling empowerment were both explored by the students with a belief that exercise therapy can be used as a means of encouraging the patient to take control of their own health.

> "I think that it is a lot more beneficial (to include exercise) because otherwise what you are doing is you are treating them, sending them back out and then they are just automatically going to bounce back anyway."
>
> S3

6.11.2 Exercise Therapy in Osteopathic Care/Management

Students explored the use of exercise therapy in the framework of giving lifestyle advice to patients. One student found the inclusion of exercise

therapy in advice given about general lifestyle useful when treating chronic patients.

> "The more chronic the patient, the severity of the problem, I think you end up using exercise a bit more and making it about their life rather than what osteopathic treatment can do."
>
> S31

Decision-making in relation to careful consideration of whether the patient can accommodate exercise within their daily schedule was an important concern for one student osteopath. The exploration of this topic inferred that these concerns might have some impact on the student's decision to use exercise therapy as an adjunct to osteopathic treatment.

> "Find out about how they (the patient) think about exercise and putting an exercise regime into their schedule."
>
> S4

6.11.3 Exercise Therapy as Treatment

When using exercise therapy as part of treatment, the students suggested that goal-setting with the patient in relation to exercise and treatment outcomes was an important part of the consultation time. Goal-setting in this way would then allow the student osteopath to think carefully about how appropriate both short- and long-term programmes of exercise might be for the presenting patient.

> "They (the patient) might have a very busy schedule and so the exercise will have to be focussed on short-term goals in small doses.
>
> S4

The students reflected on the safety considerations when using exercise in osteopathic treatment and were clear that exercise could be both

unsafe and detrimental to health when not applied or taught in the correct manner.

> "You can have exercise and you can have exercise that is detrimental to health if it is not taught correctly or not performed correctly."
>
> S4

Other issues of relevance for the student osteopaths were that of adherence when recommending exercise therapy to their patients, with students questioning the appropriateness of utilising exercise therapy in the clinical context where they are frequently faced with the reality that patients are not reacting to the advice they are given.

> "It is very difficult to prescribe an exercise programme to a patient and make sure they adhere to it."
>
> S4

One student did suggest that use of an exercise diary as a potential solution to adherence issues although the other students in this study did not echo this. There was some agreement however, that the student osteopaths should be offering the patient some feedback on the exercise therapy prescribed and should follow up with the patient on their return consultation. It was generally felt that this strategy might aid adherence.

Student osteopaths explored the reasons why exercise therapy may not be appropriate for osteopathic patients with patient expectations of osteopathic treatment being of concern. There was some discussion that patients might not expect exercise therapy as part of an osteopathic consultation and so may be perturbed if exercise therapy were to be a constituent part of an osteopathic consultation.

> "I think patients come in expecting to have a bit of a rub and a click, not expecting to do exercise."
>
> S1

Patient expectations of physiotherapy were viewed as inclusive of exercise therapy and the students suggested that perhaps physiotherapists were best equipped to use exercise therapy in the treatment situation.

6.11.4 Core Practice Elements

Exercise therapy was generally viewed as fundamental to practice with many students suggesting that it is hugely beneficial and necessary for patients to engage in exercise.

> "I think it is hugely important to most patients. Some form of exercise I think is highly beneficial and necessary."
>
> S3

The students felt that on the whole they would welcome the integration of exercise therapy into osteopathic education, treatment and management with one student suggesting that these changes might bring osteopathy into the 21st century.

> "I'd like to consider taking osteopathy into the 21st century and introduce exercise prescription and rehabilitation."
>
> S11

6.12 EDUCATION – DELIVERY

The student osteopaths generally viewed the delivery of exercise education in the undergraduate osteopathic curriculum as poor. There

was some concern that for those students who did not have any previous experience in exercise that they felt unprepared for professional life.

6.12.1 Academic Education

Students referred to the delivery of exercise content via lecture-driven classes covering aspects of rehabilitation. In general, these lectures were delivered by visiting lecturers and focussed on the prescription of exercise for patients considered non-sedentary.

> "Not as much as I would have liked. I think the only real exercise class we came across was a rehabilitative class for exercise."
>
> S4

The students also referred to the theoretical aspects of exercise being covered in physiology-based subject areas, but suggested that there had not been focussed delivery of content relating to exercise theory and principles, particularly relating to the fundamentals of exercise prescription.

> "We have not had any specific teaching in exercise theory."
>
> S3

There was some indication that the lack of emphasis on the theoretical basis of exercise was due to faculty members' increased expectations of students becoming self-directed learners. The students did not view self-directed learning as negative and there was an expression that this would enhance their ability to tailor their exercise advice to the presenting patient.

6.12.2 Clinical Education

Students explored the delivery of exercise content within clinical education suggesting that the education in this area was practically-oriented and based in a clinical context.

> "If we get anything (exercise education) it tends to be more practical."
>
> S3

The students expressed some concern over the equality of learning experience in clinical education and suggested that it was often the responsibility of the student cohort to request exercise education in a tutorial or from a faculty member in a patient consultation. Many students felt that the onus was placed on them to seek education on exercise prescription; this was a consequence of the general direction of higher education and the emphasis on self-directed learning. Learning from other students in the clinical situation was explored with recognition that student colleagues who have previous experience in exercise can be a valuable learning resource.

6.12.3 Obstacles

Student osteopaths expressed their concerns over exercise delivery in the undergraduate curriculum. The unstructured nature of the clinical tutorial system was felt to be a barrier to the delivery of exercise content. Faculty member's values and knowledge in exercise education and prescription were considered to be problematic and it was felt that they may not be able to fulfil the needs of the undergraduate student.

> "Tutorials are taken by osteopaths who sometimes themselves do not have the experience in exercise so they are really quite unable to fulfil the needs of an osteopathic student requiring exercise advice."
>
> S4

Lack of resources and exercise equipment available for students and patients to use was viewed as a barrier to delivery, as was the limited time faculty members had to explore exercise prescription and advice with students.

> "It is quite difficult for tutors to sit down and go through an exercise regime in the given time they have."
>
> S4

Students felt that there was an expectation from faculty members that they should be able to give exercise advice without explicit delivery within the curriculum. As a consequence, students felt the need to directly ask for exercise education during clinical tutorials or during the patient consultation.

> "You do get it (exercise education) if you ask – but it is wrong, it should be across the board."
>
> S21

6.13 EDUCATION – ASSESSMENT

All student members agreed that assessment in this area was limited. There was however a conflict of opinion amongst the students as to whether exercise content should be assessed in the undergraduate curriculum. One student expressed concern that not all students showed an enthusiasm for exercise and physical activity and so viewed this aspect as peripheral to other subject areas within the curriculum. This in turn might negate the requirement for assessment. However, a number of

participants suggested that assessment should be geared towards ensuring that exercise advice given is both appropriate and safe.

> "I think the key is assessing people on providing a safe start on how they would advise people."
>
> S4

The students welcomed integration of assessment into the clinical context with a clear emphasis on assessing the students on their diagnosis and management of patients and that this might include the prescription of exercise.

> "I think it should be assessed in the clinic scenario, so you shouldn't just be assessed on diagnosis and treatment, it should be diagnosis and management too."
>
> S41

Students were concerned that the education delivered should be both evidence-based and current and as a consequence modes of assessment might need to be innovative and contemporary to fulfil all learning outcomes. The use of management plans based on patient presentations to include the prescription of exercise was suggested as a mode of assessment. The emphasis of student discussion was on the importance of experiential learning and a "hands on" approach both to delivery and assessment.

6.14 EDUCATION – DESIRES

Experiential learning was of the utmost importance for student osteopaths with a clear desire to develop a “hands on” approach to exercise. There was an indication that the students felt that they could only confidently use exercise in the clinical situation if they themselves had experienced the exercise and developed a level of kinaesthetic awareness.

> “You know how to work multifidus and transversus abdominus. How can anyone show someone to do that if they have not really tried it for themselves?”
>
> S3

Adaptation of exercise was viewed as important with the students suggesting that this would help them consider tailoring the exercise advice they were giving to patients.

> “You know showing student osteopaths how to adapt central knowledge of exercise and the fundamentals of exercise to whatever situation they are in.”
>
> S3

All student osteopaths supported integration of exercise education throughout the curriculum with a clear desire to be introduced to the basic principles in year one as a foundation. In this way, students would feel competent to practically use exercise in the clinical context later in their osteopathic education. Multidisciplinary collaboration was explored with the desire to work more closely with sports professionals and physiotherapists. By learning from others in this way, the students felt that they would gain more knowledge and appreciate their own strengths and weaknesses as osteopaths. Standardisation of the learning experience

was deemed important with a clear structure directed at delivery and assessment in this area.

> "Well-structured, well-formatted and focussed education for the particular task is always a good thing."
>
> S4

Figure 6.5 illustrates an exercise education conceptual framework based upon the analysis of the student and faculty member transcripts.

Insert Exercise Education conceptual framework.

6.15 CHAPTER DISCUSSION OF QUANTITATIVE & QUALITATIVE FINDINGS

The questionnaire and focus group/ interview studies were developed and implemented with a vision of gaining insight into the exercise content featured within both the taught and received osteopathic undergraduate curriculum. It is clear from the results of these studies that there are common themes and experiences in the exploration of exercise expressed by both faculty members and students. Of particular interest were the shared desires of both groups, particularly in the expression of support for an integrated, experiential, assessed approach to the inclusion of exercise in the undergraduate curriculum.

The questionnaire revealed that the majority of faculty respondents (94%) were osteopaths. The inference is that very few academics or professionals from associated disciplines enter osteopathic education. A part-time faculty of practising osteopaths who often contribute to the delivery of the undergraduate curriculum in either an academic and/or clinical capacity dominates osteopathic education. Historically, there has been little incentive for osteopaths or others from associated disciplines to enter osteopathic education on a full-time basis. To date, many osteopathic education providers have not pursued the development of a full-time faculty and have delivered the curriculum using the predominantly osteopathic faculty available. Faculty composition within a school is commonly limited to those osteopaths who were educated at that educational establishment. This study has confirmed this notion with

a significant association between site of osteopathic education and school of employment suggesting that there is limited cross-fertilisation of ideas between schools and professions. Although many of the respondents suggest that osteopathic clinical practice and experience make an important contribution to their knowledge and ability to deliver exercise in the undergraduate curriculum, the limited use of other professionals and osteopaths who have experienced other learning styles and curricula could feasibly be limiting the educational experiences offered to the students. Students contributing to this study suggest that the delivery of exercise content in the curriculum is poor and where there is delivery, this is compromised by existing faculty members' values and knowledge base. The essence of the argument is that there appears to be a necessity to widen the experience and expertise of faculty beyond that of practising osteopaths to be inclusive of academics and perhaps clinicians from associated health professions. To be inclusive rather than exclusive will not only aid in the development of educational innovation in this area but also encourage osteopathic students and faculty members to embrace the notion of multidisciplinary collaboration beyond education and into practice.

The study in chapter five of the thesis exploring the intended curriculum suggested that much of the documentation provided by osteopathic education providers pertained to academic education and that the exercise content contained within the intended curriculum was idiosyncratic and variable. The questionnaire revealed that faculty

members who teach predominantly academic subjects are less likely to deliver exercise content. Yet exercise content was evident in clinical education but clearly not documented. Sixty one per cent of all experiences containing exercise content listed in the faculty questionnaire were delivered in clinical education, which clearly supports this notion. Clinic tutorials and treatment supervision were noted in the faculty questionnaire as the predominant educational experiences containing exercise content. Faculty members and student osteopaths expressed similar views in the focus groups and interviews. It could be perceived that the intended curriculum is reflective of academic education whilst the delivered and received curriculum reflects clinical education. The implications of this finding not only in relation to exercise content but also for the wider osteopathic curriculum are paramount. Clinical education in an undergraduate osteopathic degree accounts for a notable proportion of contact and study hours. The indication from the studies contained in this thesis is that the content in clinical education is rarely documented and that the delivery of exercise content in specifically clinic tutorials goes largely unrecognised in documentation provided by education providers. As a consequence, the tutorial system, and to a lesser extent clinical education, delivers exercise education that is ad hoc and opportunistic. The exploratory nature of clinical education means that particularly with reference to exercise education, both students and faculty members question the equality of the learning experience offered at osteopathic educational institutions. This has numerous implications. The perceived implicit delivery has repercussions for the assessment of exercise content

with both faculty members and students expressing some concern over both the limited opportunity for assessment in the current curriculum and the clear difficulties there would be for the future development of an assessment programme. Without a structured programme of delivery providing an equal learning experience for all students guided by learning outcomes, the opportunity for assessment is limited.

Both students and faculty members explored the potential for assessment with the desire for an experiential, evidence-based, integrated approach to the delivery of exercise content in the curriculum reflecting their desire for modes of assessment integrated into the clinical scenario. However, there must be some appreciation that until delivery of exercise content becomes explicit and standardised across the entire student cohort there is limited scope for the development of comprehensive assessment in this area.

The non-standardised approach to delivery and assessment of exercise content also has some effect upon the student's preparation for professional life and their confidence and ability to work in dynamic health care settings that may draw on a multidisciplinary workforce. There was some concern from both faculty members and students that preparation for professional life was limited and as a consequence that they had concerns about working alongside other professionals. Similarly, both faculty members and students expressed concerns with utilisation of exercise therapy and patient concordance and safety, particularly in

relation to the potential for negligence and litigation. Clearly osteopaths need to develop strategies to help combat issues of concordance and might look to other professions for guidance. Developing a framework for collaboration based in osteopathic education could have far-reaching implications for educational development; assessment and practice-related issues for both student osteopaths and registered practitioners.

There are a number of suggestions here for future developments in osteopathic education. However, osteopathic education providers need to be active partners in driving forward the vision of a fully-integrated, standardised approach to exercise therapy education. Faculty members and students noted their concerns about the institutional drive for the inclusion of exercise therapy into a curriculum that may be considered as over-delivered and over-assessed. These issues will be key in the decision-making processes for individual education providers when considering the integration of exercise therapy into the curriculum.

Faculty members spoke at length about their desires for exercise therapy in both undergraduate education and practice. An overriding theme was the continued development of patient-centred care particularly in relation to the use of exercise therapy. The patient-centred approach to exercise therapy can be regarded as truly osteopathic. This is in agreement with exercise theory which suggests that exercise should be tailored to the individual (American College of Sports Medicine 2000). The faculty members' exploration of a range of therapeutic approaches to exercise

and the clear decision-making processes undertaken by the practitioners suggests that there is already some indication that practitioners are tailoring their advice and looking for a patient-centred approach to exercise therapy. Further development of this process may be strengthened with further exploration of integration into both undergraduate and postgraduate osteopathic programmes.

6.16 CHAPTER CONCLUSIONS

Several clear conclusions can be drawn from this work. Exercise therapy is evident in undergraduate osteopathic education but is delivered predominantly in clinical education. Findings from the studies in both chapters five and six of this thesis suggest that the intended curriculum pertains to the academic delivery of exercise whilst the delivered and received curriculum reflects clinical education more closely. Content in clinical education is largely opportunistic and whilst the exploratory nature of this material is welcomed, there is a desire to adopt a standardised approach to delivery to give equality in the learning experience. Content in clinical education is largely not assessed and whilst recommendations for modes of assessment were offered, standardisation of the learning experience needs to be reached before faculty can confidently assess this aspect of the undergraduate curriculum.

CHAPTER 7: EXPLORING THE USE OF EXERCISE THERAPY IN UK OSTEOPATHIC PRACTICE

7.0 CHAPTER INTRODUCTION

Research exploring the use of exercise therapy has included focused systematic reviews presenting best current evidence for the inclusion of exercise therapy in treatment and management packages (Hayden , Van Tulder and Tomlinson 2005; Hayden, van Tulder, Malmivaara and Koes 2005a; Hayden , Van Tulder, Malmivaara and Koes 2005b). Findings from these studies have been incorporated into both national and international management guidelines for musculoskeletal disorders. In the UK, the Department of Health has clearly indicated its desire for the British population to increase their levels of physical activity (European Commission COST B13 Management Committee 2002; Department of Health 2004a; Department of Health 2006). Intervention guidance recommending moderate intensity physical activity on at least five occasions per week is based on the evidence drawing a clear link between physical inactivity and ill-health (Department of Health 2004a). Recent papers have noted that an increase in physical activity levels has been seen to contribute to the prevention and management of over 20 diseases including cancer, diabetes and coronary heart disease (NICE Public Health Collaborating Centre - Physical Activity 2006).

Health care professionals should base their treatment on the best possible evidence available. Osteopathy is somewhat less developed

than other professions in terms of its research capacity and it is unknown to what extent osteopaths include evidence-based recommendations in their practice or routinely review published material. Postal surveys have been the method of choice for previous studies exploring the use of exercise therapy by physiotherapists in the UK and Republic of Ireland (Foster, Thompson, Baxter and Allen 1999; Gracey, McDonough and Baxter 2002). These studies have focused on patients with low back pain and noted that the most popular exercise approaches included McKenzie and abdominal exercises, active exercises and muscle re-education. More recently, the results of Byrne et al. (2006) showed that stabilization exercises and the McKenzie approach were the most popular modes of exercise therapy (Byrne et al. 2006). Of particular interest was that the modes of exercise explored were restricted to those treatment options available within a physiotherapy department such as strengthening and stabilisation approaches. As a result, the generally more accessible modes of exercise such as walking and cycling were not included in the study findings. The use of stabilization and McKenzie approaches is in contradiction to published low back pain guidelines and Byrne et al. (2006) suggest that their use may be a consequence of the increase in focus on postgraduate courses and the published positive evidence relating to the efficacy of spinal stabilization. The study detailed in this chapter will, through the use of qualitative methods, identify whether there are similar trends in the use of these modes of exercise in osteopathy.

The use of evidence-based guidelines and their implementation in clinical practice has been investigated in predominantly physiotherapy samples. In a Dutch study of physical therapists' management of low back pain, it was found that exercise had increased in popularity over a period of 14 years and it was concluded that national guidelines had influenced management (Groenendijk, Swinkels, de Bakker, Dekker and van den Ende 2006). Groenendijk et al. (2006) suggest that such an increase in the popularity of exercise is characteristic of evidence-based practice. Closer inspection of the literature also illustrates barriers to guideline implementation. These have included a lack of emphasis on research in practice, lack of education in specific interventions, or time for implementation together with a belief that guidelines are of limited use (Foster and Doughty 2002). To date, similar issues have not been explored in osteopathic practice and this chapter sets out to provide a foundation for this work in the context of osteopathy.

The purpose of this study was to explore what practitioners understand and interpret as exercise therapy within osteopathic treatment and management.

7.1 AIMS AND OBJECTIVES OF THE STUDY

The primary aims and objectives of this study were to:

- Explore the potential use of different modes of exercise therapy during treatment.

- Explore the potential use of different modes of exercise therapy as part of patient management strategies.
- Explore the practitioners' understanding and use of the parameters of exercise prescription.
- Explore practitioners' ideas and opinions relating to continuing professional development and all levels of education in exercise therapy.

7.2 METHOD

The exploration of the use of exercise therapy in osteopathic practice was implemented using one to one semi-structured interviews with registered UK osteopathic practitioners. This qualitative method was appropriate, as the primary aim was to build upon a foundation of work in this area and explore further clinical application and understanding of the use of exercise therapy. Qualitative methods have been recommended where the aim of the research is to gain a holistic overview of the context of the research question, capturing data on perception and beliefs (Miles and Huberman 1994). Using open-ended questions to define an area of study to be explored is a common technique in health care research (Britten 2000). The semi-structured nature of the interview allowed the interviewer to explore interesting lines of enquiry raised by the participant within the construct of the interview setting ensuring that the research agenda remained flexible.

7.2.1 Ethical Issues

The primary ethical issue associated with interviews is that of confidentiality. All participants were made aware of the importance of confidentiality both in the information sheet provided and during the researchers' introduction when meeting for interview. Participants were assured that the discussion and recorded dialogue were to be kept securely stored (in a locked cupboard on private premises) and password-protected when transcribed verbatim to Word documents. All tapes will be destroyed upon completion of the doctorate. Confidentiality

of the discussion was further assured by allowing only the research team (researcher and supervisors) access to the audiotapes. In written documents, all participants were to remain anonymous. All potential identifying information was removed from written documents including this thesis and any resulting papers. All participants were made aware of the requirements of the study, including what was being asked of them in terms of time and contribution to the discussion. It was not anticipated that any of the questions included in the schedule would cause the participants undue stress. All ethical issues were covered in the information sheet given to participants (Appendix 10). Written consent was obtained prior to the initiation of the interview (Appendix 11). The University of Brighton Ethics Committee approved this study (Appendix 12), with the researcher's responses to the issues raised by the committee contained within Appendix 12.

7.2.2. Participants

Participants for this study were General Osteopathic Council (GOsC)-registered osteopathic practitioners. Participants were volunteers recruited via an advertisement in the national osteopathic press. The advert used on two occasions is given in Appendix 13. The Osteopath and Osteopathy Today are distributed bi-monthly and once per month to all UK registered osteopaths and those osteopaths who are members of the British Osteopathic Association (BOA) respectively. Those interested in participating were provided with the contact details of the researcher as contained within the advert. Upon initial contact and notification of interest, the researcher provided a full explanation of the study. The suitability of the participant was confirmed and the time, date and preferred location of the interview were discussed with the participant. For those who were willing to take part, an information sheet and consent form were sent to them by post prior to the interview (Appendices 10 & 11). It was envisaged that a minimum sample population of 15 practising osteopaths was to be needed for data saturation. The rationale for interviewing a minimum of 15 practitioners stems from the practicalities of travelling to and interviewing osteopaths. Sixteen practitioners volunteered to take part and were consequently interviewed for this study.

It was initially anticipated that participants for this study were to be drawn from practitioners based in London and the South East of England. A snapshot survey commissioned by the GOsC in 2001 showed that 48.2% of registered practitioners were practising in London and the South East

of England (General Osteopathic Council 2001). This geographical location accounts for the largest concentration of practitioners in the UK and so it was reasonable to suggest that these practitioners are representative of the British osteopathic population. The initial advert placed in the osteopathic national press did not yield enough volunteers and so the researcher extended the study to include osteopathic practitioners from across the UK.

The issue of travelling to and interviewing osteopaths in a location convenient to them, which may be at their practice address, was duly considered. In order to ensure the safety of the author, a buddy system was used. The researcher arranged to telephone a colleague by an agreed time following the conclusion of an interview. Should the researcher have failed to telephone the nominated colleague, the colleague was instructed to call the mobile phone of the researcher. Should the researcher not answer, the colleague had the authority to open a sealed envelope containing the location of the interview. This system was in place for every interview visit.

7.2.3 Inclusion Criteria

- GOsC registered osteopathic practitioners (both male and female).
- Practitioners who were willing to contribute to a discussion on exploring exercise therapy in osteopathic practice.
- Practitioners who practise in the UK.

7.2.4 Exclusion Criteria

- Practitioners who were not registered with the GOsC.
- Practitioners who were not willing to contribute to a discussion on exploring exercise therapy in osteopathic practice.
- Osteopaths practising outside the UK.

7.2.5 Development of the Interview Schedule

The interview schedule was developed in reference to the exercise literature and the findings of the studies examining exercise content in osteopathic education outlined in chapters five and six. The key issues explored are contained in Appendix 14. All participants recruited to the study were fully informed of the broad schedule of the interview prior to attending the interview.

7.2.6 Interview Procedure

The interview procedure used in this study was based on that used in the qualitative arm of the study detailed in chapter six of this thesis. In accordance with the recommendations of Silverman (2001) who suggests that thorough pre-testing of interview schedules and training of the facilitator will have some bearing on the consistency of the data collected, a pilot interview was organized and completed. Pilot study participants were practitioner colleagues of the researcher who had experience using this methodology. No subsequent changes were made to the interview schedule or procedure following the pilot studies completed.

Prior to the interview, each participant signed a written consent form and returned it to the researcher. Time for questions raised by the participant was set aside both before and after the interview. The location of the interview was at the discretion of the participant with the researcher willing to travel to practice locations. Each interview ran in a relaxed atmosphere, in a comfortable setting without interruptions.

Patton (2002) suggests that semi-structured interview questions should be open ended, neutral, sensitive and clear to the participant. It is suggested that the interview begins with questions that are easily answered and then progress on to the more challenging or sensitive topics. Patton also suggests six types of questions that are commonly found within a qualitative interview, these being questions based on

behaviour or experience, opinion or belief, feelings, knowledge, sensory and background or demographics. These general topics of exploration provided the foundation for the questions included in the interview schedule with practitioners. The researcher used a core set of questions for all participants. During the course of the interview and dependent upon the progression of the interview, the researcher used supplementary questions to probe the topic further. It was particularly important that the researcher used the terminology and phraseology of the participant to ensure continuity and understanding and so it was reasonable to expect some variation in questioning (Holliday 2007). Flexibility in the schedule of questions was also a requirement as there is often an expectation in qualitative interviews that questioning might change as the researcher becomes more familiar with the topic and introduces supplementary questions. This was the case with the study in question.

It was important that the researcher's potential bias towards the use of exercise therapy did not influence the interview and so the participants were encouraged to talk freely and explore their own framework of meanings for the potential use of exercise therapy in osteopathic clinical practice. Flexibility and sensitivity to the participant's expressions of meaning were paramount to the success of the interview whilst every effort was made to explore the topic thoroughly. Using a pre-determined interview schedule ensured that discussion was free from researcher bias or personal interpretation of meaning. Summarizing what the participant

has said and terminology used was employed as a method of clarification (Britten 2000).

7.2.7 Analysis of Interview Data

The analysis of the interview data was guided by the stepwise procedure for qualitative data recommended by Krueger (1997). Dialogue from the interviews was audio-taped and then transcribed verbatim by the researcher. The transcription was supplemented with notes from observations made during the interview and an initial review of the recording made within twenty-four hours of the interview (Krueger 1997). Every effort was made to transcribe pauses and overlaps of dialogue to improve the accuracy of the transcription.

Prior to analysis, all of the transcripts were read in full with notes made outlining comparisons and contrasts in dialogue. These initial notes aided the researcher in the early stages of data analysis that included the sorting of data. Sorting, comparing and contrasting dialogue essentially began during the data collection stages, to ensure that ongoing analysis shaped future data collection. This method has been shown to contribute to high-quality qualitative data (Ezzy 2002).

Following the initial reading in full of all of the participant transcripts, data analysis began with the conceptualisation of the data. Employing the technique of open coding where the margins of the transcripts are used to note areas of interest aided the researcher in beginning to conceptualise

the data (Ezzy 2002). Conceptualising the data aided the process of thematic coding across all of the transcripts. Thematic coding was based on evidence gathered from previous literature, findings from parallel studies looking at osteopathic education and data collected during the interviews. Themes were updated and restructured through retrospective analysis of all the transcripts. The themes were represented in a comprehensive framework to aid organisation of data (Miles and Huberman 1994) and was cross-referenced with the full transcripts to identify common topics, strength of feeling and singularities in data (Krueger 1997; Mortimer 2004). This sequential analysis ensured that questions were refined throughout data collection as themes emerged (Pope, Ziebland and Mays 2000).

Another coder was used to assess the data to ensure consistency of themes and the resultant framework generated (Higginbottom 1998). Following blinded analysis of 10% of the transcripts, the coding framework and resultant themes were discussed and alterations made where necessary.

The process of qualitative data analysis is outlined in the flow chart below:

Stage 1: Initial read through of all transcripts to aid familiarisation.

*Stage 2:*Transcripts read for a second time using open coding. Margins used for notes relating to early conceptualisation of data.

Stage 3: Initial thematic coding of all transcripts.

Stage 4: Thematic coding updated and restructured through retrospective analysis of all transcripts.

Stage 5: Comparisons in thematic coding across transcripts noted.

Stage 6: Thematic coding represented in a framework to aid organisation.

Stage 7: Framework cross-referenced to all transcripts to identify common topics, strength of feeling and singularities in data.

Stage 8: Continued refinement of questions throughout data collection as thematic codes emerged.

Stage 9: Another experienced postgraduate coder used to ensure consistency of data and thematic coding:

Blinded analysis of 10% of transcripts.

Discussion of thematic codes and coding framework.

An audit trail of transcript quotes and how they relate to thematic codes generated can be found in Appendix 15.

7.3 PRACTITIONER INTERVIEW RESULTS

Following advertisements placed in the national osteopathic press on two occasions, sixteen practitioners volunteered to take part in the study. One interview could not be used for analysis as problems with the audio recording meant that accurate transcription could not take place. Fifteen interviews and their resultant transcripts were used. Interviews either took place in the osteopath's private practice or in an alternative place of work (in this case an osteopathic education institution OEI). The coding framework outlined in table 7.1 was generated using a content analysis and constant comparison approach to data analysis whereby explanatory themes were generated from the data. Continual coding and the generation of emergent themes were continued until data saturation had been reached and no new concepts were identified in the data collected. Initial coding including the analysis of the transcripts by sentence fragment derived a set of themes that contributed to the overall emergence of a conceptual framework. The framework of themes derived was agreed in principle by a co-coder and both used the framework to analyse a transcript independently. The themes and corresponding verbatim quotes were discussed by the co-coders until the themes presented could be presented as an inter-relating framework. The coding framework identified nine themes, summarised in table 7.1. The themes identified are broadly representative of the questions included in the study interview schedule.

Theme	*Scope of Theme*
Aims of Using Exercise Therapy in Practice	Osteopathic aims when using exercise therapy to include strengthening, stabilising, mobilising, weight loss, weight gain, proprioception, prevention, balance, postural changes, range of movement and education
Elements Relating to Use of Exercise Therapy	Elements of "prescription" used by practitioners in treatment and management to include mode, duration, frequency, intensity, loading, repetition, general and specific exercise therapy, limitations to using prescription in practice.
Modes of Exercise Therapy	Modes of exercise therapy used in treatment and practice to include strengthening, stretching, modes specific to sport, aerobic exercise, anaerobic exercise
Monitoring Patient Progression	Methods used to monitor patient progression in relation to exercise therapy to include palpation, observation, patient report, written patient notes, limitations to monitoring.
Scope of Practice	Scope of practice to include current extent of use, clinical decision-making, limitations to using exercise therapy in practice and position in osteopathic models of practice.
Extent and Sources of Knowledge	Extent and sources of practitioner knowledge to include education (undergraduate and postgraduate), experience, collaboration and evidence.
Evidence-Based Practice	Influence of evidence on practice and use of exercise therapy to include limitations of using evidence and guidelines and existing evidence base.
Resources	Resources used in practice to include referral, equipment, literature.
Practice Desires	Desires for future development in exercise therapy to include continued development in undergraduate education, continuing professional development, interdisciplinary collaboration.

Table 7.1: Qualitative Data Practitioner Coding Framework

Nine themes were generated from the analysis of the transcripts; these are presented in the text with corresponding quotes from participants interwoven with the narrative.

7.3.1 Aims of using exercise therapy in practice

All of the practitioners who volunteered for the study spoke at length about their own personal aims for using exercise therapy with their patients. The aims that were outlined by the practitioners ranged from the more global aims of pain relief, improving quality of life, education and prevention of further injury or disease to the more specific aims that were generally considered as being dependent on the presenting patient and their symptomatology.

> "If I am going to give somebody (exercise), for example with a low back problem, I might give them some lumbar flexion, bringing the knees to the chest to try and help them get some pain relief."
>
> OstPI8a

Clinicians suggested that the specific aims of using exercise therapy with their patients could include relaxation (of the patient as a person and musculature), improvements in posture, spinal stabilisation and increased range of movement, gains in strength, balance and mobility, weight loss and weight gain (as an adaptation from strength training) and proprioception.

> "It depends what I am treating them (the patient) for. So sometimes it might be strength, sometimes it might be mobility, sometimes it might be range of movement to lengthen the muscles to make sure that the joint itself has got the freedom. Other times it might be balance."
>
> OstPI4a

> "There is also weight loss. Weight gain. So both of those things I would use exercise for."
>
> OstPI4a

7.3.2 Elements relating to use of exercise therapy

The “prescription” of exercise therapy in the osteopathic clinical setting was an area of intense discussion for the practitioners who participated in this interview study. Few of the practitioners agreed with the use of the term “prescription”, with many happier to describe their use of exercise therapies using the terms advise, suggest, educate, recommend or explain.

> “It is much more about advising. Yes, I do say to the certain patient you do need to do twenty abdominal crunches going this way for this length of time and for this amount of reps. There will be one a week that I do that with. The rest is just advising, do some of this, do some of that.”
>
> OstPI7a

There was however, global agreement relating to the nature of advice given to patients in relation to exercise therapy. All clinicians stated that they would regularly discuss with the patient the preferred mode of exercise to be used, the duration and frequency of the exercise and, where appropriate, would explain the loading and potential progressions associated with the mode of exercise therapy selected.

> “Usually you know, I might say you need to do a particular strengthening exercise and I want you to do ten of those on each leg three times.”
>
> OstPI8a

> “I do tell them to do that many exercises for that long and count how many you do.”
>
> OstPI6a

In this way, the practitioners favoured a more tailored approach to using exercise therapy with their patients. However the use of the term “tell them” when advising the patient about exercise does suggest a rather paternalistic approach to exercise therapy advice on the part of the osteopath.

The mode of exercise selected was identified as being of particular significance with the practitioners emphasising the importance in increasing activities associated with daily living and how this might encourage the patient to become habitually active. By encouraging and focussing on advising activities associated with daily living, practitioners felt that this might in turn have a beneficial affect on patient adherence and be a particularly useful strategy for those patients who had previously struggled when the practitioner had tried to introduce exercise-based activities into their treatment and management programme. Practitioners used the terms adherence and compliance interchangeably.

> “I guess I do try to build it (exercise) into their daily life. I try to because I think that is a good way of doing it.”
>
> OstPI5a

> “I will try and tailor it (exercise) to their everyday life. So if they are sitting in an office you know, I will try and work it (exercise) around what they do. You know they (the patient) can’t always go out and run up and down stairs or something like that.”
>
> OstPI3a

Participants talked about the potential limitations to using exercise therapy and that essentially the patient had to make the decision to exercise themselves.

> "I think it is the fact that you can't prescribe exercise because it has to be the patient's own free will (to participate). But you can educate and explain to them why they need to do it and how it is going to help their recovery."
>
> OstPI4a

To improve patient adherence, some osteopaths spoke about the use of an electronic reminder system for those patients who had access to email and Internet facilities. In the main, the practitioners felt that a physical demonstration of the exercise to be used in the clinical environment could act as a reminder for some patients.

> "Whenever they get off the bed, then I generally hop on and show them what they should be doing with regards to a crunch or if it is a pelvic floor thing."
>
> OstPI7a

> "And sometimes I will get down on the floor and show them exactly what to do."
>
> OstPI5a

7.3.3 Modes of exercise therapy

The modes of exercise therapy favoured by osteopaths were clearly split into those that could be used in treatment (within the clinical environment) and those that could be included as part of patient management (using facilities and resources beyond the immediate clinical environment, to include exercising at home). Some of the practitioners stated that their

use of exercise therapy as part of treatment was limited often due to restricted resources.

> "Within the clinic – no I don't use resources. I don't provide them with a piece of equipment or tell them they need a piece of specific equipment."
>
> OstPI4a

As a result of this, the osteopaths tended to use simple modes of exercise that do not require additional equipment. The most frequently reported modes of exercise therapy used during treatment were strengthening exercises, stretching, core stability (or spinal stabilisation dependent on the terminology used by the practitioner) and breathing exercises. Breathing exercises in this case refer to encouraging the patient to use diaphragmatic breathing.

> "It will be mainly core stability, sometimes strengthening exercise."
>
> OstPI5a

> "Stretches is one of the most common ones that I use both whilst I am treating patients. I can use stretching in the treatment room Itself."
>
> OstPI13a

The range of modes of exercise used in a management context was far wider. These included advising the patient to increase or adopt cardiovascular and aerobic forms of exercise to include cycling, swimming, running, rowing and walking.

> "Generally more walking, cross trainer, I tend to recommend cardiovascular work."
>
> OstPI7a

> "I could send them (the patient) to the swimming pool or send them to a gym. Other times I might find ways that it (the exercise) could

> be free. You know if they have a dog, increase walking of the dog."
>
> OstPI14a

Where resources allowed, hydrotherapy, Pilates and gymnasium work was also reported. Two clinicians spoke about the benefits of recommending Tai Chi and yoga as part of osteopathic management.

> "Pilates, yoga, if I think their problem is a stress–tension type thing. Tai Chi for that as well."
>
> OstPI5a

> "I get lots of clients to do hydrotherapy. Jump in the pool and do some running up and down the pool and things like that."
>
> OstPI8a

Clinicians spoke about the context in which the modes of exercise may be used and, in the main, this was dependent upon the presenting patient and their history. For example, the modes of exercise chosen might be selected in a more general context, as part of a wider rehabilitation programme or the osteopath might consider using a specific mode of exercise therapy because it was sport-specific to the presenting patient.

> "If somebody came in who is a marathon runner then you know obviously they are going to want to get back to running sooner rather than later. What I might suggest is that they have had the injury, you have stopped running if they have stopped running, that they start off running maybe just two miles and then build up slowly rather than to go straight back into where they were beforehand."
>
> OstPI8a

7.3.4 Monitoring patient progression

Many of the practitioners stated that they did not objectively monitor the progression of their patients in relation to their exercise therapy use and

adherence. In this way their emphasis was clearly not on a specified outcome measure. A key reason for this was attributed to lack of time in the osteopathic consultation.

> "I don't usually get too tied up on measuring, like not clinically measuring and monitoring things. I usually don't have that much time."
>
> OstPI13a

The practitioners suggested that often observation of patient posture and movement on subsequent consultations, patient reports of discomfort, pain and ability to complete the exercise, and practitioner palpation aided them in monitoring the progression of the patient following the use of exercise therapy.

> "Monitoring is really do they come back with less symptoms. If they do and say they were better straight after treatment and that the stretches have worked, then it may be a combination of the treatment and the exercise."
>
> OstPI7a

> "You do kind of monitor it (exercise adherence) because you can tell by the state of the muscles underneath your hand."
>
> OstPI8a

> "I do (monitor progression) but probably more just "how is it going?" and "let's see" and "let's palpate and see what is happening."
>
> OstPI3a

For patients who were returning for consultation after some time, clinicians suggested that they would rely on the patient case history for details relating to previous exercise therapy progression and adherence. Practitioners who were working in a gymnasium environment or were

able to refer to personal trainers or other exercise professionals reported that they would ask the exercise professional to monitor the progress of the patient when they attended for exercise sessions. Those clinicians that had this opportunity found this a particularly good use of a collaborative referral system.

> "(Monitoring progress) is more about the quality of the movement that I am looking at and physically how they (the patient) are feeling. I will ask the person who has been training them as well as to how they (the patient) has been getting on."
>
> OstPI3a

7.3.5 Scope of Practice

The ability to confidently refer patients was a key issue when the practitioners considered the limitations of using exercise therapy in osteopathic practice. Osteopaths suggested that they would like to refer patients to suitably qualified exercise professionals but that they were reluctant to do so without being familiar with the professional and the manner in which they worked.

> "I am reluctant to refer without actually knowing the person (the exercise professional)."
>
> OstPI5a

Other limitations to using exercise therapy in osteopathic practice included the lack of time within a consultation, a perceived lack of patient adherence and a lack of confidence, knowledge, experience and formal education in the field on the part of the practitioner.

> "I think it is the lack of experience and knowing what to do. First of all lack of experience about whether the exercise will help with that specific condition and also I wasn't really taught exercise and how to use them at undergraduate level. I got it (knowledge) from clinic and hearing other people."
>
> OstPI6a

Not all of the clinicians interviewed used exercise therapy in their practice but those who did suggested that exercise therapy is considered to be integral to osteopathic treatment and management. Some osteopaths suggested that a form of exercise therapy is often appropriate for a high proportion of their caseload (somewhere in the region of 90% of patients seen) and that using exercise therapy could enhance treatment effectiveness and in some cases be a useful form of marketing for their practice.

> "I would generally say you know, 80-90% of the people you see are with back problems, so I would say for most of those I advise to do some sort of Pilates or may be show them a few little exercises."
>
> OstPI7a

> "I think that you need to use exercise in the majority of cases."
>
> OstPI4a

> "By using exercise, it helps me in a way build up patients."
>
> OstPI3a

There was evidence of a clear decision-making process when deciding when to use exercise therapy with the presenting patient. In addition to the limitations earlier described, the practitioners would consider how appropriate a particular mode of exercise was for a patient dependent upon the position of the patient in the diagnostic triage (acute, sub-acute

or chronic), the nature of the presenting problem, the amount of pain the patient was in upon presentation, the age of the patient, known pathologies and contraindications to exercise and the potential for patient adherence. These factors would ultimately contribute to the practitioner's decision-making process of whether to use exercise therapy or not with the presenting patient.

> "Well, in terms of treatment it would depend on what stage the patient is at, how acute they are."
>
> OstPI5a

> "Are they physically able to do it (the exercise)? I think they have got to be physically well enough to perform those exercises. You have got to justify, can the patient do it (the exercise) on their own if they are elderly."
>
> OstPI7a

> "Again it (the exercise) varies on severity, age of the client."
>
> OstPI8a

The clinicians also considered the appropriateness of a range of exercise modes that were known to them and for some they would consider only those that they regarded as relatively simple so as to influence the potential for patient adherence. When considering the range of appropriate exercise modes, practitioners suggested that they would opt for those that reinforced previous exercise habits and recommend those modes that had been tried by the patient previously to reinforce an element of familiarity.

> "Simple walking. Fairly simple. I don't complicate things. See what the patients will be most likely be doing, reinforce what they are already doing."

OstPI6a

Cheap, familiar and simple modes of exercise were often those that were favoured by the participant group. One osteopath put the decision-making process into a clear osteopathic context by suggesting that whether or not to recommend exercise therapy was truly osteopathic when one considered the physiological and psychological paradigms and predisposing factors of the presenting patient.

> "Exercise is not just physical, it is mental. If you consider a triangle, osteopathic treatment is not just a physical treatment, it's psychological, then exercise fits into that as well. Psychologically you can affect a patient, especially a patient who is chronic, you also psychologically benefit them by performing exercise. That can change their psychology behind their illness and so it is osteopathic (using exercise) because it is holistically involving the whole person."
>
> OstPI4a

7.3.6 Extent and Sources of Knowledge

Practitioners stated that their main sources of exercise therapy knowledge came from their own clinical experience and networking with other osteopaths through continuing professional development (CPD).

> "A personal trainer who works for a local osteopath runs a CPD session once per month for all of the other osteopaths in the area. He does all different things that we can do with our patients but we turn up in our shorts and he lays out all of the exercises and we go through what works and how it works. We find it useful and we are learning."
>
> OstPI7a

> "My knowledge comes from teaching at school, talking to others, patients' experience of what seems to work and talking to more experienced practitioners who have different views."
>
> OstPI13a

Their own clinical experiences, in particular identifying modes of exercise that were beneficial for individual patients and in some cases the

practitioner's own exercise and sporting experience contributed to their knowledge and ability to use exercise therapy in an osteopathic context.

> "I do it (use exercise) because I am interested in exercise and do a lot of it myself."
>
> OstPI3a

A small number of clinicians suggested that their own undergraduate osteopathic education and in particular their clinical learning had contributed to their knowledge base. One osteopath made reference to the availability of exercise-based guidelines but noted that they (the practitioner) should remain a "critical consumer" of this type of evidence and that sometimes recommendations were not clinically applicable to the osteopathic practitioner.

7.3.7 Evidence-Based Practice

The participants explored the use of evidence in supporting the exercise therapy decision-making process. The clinicians suggested that they did not explore the evidence for exercise therapy with regularity and noted a number of reasons for this including time constraints, lack of familiarity with information technology and the Internet in particular and that they felt confident in their existing knowledge and ability to use exercise therapy in the osteopathic context.

> "For me to sit down and read an article on exercise therapy, I get to the second paragraph and give up! If it hasn't gripped me then I have had enough. A lot of my experience comes from my experience in sport anyway."
>
> OstPI8a

> "I feel confident when I suggest exercise because I have had a lot experience in exercise. If I hadn't had a lot of experience, I may well refer or research to find out what is appropriate."
>
> OstPI4a

The practitioners that talked about the existing evidence suggested that the research was not considered as being "osteopathic" or "applicable in the osteopathic setting". As a result, it is reasonable to suggest that the osteopath's use of exercise therapy is not evidence-based. The practitioners' desire was to see an increase in published papers exploring condition-specific exercise therapy with "consumable" recommendations that can be readily applied to practice.

7.3.8 Resources

All of the practitioners interviewed spoke about a range of resources that they make use of when using exercise therapy with their patients. There was no one favoured resource with a wide variety being used and recommended. Resources used in the treatment environment included Swiss balls, therabands, wobble boards and, to supplement exercise demonstrations, written guidance.

> "We sometimes work on machines, therabands, you know give someone something very simple such as the wobble board."
>
> OstPI9a

For those practitioners who had the resources available, they often recommended the use of a wide variety of gymnasium-based equipment. Personal trainers, exercise professionals and physiotherapists were

regarded as resources that could be used as part of the collaborative referral process.

> "So maybe a little more cooperation between the two different professions (osteopathy and exercise professionals) would be very useful."
>
> OstPI4a

7.3.9 Practice Desires

Desires for developing exercise therapy in an osteopathic context focussed on the need for development in undergraduate and post-qualification education. Undergraduate education was viewed as an area of weakness by the practitioners and for those who had recently graduated, they felt that exercise therapy could be included as an elective element within the existing programme of studies and reinforced the need for any exercise-based educational module/unit to be predominantly experiential.

> "I think it (exercise) needs to be covered in undergraduate training."
>
> OstPI8a

CPD was an area for exploration with the practitioners suggesting that there could be a wider variety of postgraduate degrees on offer whilst most felt that future CPD programmes could focus on the need for education in rehabilitation and condition specific exercise therapy.

> "Certainly CPD in rehabilitation techniques. They change and I might give different people different versions of the exercise depending on the age of the client for example. Adaptation of rehabilitation techniques really would be useful."
>
> OstPI8a

A number of practitioners did explore the need for greater collaboration amongst manual therapists and exercise professionals and they felt that

this would be one of the more rewarding ways of expanding their knowledge and clinical experience in exercise therapy.

> “An osteopathic referral system. Where you could speak to that individual (an exercise professional) and say I am sending you a patient for this reason or write them a letter saying this is what I have suggested and this is what I am looking for.”
>
> OstPI4a

7.4 CHAPTER DISCUSSION

This semi-structured interview study with osteopathic practitioners was designed to gain an insight into what clinicians understand and interpret as exercise therapy in osteopathic treatment and management settings. This study provoked intense discussion about the potential use of exercise therapy in an osteopathic setting providing a clear opportunity for the expression of comparative and contrasting opinions. Of particular interest is the potential for triangulation of results between the education-based studies contained in chapters five and six of this thesis and the findings of the qualitative practice-based study detailed in this chapter.

The analysis of the transcripts of the fifteen participants who volunteered for this study generated a total of nine themes. These themes were broad in nature as they spanned concepts including global and specific aims, decision-making, scope of practice and prescriptive elements of exercise therapy. In the same way, the depth of the data collected ensured that analysis captured both the comparative and contrasting nature of contemporary osteopathic practice.

7.4.1 Delivering the Physical Activity Message and Promoting Health

The foundation for the use of exercise therapy in osteopathic practice was laid in the qualitative study with UK OEI faculty members detailed in chapter six. The participants, whilst being faculty members in UK OEIs, were also registered clinicians who spent some time during their working

week in practice. The findings from the qualitative study with faculty members highlighted the more global aims for the practitioner in using exercise therapy, these being to educate, empower, reinforce and maintain health and well-being. Whilst these aims were reinforced by the practitioner-participant group detailed in this chapter, they also chose to explore the more specific aims associated with their own use of exercise therapy. In particular they focussed on a more tailored approach to using exercise therapy aiming to improve range of movement, improve strength and affect balance and mobility amongst their patient group.

The focus on the more generalised aims of exercise therapy in improving well-being, and in particular focussing on increasing levels of habitual daily activity as expressed by the practitioners in this study, is of particular interest in light of recent Department of Health reports on the importance of increasing physical activity amongst the UK adult population (Dubbert 2002; Department of Health 2004a; Department of Health 2004b). A number of the participants in this study expressed lack of time as a considerable barrier to imparting the exercise therapy and physical activity message, a statement that is in agreement with work that has explored the role of General Practitioners and adult nurse practitioners in delivering the physical activity and exercise message in primary health care (Burns, Camaione and Chatterton 2000; Smith 2004). It would be reasonable to question why osteopaths are not then lengthening consultation times and/ or increasing the number of consultations if they feel that they are restricted by time. One potential

reason may be financial as much of osteopathic practice is private. Further reasons may be that they are ultimately more comfortable referring to other professionals or that they view exercise therapy as an area of expertise in other manual therapies such as physiotherapy. Despite time being a potential barrier, it does appear that osteopaths are spending a proportion of the limited consultation time advising and educating their patients about the benefits of physical activity and exercise. From a public health perspective, it does appear that UK osteopaths are making a contribution to improving the diminishing physical activity levels amongst adults in the UK. The magnitude of the aforesaid contribution or how representative this might be of the UK osteopathic population cannot be determined from the work contained in this thesis but future research might wish to explore this further and provide a clearer picture of the role of UK osteopathic practitioners in UK wider public health initiatives to include exercise and physical activity. In achieving this, it may be that osteopathy as a profession could ultimately strengthen its position in wider UK health care provision.

The concept of health promotion has been widely debated within mainstream health care and the findings of this study highlight the contribution that osteopaths are making in empowering individuals to act in their own health-related interests. By educating, enabling empowerment and being an active listener to the exercise preferences of the patient, osteopaths are enabling the patient to exert choice over the exercise approach that they use and provide scope for future exercise

development. For those patients who indicate that their choice is to remain inactive or show a preference to not participate in a specific exercise approach, there is some indication that the practitioners in this study do not needlessly pursue exercise therapy. In this way, the patient is exerting a choice about his or her own lifestyle and exercise preferences and participation and is ultimately informing their own strategies for health promotion in the context of physical activity and exercise.

In conflict with the health promotion ethos in osteopathy was the interchangeable use of the terms “adherence” and “compliance” by the practitioners. Some practitioners chose to use the term compliance when referring to a patient’s exercise habits following a period of treatment. The use of this term is in direct conflict with the proposed notion of health promotion within an osteopathic context and suggests that the patient is in a passive rather than active role. Exploration of the results indicate that there may some confusion on the part of the practitioners who seem to be using the terms interchangeably, which is not uncommon amongst health care professionals (Myers and Midence 1998). Interpretation of the dialogue suggests that in the main the term adherence might be more reflective of the context in which the term is used and indications are that the patient is viewed as an active partner in the exercise decision-making process.

7.4.2 Favoured Modes of Exercise

In addition to exploring the aims of exercise therapy and physical activity in a general context through the use of habitual modes of exercise familiar to the presenting patient, the participants in this study expressed modes of exercise that they may use in treatment and management that show common trends with other manual therapies such as physiotherapy. The osteopaths favoured core stability or spinal stabilisation approaches and abdominal focussed exercise and this shows some commonality with studies that have recruited a sample of practising physiotherapists (Byrne et al. 2006). The reason for the choice of mode by the osteopathic participants was in the main patient specific and based upon availability of resources. In the work of Byrne et al, there is some suggestion that postgraduate courses and the increase in positive published evidence for the use of spinal stabilisation has influenced the physiotherapists' exercise choices. What is not clear is if the rationale for the findings of Byrne et al. (2006) is mirrored amongst their osteopathic colleagues. Osteopaths in this sample group suggest that they do not access research evidence with regularity and question the applicability of the evidence to osteopathic practice. It would appear that the evidence base for exercise therapies is not a conclusive factor in their decision to select one mode of exercise over another. This may be due to the failure of much of the research evidence to identify the specific effect of any one exercise approach and indeed the reasons given for not accessing research evidence include the perceived lack of applicability of the approach and outcome measures to real world clinical osteopathic

practice. The holistic and individualised practice of osteopathy gives some rationale for this antipathy towards research evidence. The osteopaths' perceived reluctance to use current evidence provides a clear focus for discussion for those driving the research agenda within osteopathy in relation to targeting areas for research and strategies for research design and implementation. The introduction and continued work of the National Council for Osteopathic Research (NCOR) in the UK has seen the establishment of a national framework for osteopathic research and a clear procedure for applying for and managing grant allocation within the profession. In addition, there is a clear drive for the continued development of a research culture within the profession.

To propose that postgraduate courses or CPD events are contributing to an osteopath's decision-making process is a feasible suggestion. Continuing professional development provision in osteopathy is a growing and relatively recent concern for providers of post-qualification education. The market for CPD provision is such that many osteopaths are enrolling on courses either provided or led by practitioners from associated professions including physiotherapy or exercise rehabilitation. It would be reasonable to suggest that these post-qualification experiences are influencing the practitioners' choices of exercise mode.

The range of exercise approaches being used by the osteopaths is clearly being driven by desired patient outcomes and goals. In addition, it appears that a practitioner's choice of exercise approach is in some way

being guided by patient and practitioner preference, desired functional outcomes and availability of resources and facilities within the treatment and management environments. This is in general agreement with much of the literature that has explored exercise approach and choice within other health care professions (Rakel and Barr 2003; Klaber Moffett and Mannion 2005).

7.4.3 Clinical Decision Making and the Potential for Influencing Behavioural Change

The clarity of the decision-making processes in relation to the use of exercise therapy by the osteopathic practitioners is evident in the findings of this study. All of the practitioners explored with some depth their rationale and decision-making processes, giving consideration of when exercise is appropriate and for whom. The evidence for the promotion of physical activity by the osteopathic population is reasonably strong and as previously discussed, it appears that osteopathic practitioners within this study are reacting to and are able to give generic advice on initiating and maintaining a physically active lifestyle. What is not clear however is how familiar or confident practitioners are with the concept of relapse prevention and ensuring that their patients do not slip back into a physically inactive lifestyle both during the consultation period and post-treatment. Relapse prevention is an important part of the successful process of behavioural change and should ideally be addressed by health care practitioners who can have some influence on adopting and

maintaining health behaviours such as exercise (Kim et al. 2004; Fallon, Hausenblas and Nigg 2005).

The decision-making processes undertaken by the clinicians give some indication that they are receptive to suggestions made by the patient during the consultation in relation to the key elements of an exercise encounter. This has been seen to be key in the process of behavioural change and is an indication that osteopaths are able to consider an individual's intentions or meanings in relation to exercise therapy during the consultation period. The work of Kim (2006) describes in detail how the receptive health care professional can influence behavioural change in relation to exercise and takes this one step further through the application of the Transtheoretical Model of Behavioural Change (Kim 2006). There has been notable opposition to the application of the Transtheoretical model in health care (Sutton 2001) and with these issues in mind it would be interesting to see if osteopaths are consciously applying a theoretical model to their own decision-making processes. It may be that future work focuses on the potential use of a behavioural change model in the osteopathic consultation and how this relates to current practice.

7.4.5 Exercise Prescription – Tensions within an Osteopathic Model of Health Care

This chapter has already highlighted the identified role of the osteopathic practitioner in health promotion and behavioural change. It is clear that

the practitioners who participated in this study are identifying themselves with a health promotion role and view their patients as active partners in exercise-related decision-making. Although there was some perceived lack of understanding in the use of key exercise terminology relating to exercise adherence, it appears that the practitioners are truly working within an osteopathic context and developing an individualised approach to exercise therapy. This is further supported when one considers the debate initiated around the use of the term “prescription”. In almost all cases, the practitioners did not agree with the term prescription and intimated a preference for terms such as advise, educate and suggest. Once again this appears to indicate a partnership approach to the use of exercise therapy, allowing the patient to indicate preferences and directions in exercise behaviours. This apparent emphasis on including exercise therapy within the patient care paradigm shows a distinct agreement with osteopathic philosophy and models of practice as detailed in the work of Seffinger (2003). It has already been detailed in this chapter how an osteopath can contribute to potential behavioural change and Still, in his early work, clearly viewed exercise as a behavioural adjustment within patient management strategies. The active patient–practitioner partnership is a strong theme running through much of osteopathic philosophy and it appears that the practitioners in this study are drawing on their osteopathic heritage by exhibiting a partnership approach in practice.

There does however appear to be some tension and conflict with the use of exercise therapy and osteopathic philosophies with the widespread adoption of the prescriptive elements associated with exercise. All of the practitioners in this study, whilst not being comfortable with the term “prescription”, were happy to use the terms associated with exercise prescription, these being frequency, intensity and duration. It is difficult to gauge from the dialogue whether the practitioners in this study are using the terminology in its correct sense and meaning or if indeed they are simply using the terminology without a clear knowledge and appreciation of meaning. An exploration of this would be enlightening particularly in the context of osteopathic models of practice.

By being “prescriptive” with their exercise recommendations, one could suggest that the practitioners were being reductionist in their approach and that perhaps they were then putting their patients in a far more passive role. An understanding of this perceived conflict may be that the practitioners have a limited understanding of the nature of the terms associated with exercise prescription and are fundamentally reacting and using methods of practice common to other therapies or professions. Looking back at the theoretical underpinning of exercise therapy in the undergraduate curriculum, it would be feasible to suggest that the practitioners had a limited exposure to the theoretical knowledge and application of the terms frequency, duration and intensity. What should not be underestimated however is that for exercise therapy to achieve physiological and functional outcomes, some consideration must be given

to the prescriptive elements of the recommendation. Without this direction, the therapy may not achieve its desired outcomes.

Although there appears to be some conflict and tension with the use of terminology and how this apparently fits into an osteopathic model of practice, ultimately the osteopath is developing a culture of partnership with their patient in the context of the use of exercise therapy. There needs to be further discussion about the elements of an exercise therapy approach that do not apparently fit within an osteopathic model of patient care, with some appreciation that those elements that are perhaps in disagreement need to accepted for the success of the therapy. It is clear from the studies contained within this thesis that the profession is mature enough to deal with this type of debate and has actively embraced discussion of this type in recent decades. Now may be the time to look again at the underpinning osteopathic philosophy and view it through the eyes of the 21st-century practitioner.

7.4.6 Triangulation – Undergraduate Education and Osteopathic Practice

The education-based studies detailed in chapters five and six of this thesis present an opportunity to explore in more detail the potential relationship between undergraduate education and professional practice. In chapter five, which investigated exercise in the context of the intended curriculum, there was some suggestion that either the undergraduate curricula might reflect current clinical practice or that trends in clinical

practice simply mirror what is learnt in the undergraduate curriculum. Combined with the findings of the qualitative study recruiting faculty members and students from UK OEIs in chapter six and the findings of this study with practitioners, education and practice clearly do not reflect a mirror image. The idiosyncratic and variable nature of exercise content in the undergraduate curriculum means that not all practitioners begin professional life with the same level of exposure to key exercise theory and practice elements. This is reflected in the variable way practitioners are using exercise therapy in practice. Specifically looking at the modes of exercise favoured in the undergraduate curriculum, namely stretching and strengthening exercise, this study finds that there appears to be limited evidence of their use in practice. Other modes of exercise therapy such as core stability and spinal stabilisation techniques appear to be used on a much wider scale and with greater frequency. The theoretical knowledge and practical application of these modes in the undergraduate curriculum is not evident. It is clear therefore that there appears to be little relationship between the intended and delivered content in undergraduate education and modes of exercise favoured in professional practice.

There could be several reasons for this. The osteopathic undergraduate curriculum is already regarded as “full” with important decisions being made by course teams and faculty members about what elements of a programme are elective or core. The introduction of the benchmarking statement for osteopathy has aided decision-making processes for OEIs, however it would be unwise for the OEIs to consider the benchmarking

statement as an indication of what is core to an osteopathic undergraduate curriculum. In the absence of a definitive core curriculum, OEIs decide on programme content and it appears that exercise therapy is given only a small proportion of contact time available. In some cases this is as an elective element of the programme introduced when the student osteopath is approaching graduation. As a consequence exercise therapy is viewed as an area of specialist expertise that is developed in professional life and is a focus of post-qualification education or CPD. This scenario would then provide some explanation for the discrepancy in modes of exercise used in practice and those delivered during undergraduate education. Practitioners using exercise therapy in practice could be described as those who have experienced, been educated in and acknowledged other modes of exercise appropriate to their patient population through their own clinical experiences, post-qualification education and previous educational and sporting experiences. The rationale presented here is supported by a number of the practitioners who took part in the studies contained within this thesis who suggested that their ability and choice to use exercise therapy was a consequence of their clinical practice and sporting and educational experiences both within osteopathy and from other associated disciplines. The scenario described here does have a number of wider implications for undergraduate and post-qualification education as well as osteopathic practice and these implications will be explored further in the following chapter.

7.5 CHAPTER CONCLUSION

In conclusion, this study has enabled the researcher to gain a greater insight into the use of exercise therapy in an osteopathic context and has ensured that a clear and current picture of exercise therapy in osteopathic treatment and management has been realised. Practitioners discussed both their specific and general aims when using exercise therapy and whilst adopting a tailored approach to exercise, were also comfortable in offering generic physical activity advice. In the main, the practitioners adopted a partnership approach, although there remains some confusion over use of exercise terminology and the paternalistic manner in which it was used. Favoured modes of exercise show common trends with other manual therapies but bear little resemblance to those delivered during undergraduate education. Reasons for this may be collaborative CPD provision and a reluctance to use research to drive practice.

Whilst there is evidence to suggest that practitioners are reflective listeners, responding to the suggestions of their patients and invoking elements of behavioural change, there remains some confusion over their level of understanding of exercise-based terminology. Whilst a partnership approach fits with the patient-centred model of osteopathic practice, the paternalistic manner in which some terminology is used does not. Further study might look to explore the perceived conflict and tension with the use of exercise terminology and how practitioners can best integrate exercise therapy into modern osteopathic practice.

CHAPTER 8: APPLICATION OF THESIS FINDINGS TO UK OSTEOPATHIC EDUCATION AND PRACTICE

8.1 IMPLICATIONS OF THE FINDINGS FOR UK OSTEOPATHIC EDUCATION

The findings from the studies in this thesis exploring exercise therapy in the intended, delivered and received osteopathic undergraduate curriculum have wider implications for educational developments in osteopathy. It is reasonable to that programmes of education in health care and in osteopathy should look to prepare students with a good foundation of technical knowledge. This should be complemented by a broad general education with an emphasis on personal and transferable skills and attitudes. Curricula should be designed to fulfil these aims and be flexible to complement a variety of learning styles and levels (McAllister 2001).

The educational studies included in this thesis have highlighted that exercise therapy in undergraduate education is both sporadic and idiosyncratic. The theoretical underpinning of the application of exercise therapy in the clinical context is variable and that clinical education is ad hoc, opportunistic and limits the opportunity for assessment. In the absence of a core curriculum and definitive educational direction from the General Osteopathic Council, it is inherently difficult to make a decision

about the level and relative importance of education offered to undergraduates in exercise therapy. However, in light of the findings discussed in this thesis, it is suggested that small-scale educational strategies should be used to introduce exercise into the undergraduate curriculum were it deemed necessary or appropriate. For example, students could critically analyse case histories and resultant treatment and management plans for the attention paid to the use of exercise therapy. This would give the student the chance to explore the potential inclusion of exercise therapy and allow the student to critically analyse the cases where exercise therapy has been used. Students could also devise their own treatment and management plans for exercise therapy in response to case vignettes. This has been used as a strategy in nursing education where emphasis has been placed on fulfilling the patients' psychological care (Priest 2006).

These methods are not revolutionary and have been successfully used in health care education and are represented already in osteopathic education. However, these educational strategies would provide an opportunity for the student to actively engage in the knowledge and practice processes of integrating exercise therapy into osteopathic treatment and management where it is considered appropriate.

In a skills-based curriculum, there is a suggestion that there needs to be adequate evidence for the inclusion of additional content if the skills, in this case those associated with exercise therapy, are to be given equal

weight to both practical and clinical skills. This scenario has been highlighted in the nursing literature (Priest 2006). In osteopathic education there appears to be limited argument for the skills associated with the use of exercise therapy having absolute equality with other practice or clinical skills, with evidence to support this in the interview and focus group studies. There is additional evidence from the qualitative study of practitioners, which highlighted the lack of global desire to incorporate exercise therapy into practice. This would indicate that other technical, clinical or cognitive skills would take precedence over those based in exercise therapy were practitioners asked to place them in a hierarchy based on their needs in professional practice. There is however evidence in both the literature and from the findings of the studies featured in the thesis that there should be some attempt at building on and consolidating existing knowledge in this area whilst successfully integrating this into the undergraduate curriculum. The osteopathic undergraduate curriculum has long been considered as full with little scope for introducing additional content. If the integration of exercise therapy into the existing curriculum is to be successful, then the educational strategies used need to be innovative and promoted by osteopathic educators who can advocate for an integrated approach and additional time in the curriculum. As an alternative strategy, it may be that education providers view exercise therapy as peripheral to the core academic and clinical skills underpinning the curriculum and so offer exercise therapy-related modules or units as electives to students as they progress through their osteopathic education. The use of electives in

undergraduate education is a widespread practice in higher education and may provide an opportunity for exercise therapy to be included in the curriculum. During the time to completion of this doctorate, two of the OEIs participating in the research have indeed identified exercise therapy as an elective option in the final year of their undergraduate programme.

8.1.1 Learning Climate in Higher Education

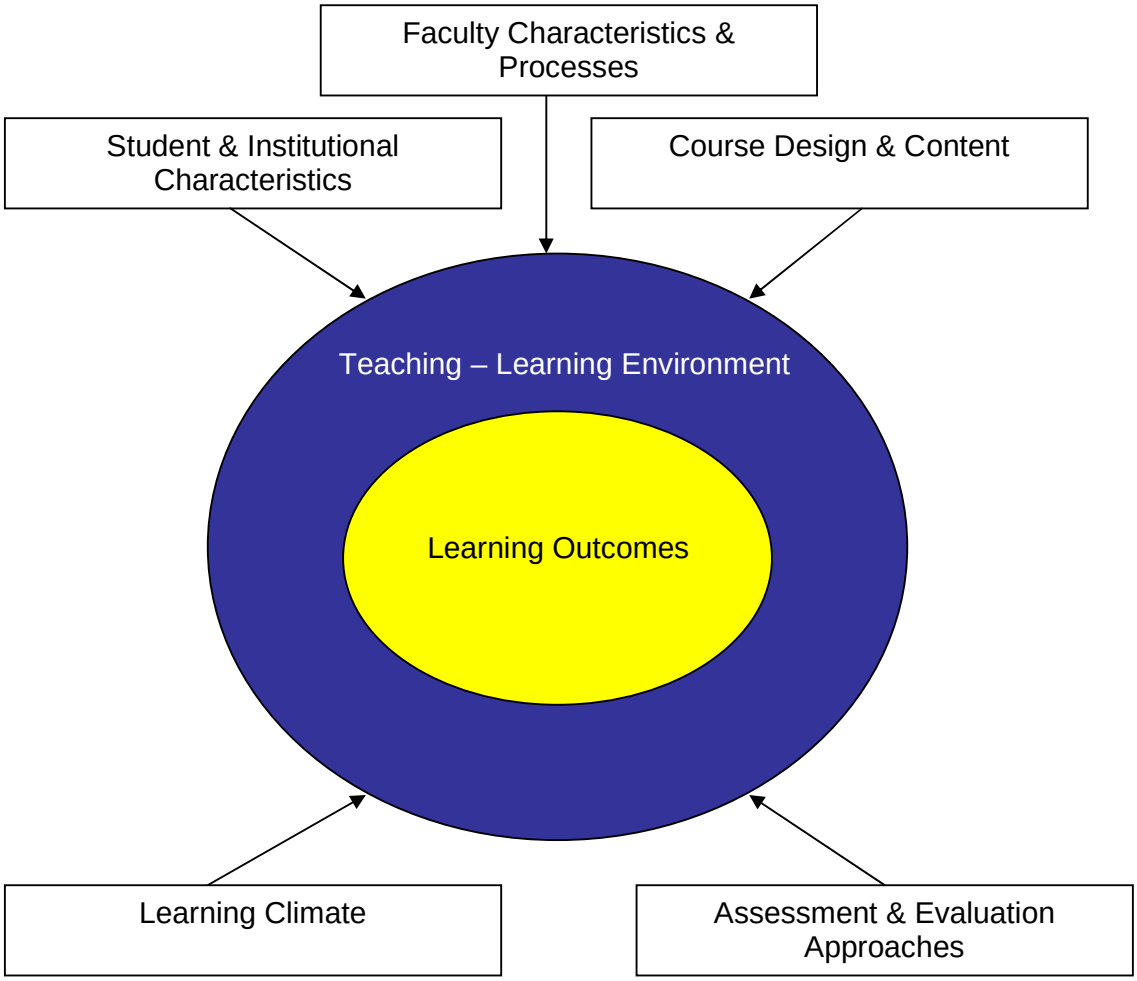

Figure 8.1: Learning Climate & Environment in Higher Education.
Adapted from Balla & Boyle (1994) and McAllister (2001).[8]

[8] Original in colour

The model in Figure 8.1 can be readily applied to osteopathic undergraduate education and the issues that have been raised in this thesis exploring exercise therapy. The model explores the Learning Climate and Environment in higher education and how a series of factors affect the teaching and learning climate and ultimately the learning outcomes used in education. Although this theoretical model can be applied generically to higher education, it can also be readily applied to the findings of the studies contained within this thesis. ***Learning climate and environment*** embraces the social context in which osteopathic education takes place. As highlighted in the work of McAllister, who focussed on education in nursing, osteopaths, like nurses, are expected to embrace a practice discipline whilst also being viewed as knowledge workers (McAllister 2001). McAllister suggests that knowledge workers are those who utilise theoretical knowledge but are expected to transform this knowledge so that it remains relevant to the discipline. This suggests that osteopathic education should remain flexible to take into account changes in the workplace and that there is support for students who wish to become proactive knowledge workers. The relevance for exercise therapy is that there is an expectation from the profession and potentially patients that osteopaths should be prepared to give both general and specific exercise therapy advice. As was noted in chapter six, final year students do not necessarily feel equipped for professional life particularly where exercise therapy is concerned. This in itself provides adequate impetus for clear, continued discussion about standards of proficiency in osteopathy and the OEIs' preparation of future osteopaths in the UK

health sector. Another key issue for the profession is the term “knowledge worker”. This implies that the professional has existing theoretical knowledge to take into practice. Studies in chapters five and six suggest that although a limited amount of theoretical knowledge is delivered relating to exercise therapy there is some indication of a potential theory–practice gap where knowledge is not readily or confidently applied in the clinical environment. Part of the problem here is the opportunistic, ad hoc and non-experiential way the content is delivered limiting the student osteopaths’ opportunities for bridging the theory–practice gap and applying their knowledge and skills in practice. It would be pertinent to indicate that the ways in which exercise therapy content is delivered and incorporated into the undergraduate curriculum should be explored further. This may mean examining opportunities for an equality of learning experience whilst promoting application of skills and knowledge in a clinical situation. By achieving this, ***course design and content*** of undergraduate programmes might embrace more innovative educational strategies for delivery and assessment should it be deemed appropriate and necessary.

Already highlighted is the potential for a theory–practice gap in relation to exercise therapy. It also became clear in chapter seven that the delivery of content relating to modes of exercise bore very little resemblance to those modes of exercise favoured in practice. The perceived lack of coherence between undergraduate education and practice suggests that exercise therapy may be regarded as a peripheral content area, reserved

for elective elements of the course or viewed as a postgraduate area of expertise. There needs to be continued discussion between all major stakeholders about the importance of exercise therapy in osteopathic education and practice and how practitioners and students can be best prepared for professional life.

In direct relation to the issue of content is the importance of clear and detailed course documentation. The study detailed in chapter five highlighted some of the key issues relating to the presentation and detail afforded to course documentation specific to osteopathy. It became clear that the course documentation related in the main, to academic education and there was little reference or content relating to intended clinical education. A high proportion of contact hours within an undergraduate osteopathic programme is given over to clinical education. It became apparent in chapter six that most of the exercise content delivered was in fact in a clinical educational environment which had not been detailed clearly or comprehensively in the intended curriculum. A recommendation of the work contained in this thesis is for OEIs to consider the best ways in which they might with clarity detail the delivery of content in a clinical environment. It must be appreciated that the essence of clinical education lies in the patient–practitioner consultation. This is characterised by the individuality of contact and cannot easily be specified. However, there are a number of aspects of clinical education including the popular clinical tutorial system that could easily be structured and detailed in terms of content and delivery.

When considering the potential for integration of exercise therapy into the undergraduate curriculum, it is important to consider the ***characteristics of students and the learning-style preferences*** of those entering the profession. Student characteristics featured in Figure 8.1 refer to levels and styles of learners entering osteopathy. Adult learners are often characterised by their self-directedness, prior life experiences, readiness to learn and problem-centred orientation. Research suggests that the best way to teach these adult learners is to encourage an active role for the learner, place more emphasis on self-directed learning, value teacher role modelling and apply concepts to prior experiences. These theoretical suggestions for learning have some similarities with the suggestions made by those osteopathic undergraduates in chapter six who said that they would welcome a more active role in the clinical application of exercise therapy. Experiential learning is already used in the delivery of exercise content in the undergraduate curriculum although this is often ad hoc and opportunistic. Exploring new ways of integrating this type of learning experience into the curriculum will offer osteopathic students an opportunity to experience and explore approaches to exercise therapy whilst drawing on their previous life and clinical experiences. Undergraduates were keen to apply their knowledge and experience using an active, “hands on” approach. Clinical education clearly lends itself to this type of learning experience and the introduction of applied, standardised tutorials in exercise therapy would allow all students to

explore and integrate exercise therapy into osteopathic treatment and management.

Important to the introduction and delivery of exercise therapy are ***institutional and faculty characteristics***. The exercise education conceptual framework detailed in figure 6.5 includes institutional drive and faculty values as perceived obstacles to the delivery of exercise therapy education. In chapter six, both faculty members and students talked at length about how the institution can be perceived as being an obstacle to the introduction and delivery of exercise therapy. The OEIs are in a difficult position when faced with making decisions about content in the absence of definitive direction. Those faculty members and students who wish to see a more comprehensive programme of exercise therapy education may perceive this as a negative orientation. A contributing factor to the negative perception may also be faculty member values associated with exercise therapy and the constitution of the OEI faculty. There was some indication that not all faculty members show a desire for or confidence in delivering exercise therapy education and this in turn impacts the equality of provision. What is evident throughout all of the studies contained within this thesis is the desire for multidisciplinary collaboration both in education and in professional practice. Embracing other associated health care professions and ultimately enticing academics from other disciplines into osteopathic education may have an effect on the delivery of specialist content areas in the curriculum. At the present time, there is little evidence of cross-fertilisation of faculty

members either between OEIs or from other professions and it appears that exercise therapy content areas could benefit from the expertise of other academics and clinicians from associated disciplines. Multidisciplinary collaboration was also a key feature in the qualitative work with practitioners in chapter seven, although there was very little evidence of any type of collaborative arrangement existing for the practitioners who volunteered for the study. The potential negative aspects of collaboration must also be explored and it may be that with the introduction of collaborative arrangements comes the dilution of the osteopathic approach to exercise therapy in education and practice. An alternative point of discussion may be that osteopaths view other professions as being best placed to deliver exercise therapy. This would then allow osteopaths to retain their “hands on” focus. These views on collaborative arrangements clearly need to be discussed further within the profession.

The development of any curriculum is of course based around content. Of equal importance however are teaching methods, teaching environment and methods of evaluating learning, with all of these aspects influencing what students are learning (Caldwell 1997). ***Assessment and evaluation*** methods in relation to exercise therapy have been problematic in undergraduate osteopathic education. The implicit delivery of exercise therapy has ultimately limited the opportunity for assessment and, as reported by students, has resulted in an inequality in educational experience. In order to address the assessment and evaluation limitations

it is imperative that an equal learning experience in exercise therapy is provided. An integrated approach to this is the recommendation from both faculty members and students but it is for the education provider to decide whether they feel that this should be achieved in the undergraduate core curriculum through the use of electives, or designate this area of knowledge as a postgraduate specialist area. Should exercise therapy be integrated into the undergraduate curriculum then in order to provide an equal learning experience, the content must be documented and assessed. The choice of assessment remains the decision of the education provider but the studies in this transfer document encourage the use of experiential, active and integrated approaches to both learning and assessment.

8.2 IMPLICATIONS FOR POSTGRADUATE EDUCATION

As with any other discipline, the emergence of new evidence and techniques in exercise therapy ensures that the osteopath should be prepared to continue their own professional development. The tension here is that there may be a struggle between osteopaths striving to be competent practitioners whilst also recognising the importance of becoming lifelong learners. The professional requirement to be a competent practitioner has always been apparent but more recently the emphasis on lifelong learning has become more evident with the osteopathic professionals' necessity to fulfil CPD requirements set by the GOsC. Educational initiatives aimed at the postgraduate practitioner are numerous and already there is a variety of exercise-based courses aimed

at practitioners. These types of initiative may provide an alternative source of exercise therapy knowledge and application and may be particularly attractive for those who regard exercise therapy as a peripheral subject area.

Already the undergraduate osteopathic curriculum is characterised by a high number of teaching hours and an extensive assessment programme. Adding exercise therapy into the undergraduate curriculum could prove problematic for these reasons and so the option of exploring exercise therapy as a postgraduate area of study whilst providing an additional opportunity for continuing professional development may be attractive to education providers and practitioners alike.

As previously mentioned, there are many CPD opportunities for osteopaths. The exercise therapy courses offered are in the main provided by professionals from associated health care disciplines. This may have an impact on the applicability of the course to osteopaths and the findings of chapter seven highlighted the desire for more CPD courses to be designed mindful of osteopathic practice. In the previous section, the issues with multidisciplinary collaboration were explored and it appears that practitioners want exercise therapy CPD provision from osteopaths or from those with an experience of osteopathic education and practice. The introduction of an increase in CPD course provision does however raise the question of quality assurance. At the present time, a CPD course can be designed and implemented for the

osteopathic profession by any individual regardless of whether they have any association with an OEI. CPD courses that are introduced by OEIs are not necessarily accredited and that can mean that their quality is not automatically assured. A logical step forward in postgraduate education provision would be the introduction of a process of quality assurance and accreditation of courses. Discussion between all major stakeholders would of course need to take place for this process to work, but it may be that the most logical step forward is assuring the quality of CPD provision.

8.3 IMPLICATIONS FOR OSTEOPATHIC PRACTICE

The work contained in this thesis has raised a number of issues associated with osteopathic practice that are not solely related to the integration of exercise therapy. Lack of time within a consultation was highlighted as a significant barrier to imparting the physical activity message. Whilst practitioners were comfortable in giving this advice they felt that perhaps other therapeutic modalities should take precedence during the time available to them. This raises the issue of the length of osteopathic consultation and whether practitioners might consider lengthening appointment times. Currently, time per patient in osteopathy varies widely. There is no published evidence exploring the reasons behind the variation in consultation time, although it is feasible to suggest that working environment (sole practitioner vs. multi-practitioner practice), number of patients and the issues associated with mainly private practice drive the practitioner's choice for length of patient consultation. The perceived reluctance of the practitioners to lengthen consultation times to

adequately incorporate physical activity and exercise therapy advice may also be a consequence of their belief that exercise therapy is an area of specialist interest amongst other professions. Practitioners spoke at length about the necessity and desire to improve multidisciplinary collaborative arrangements with other professions and were keen to explore avenues for exercise therapy referral. This may indicate that osteopaths do not view exercise therapy as a constituent element in their own scope of practice. Despite the widespread desire to improve multidisciplinary working relationships, there is no absolute evidence that this is in fact taking place in practice. The debate here has raised a number of issues that must be discussed further amongst the profession, where practitioners might seek additional clarification of scope of practice and consider the relative merits of developing multidisciplinary working relationships with other professions. Multidisciplinary collaboration, whilst enabling the development of potential referral pathways and knowledge and skills transfer, may also feasibly herald the underdevelopment of key skills in the promotion of health-related activities within osteopathic practice and ultimately weaken the profession's position in UK health care provision.

The impetus for evidence-based practice has been growing steadily amongst the manual therapies and osteopathy has been no exception. The studies in this thesis have highlighted the reluctance of osteopaths to use specifically exercise-based evidence to drive their practice. Reasons given include the perceived lack of clinical applicability of the research to

the osteopathic setting and the failure of the evidence to identify the specific effect of the exercise approach. The perceived reluctance amongst osteopaths to use the evidence available must be the focus of continued discussion amongst those responsible for driving forward the research agenda in osteopathy. It may be that there needs to be some acceptance that randomised controlled trials and universally accepted evidence-based practice models, are not going to capture the essence of the osteopathic consultation. This will mean that the profession may have to accept that the evidence available and outcome measures used may not be wholly applicable to the osteopathic clinical setting. As a means to address this, the profession and NCOR has actively encouraged research that embraces a broad range of methodologies that more adequately encapsulate the essence of osteopathic practice. Although these discussions and decisions might be challenging for the profession, the continued cultural change in osteopathy favouring research and evidence-based practice means that osteopathy is in a favourable position to cope with the challenges that lie ahead.

The sample population recruited to the practitioner study is not representative of UK osteopaths. Whilst there are commonalities in practice there have also been a number of issues relating to contrasting practice in relation to exercise therapy and its use in treatment and management. There continues to be a lack of clarity over the use of key exercise-based terminology, and it was difficult for the researcher to gauge the true meaning of the exercise prescription terminology used by

the sample population of practitioners. There was some indication that the descriptions and advice offered to the patient was given in a rather paternalistic manner. In direct contrast, it became clear that in the main osteopaths view their patients as being in partnership with them, particularly in relation to health-related decisions. This in effect ensures that the patient is an active partner in decision-making processes associated with treatment and management. This apparent conflict - the use of paternalistic terminology whilst viewing the patient as a partner in the health care relationship - warrants further discussion particularly in light of models of osteopathic practice.

8.4 THESIS LIMITATIONS

The limitations of the studies contained within the thesis relate in the main, to issues with sample populations. The exploration of the intended curriculum detailed in chapter five sought to include an analysis of documentation from all UK OEI's as of the academic year 2003/ 2004. Unfortunately, one OEI could not provide documentation for the purposes of analysis. The dynamic culture of higher education provision in osteopathy has also meant that two further OEI's have gained RQ status in the time that has elapsed between the completion of the studies in chapters five and six and the present time. Future work that focuses on curriculum evaluation in osteopathy should look to include all OEI's in their sample population.

The model of curriculum evaluation used in this thesis incorporated a number of stakeholder perspectives. By achieving this, a current exploration of exercise therapy in osteopathic undergraduate education has been achieved. Curriculum perspectives were explored with faculty members and students within four of the OEI's. Those faculty members and students volunteering for the study could be expected to have a bias towards exercise therapy as they agreed to discuss issues surrounding the provision of exercise therapy in osteopathy. Every effort was made to encourage volunteers who could express opinions both in favour of and against the provision of exercise therapy in undergraduate education. It is unclear how representative the participant's views are of the faculty member and student populations.

A similar scenario can be expected from the practitioner study in chapter seven. Adverts in the national osteopathic press requesting volunteers encouraged both those using exercise therapy and conversely those who did not, to respond. It is unclear however, how representative the sample population of osteopaths was of the UK population particularly in their use of exercise therapy. Further work in this field should look to establish how widespread the use of exercise therapy is in UK osteopathic practice using a questionnaire approach, thus increasing the potential sample population.

The patient perspective of exercise therapy in osteopathic practice is not evident within this thesis. This is a limitation to the work but it was deemed to be beyond the scope of this thesis. It is hoped that work at a post doctoral level might be directed at exploring patient expectations, needs, values and attitudes in relation to exercise therapy and osteopathy.

8.5 APPLICATION OF THE WORK CONTAINED IN THE THESIS AND CONTRIBUTION TO KNOWLEDGE IN THE FIELD

This thesis outlines the first in depth exploration of osteopathic undergraduate education in the UK. The model of curriculum evaluation is the first to be developed that has looked at the shared perspectives of major stakeholders in osteopathic education. The studies contained in this thesis have led to a number of opportunities for further development and sharing of knowledge in osteopathic education. The model of curriculum evaluation detailed in chapter five has been used by two OEIs for the purpose of curriculum review. One school has used the model to review the existing curriculum including the perspectives of a number of stakeholders to include a graduate population. The results of this review have led to the development of a new undergraduate Masters programme, the MOst. This work was presented at the recent international osteopathic conference, Advancing Osteopathy 08 in London. The model can be readily applied to any osteopathic

undergraduate or postgraduate curriculum for the purposes of review and evaluation.

In addition to the implementation of the curriculum evaluation model, the work in chapters five and six have highlighted to OEIs the inherent problems in describing and detailing content delivered in clinical education. This has led to one school revising their clinical tutorial programme and attempting to document the content with a view to providing equality in learning experience for undergraduate osteopaths.

The model of curriculum evaluation developed is not limited to undergraduate education. Future work will involve the model being used to review existing postgraduate programmes as a method of self-evaluation prior to the re-validation of the programme. It is hoped that the model can also be used internationally as a comparative process for undergraduate education provision.

8.6 THESIS CONCLUSIONS

The work contained in this thesis heralds the first in-depth exploration of exercise therapy in undergraduate osteopathic education and professional practice. A model of curriculum evaluation has been successfully developed and applied to UK osteopathic education ensuring that the model can now be used and refined for review and evaluation purposes both nationally and internationally.

This thesis has highlighted a number of issues for further discussion particularly amongst OEI's and the GOsC. The provision of exercise therapy education is clearly sporadic and idiosyncratic and there needs to be some discussion both locally and nationally about exercise therapy and osteopathic scope of practice and provision within education. Locally, OEI's need to address the perceived issues with documenting their educational content accurately. In instances where exercise therapy is delivered and assessed then provision needs to be characterised by its experiential, standardised, patient-centred approach.

Practitioners are at ease with offering physical activity and exercise advice to their patients using a mainly patient-centred approach. There remains some confusion about the use of exercise terminology but this does not appear to wholly undermine the practitioner's ability to educate or promote exercise as health behaviour. Wider discussions at a national level need to focus on the provision of quality assured continued professional development in this area.

It remains unclear as to whether osteopaths view exercise therapy as being within their own scope of practice. The importance of collaborative arrangements with other professions was a focus for practitioners. There must be further investigation as to whether practitioners view this as a potential referral pathway for those patients needing exercise therapy or whether this arrangement might be in the context of knowledge and skills transfer.

8.7 Publications & Associated Conference Presentations Derived From the Thesis

8.7.1 Publications

Dear, J. and Underwood, M. (2007). *What is the role of exercise in the prevention of back pain*? In Evidence-Based Sports Medicine (2nd Edition), p257-280. BMJ Publishing; London.

Vogel, S., Dear, J., Evans, D. (2005). The UK BEAM Trial – a review & discussion. *International Journal of Osteopathic Medicine,* 8 (2); 62-68.

Zamani, J., Vogel, S., Moore, A. and Lucas, K. (2007). Analysis of Exercise Content in undergraduate osteopathic education – A content analysis of UK curricula. *International Journal of Osteopathic Medicine,* 10 (4), 97-103.

8.7.2 Presentations (Presenting author)

Zamani, J. (2008). *Back to Exercise: Issues for Practising Osteopaths.* Platform Presentation, Advancing Osteopathy 08, January 2008; London.

Zamani, J. (2008). *Exploring Exercise Content in the UK Osteopathic Curricula – a qualitative study of osteopathic students and faculty members.* Platform Presentation, Advancing Osteopathy 08, January 2008; London. Awarded prize for best oral presentation in session.

8.7.3 Presentations (co-author)

Nunn, N., Zamani, J., Korth, S. and Wolff, M. (2008). Development and implementation of a Masters level qualification in Paediatric Osteopathy. Platform Presentation. Advancing Osteopathy 08. London, January 2008.

Potter, S., Zamani, J. and Vogel, S. (2008). Variability in clinical teaching at the British School of Osteopathy – a focus group study of staff and students. Platform Presentation. Advancing Osteopathy 08. London, January 2008.

Potter, S., Zamani, J. and Tyreman, S. (2008). Developing an MOst degree at the British School of Osteopathy. Platform Presentation. Advancing Osteopathy 08. London, January 2008.

8.7.4 Poster Presentations

Dear, J., Vogel, S., Moore, A. and Lucas, K. (2005). Analysis of Exercise Content in the UK Osteopathic Curriculum. Poster Presentation. *International Osteopathic Education Conference.* London June 2005.

Dear, J., Vogel, S., Moore, A. and Lucas, K. (2006). Taught & Received Osteopathic Curriculum – Exercise Theory & Practice. Poster presentation at the *International Conference on Advances in Osteopathic Research* (ICAOR 6) London, April 2006.

Zamani, J., Vogel, S., Moore, A. and Lucas, K. (2008). Analysis of Exercise Content in the UK Osteopathic Curriculum. Poster Presentation. Advancing Osteopathy 08. London January 2008.

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10.0 APPENDICES

APPENDIX 1: PILOT MODEL OF CURRICULUM ANALYSIS

APPENDIX 2: CODING FRAMEWORK AND INSTRUCTIONS

The framework for coding the osteopathic syllabi is split into ten themes. Each theme unit has a definition and is represented by cue words or phrases, which might feature within the text unit. Identification of the cue word/phrase signifies the presence of the corresponding theme in the text unit. Note the specific text unit identifying which theme it fits into and whether the text indicates a theoretical or practical aspect of the syllabus. If this cannot be determined, complete the text box in the undecided column.

1. **Identify cue word/phrases, which pertain to exercise content within the syllabus. Text unit must contain contextual evidence of a link to exercise.**
2. **Identify which theme the cue word/phrase can be categorised as.**
3. **Note whether the content is theoretical, practical or undecided.**
4. **Note the text unit in which the exercise content is found on the correct theme page and content box.**

- **<u>Theme 1: Movement & Muscular system (MS)</u>** Terminology used as a ***general descriptor of movement and the muscular system*** to include *movement patterns, human movement, motion (whole body and not joint specifically), movement (whole body),*

achievement of everyday activity, human mechanics, locomotion, weight bearing and movement, muscle tone, muscle strength, muscle length, muscle testing, muscle function, muscle contraction, isometric contraction, isokinetic contraction, isolytic contraction, aerobic and anaerobic contraction, muscle activity, muscle conductivity, isometric contraction, isotonic contraction, muscle fatigue, muscle function, actions of muscle, function of muscle groups, muscle fibre, muscle tension, muscle physiology, muscle types, muscle imbalance, motor unit, muscle hypertrophy, muscle atrophy.

- **Theme 2: Health Education (HE)** Exercise as featured within ***health education and health promotion strategies and programmes*** to include *health education, healthy living, promoting healthy living, health promotion, health promotion strategies.*
- **Theme 3: Descriptors of Exercise (DE)** Terminology used in the text to refer to ***exercise activity (either specific or general)*** to include *exercise, athletic, training, performance (athletic), human performance, fitness (physical), sports, health and sports related fitness, sporting activities, competitive sports.*
- **Theme 4: Exercise as treatment specific (Ex Spec)** Terminology which refers to the ***use of specific modes of exercise which implies application*** to include *exercises, stretching techniques, PNF stretching, facilitated stretching, strength training, resistance training, stretching, exercise adjustments, proprioceptive exercise,*

resistance exercise, range of motion exercise, Pilates, exercise programming, exercise prescription (for health)

- **Theme 5: Exercise as treatment general(ttt)** Refers to the ***use of exercise as part of a wider treatment programme*** to include *sports rehabilitation, rehabilitation programme, sports medicine, rehabilitation, general exercise therapy, remedial exercise, sports osteopathy, osteopathic sports medicine, rehabilitative exercise, therapeutic exercise, exercise therapy, sports massage, sports care.*
- **Theme 6: Principles of Exercise (PofEx)** Refers to the ***theory/ knowledge of exercise principles. Does not necessarily imply practical application*** to include *knowledge of sports training, conditioning principles, strength conditioning, over training, training principles, adaptation to loading, isometric (training/ exercise), concentric (training/ exercise), eccentric (exercise/ training), plyometrics, sports training principles, (clinical) exercise physiology, work physiology, coaching, endurance (physical), power (physical), biomechanical theories, physiology of stress and exercise, sport (specific) training programmes, physical inactivity, science of training , progressive exercise, exercise in health & disease, physiology of sport & exercise, benefits & hazards of exercise, guidelines for exercise, mechanics of sports injuries, strengthening, warm-up, sports psychology, biomechanics, biomechanical principles, training practices, training regimes, injury*

prevention, nutrition in sports, core stability, appropriate selection of exercise treatment, proprioception.

- **Theme 7: Response to Exercise (Rof Ex)** Refers to ***measurable athlete or individual responses to exercise*** to include *muscle response, physiological response to exercise, injury in sport (sports injuries), exercise state, acute cardio-respiratory response to exercise, chronic cardio-respiratory response to exercise, cardiac response to exercise, respiratory response to exercise, athletic injuries.*
- **Theme 8: Population & Environment (P&E)** Refers to ***exercise for named populations and awareness of osteopathic intervention in the sporting environment*** to include *advice/ exercise for the patient, athletes, sports arena, competitive situation, playing field, sporting situations, sports club, pitchside.*
- **Theme 9: Measures (Meas)** ***Psychological and physiological assessments associated with exercise*** to include *sports assessment, V_{o2}max, explosive power tests, power, strength, body composition, skinfolds, girths, somatotyping, biomechanical evaluation, biomechanical assessment aerobic capacity, anaerobic power, flexibility, grip strength, percentage body fat, respiratory peak flow, human movement analysis.*

APPENDIX 3: UNIVERSITY OF BRIGHTON ETHICS COMMITTEE APPROVAL JUNE 2005

257.2 Exploring exercise content in the osteopathic curricula - a focus group study of UK osteopathic students and faculty. Joanne Dear, PhD. (REC05-42)

The chair noted that this application was welcomed as part of a process of developing the evidence base in complementary healthcare. The proposal was also commended as thorough and well-presented. The committee was interested in the intention to develop a questionnaire prior to holding the focus groups, as this was an unconventional order of proceeding. Following discussion, members agreed that this could be valuable for a number of reasons, but were interested in the researcher's rationale for this.

The proposal was approved.

APPENDIX 4: PARTICIPANT INFORMATION SHEET

Exercise content in the UK undergraduate osteopathic curriculum

Dear Faculty member,

You are being invited to take part in a research study exploring exercise content in osteopathic education. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you require more information. Take time to decide whether or not you wish to take part. Thank you for reading this.

What is the purpose of the study?

Incorporating exercise advice into patient management and treatment strategies is the focus of considerable attention within manual therapy. However, there is little published evidence to suggest that osteopaths are incorporating exercise into treatment and management. A prior study of UK osteopathic curricula suggests that exercise content in undergraduate education is variable and idiosyncratic. Exercise is accepted as a therapeutic modality but there is limited evidence of its use as an intervention. However, analysis of course documentation may not fully record exercise teaching. We are therefore carrying out a survey and

some focus groups. These studies explore exercise content in the osteopathic curriculum by eliciting faculty and student experiences, identifying potential hidden aspects of the curriculum and building upon the findings of previous studies.

This questionnaire is the first stage of the study. The answers that you provide will give us some indication of the curriculum content you deliver and help in the recruitment of a sample for a future focus group study.

This questionnaire asks questions about you, whether you contribute to exercise education in the clinical or academic curriculum, what material you deliver and how this is achieved. Please try and complete all the sections that apply to you. Even if you do not deliver exercise content, we would still very much like to hear from you.

It should take you no more than 10-15 minutes to complete

We invite faculty members from your institution to be included in a focus group exploring exercise and osteopathic education. This is the second stage of the study and the session will last no more than one and a half hours. If you are interested in taking part, please read the information on the back page of the questionnaire and provide your contact details so that a member of the study team can contact you to discuss the project further. We will be happy to answer any questions and then send details

of the location of the meeting and a consent form for you to sign and return to the study team. Each osteopathic school will host a focus group so the location will be convenient to you. Some participants will be invited to comment on our interpretation of the interviews. The information obtained will be used to develop a framework for best practice and education when including exercise as part of treatment and management. Even if you do not want to take part in the focus group study, we would be grateful if you would complete the questionnaire. Completing this questionnaire does not commit you to being included in the focus group.

Why have I been chosen?

You have been identified as a faculty member of an osteopathic school. We will use your responses from the questionnaire to build a picture of the delivered exercise content in the osteopathic curriculum.

What do I have to do?

We would be grateful if you could complete the questionnaire and return it in the pre paid envelope provided. All reply envelopes have a code number. This number is for the purpose of sending out reminders to those who have not responded. Code numbers will not feature on the database used to analyse the data so there is no way of identifying an individual's response in the final analysis. If you are interested in taking part in the focus group stage of the study, please put your name and contact details on the final page of the questionnaire. Identifying information will be removed from the questionnaire prior to analysis.

Will my taking part in the study remain confidential?

The study has been approved by the Research Ethics Committee at the University of Brighton. All the data from the study will remain confidential to the study team. Individuals will not be identified during the analysis of data.

What will happen to the results of the study?

The results of the study will be presented as part of a doctoral thesis submitted by Joanne Dear, a research student at the Clinical Research Centre for Health Professions, University of Brighton. In addition, results will be published in peer reviewed journals and be presented at professional conferences.

Who is organising and funding the research?

Joanne Dear (research student) is organising this research as part of her doctoral studies. Supervision is given by Professor Ann Moore (University of Brighton), Steven Vogel DO (British School of Osteopathy) and Dr. Kevin Lucas (University of Brighton). This study is funded by the British School of Osteopathy, and no profit making is involved, either to an institution or an individual. There will be no form of payment for the participants' collaboration. Participation is required to be free and voluntary. This study is a non-profit project and only the researcher analysing data will be funded.

Contact for further information:

If you have any questions, please contact:

Joanne Dear

Address: Research Student, Clinical Research Centre for Health Professions, University of Brighton, Aldro Building, Darley Road, Eastbourne, East Sussex, BN20 7UR.

Telephone: 020 7 089 5328 Email: bd014a7922@blueyonder.co.uk

APPENDIX 5: QUESTIONNAIRE (pdf)

APPENDIX 6: FACULTY MEMBER INTERVIEW INFORMATION SHEET AND CONSENT FORM

Information Sheet – Faculty

Exploring exercise content in the osteopathic curricula – a focus group study

Background

Incorporating exercise advice into patient management and treatment strategies is the focus of considerable attention within manual therapy. Osteopaths as health care professionals are in a prime position from which to give advice on exercise and physical activity both as an adjunct to treatment and in the wider remit of health education. However, there is little published evidence to suggest that osteopaths are incorporating exercise into treatment and management.

As part of a study exploring exercise content in the osteopathic curricula we are running discussion (focus) groups for faculty and student groups representing UK osteopathic schools. All members of your group will be faculty members who are willing to contribute to a discussion on exercise in the osteopathic curriculum. The session will last no more than one and a half hours and be led by an experienced researcher. The session will be recorded to allow later analysis. This discussion group will take place at the BSO.

Why have I been chosen?

All participants come from the BSO. We have obtained your name from your returned questionnaire.

What happens to the recording of the group

It will be stored in a locked cupboard at the BSO. The recording will be transcribed. Once the analysis is complete the original recording will be destroyed. Some participants will be asked to comment on our interpretation of the interviews. The information obtained will be used to develop a framework for best practice and education when including exercise as part of osteopathic treatment and management.

Will what is said be confidential?

We will ask members of the group to keep the contents of the discussion confidential. The study team will keep the contents of the discussion confidential.

If I have any questions who do I ask?

Jo Dear can be contacted via email at

bd014a7922@blueyonder.co.uk

Focus group consent form faculty

Exploring exercise content in the osteopathic curricula
Focus group consent

Please complete and sign this form.

	Yes	No
I agree to take part in this research which is to contribute to a discussion exploring exercise content in the osteopathic curriculum	☐	☐
I have had the opportunity to discuss the study with the researcher	☐	☐
I have had the principles and procedure explained to me & I have also read the information sheet. I understand this information fully.	☐	☐
I understand that other faculty members who work within the school will be present.	☐	☐
I understand that I can withdraw at any time, even after the session has started without giving a reason	☐	☐
I understand that the discussion will be recorded and that confidential information will be seen only by the researchers and not revealed to anyone else.	☐	☐
I agree to keep the contents of the discussion confidential	☐	☐

Name (please print) ……

Signed ……

Date ……

Witnessed (please print name)……..

Signature of witness……

Date……

Jo Dear
Email: bd014a7922@blueyonder.co.uk

APPENDIX 7: STUDENT INTERVIEW INFORMATION SHEET

AND CONSENT FORM

Information Sheet – Student

Exploring exercise content in the osteopathic curricula

Background

Incorporating exercise advice into patient management and treatment strategies is the focus of considerable attention within manual therapy. Osteopaths as health care professionals are in a prime position from which to give advice on exercise and physical activity both as an adjunct to treatment and in the wider remit of health education. However, there is little published evidence to suggest that osteopaths are incorporating exercise into treatment and management.

As part of a study exploring exercise content in the osteopathic curricula we are running interviews for faculty and student groups representing UK osteopathic schools. The session will last no more than one hour and be led by an experienced researcher. The session will be recorded to allow later analysis.

Why have I been chosen?

All participants come from UK osteopathic schools.

What happens to the recording of the group

It will be stored in a locked cupboard at a private address. The recording will be transcribed. Once the analysis is complete the original recording will be destroyed. Some participants will be asked to comment on our interpretation of the interviews. The information obtained will be used to develop a framework for best practice and education when including exercise as part of osteopathic treatment and management.

Will what is said be confidential?

The study team will keep the contents of the discussion confidential.

If I have any questions who do I ask?

Jo Dear can be contacted via email at bd014a7922@blueyonder.co.uk

Interview consent form student

Exploring exercise content in the osteopathic curricula
Interview consent

Please complete and sign this form.

	Yes	No
I agree to take part in this research which is to contribute to a discussion exploring exercise content in the osteopathic curriculum	☐	☐
I have had the opportunity to discuss the study with the researcher	☐	☐
I have had the principles and procedure explained to me & I have also read the information sheet. I understand this information fully.	☐	☐
I understand that I can withdraw at any time, even after the session has started without giving a reason	☐	☐
I understand that the discussion will be recorded and that confidential information will be seen only by the researchers and not revealed to anyone else.	☐	☐
I agree to keep the contents of the discussion confidential	☐	☐

Name (please print) ……

Signed……

Date ……

Witnessed (please print name)……

Signature of witness……

Date……

Jo Dear
Email: bd014a7922@blueyonder.co.uk

APPENDIX 8: INTERVIEW SCHEDULE FOR FOCUS GROUP AND INTERVIEWS

Focus Group Interview – Key Issues to be explored

Faculty Group

- How does exercise therapy relate in your opinion, to osteopathic treatment & management?
- How important is exercise in the osteopathic management of patients?
- Does exercise have a place in osteopathic education?
- You are currently involved in teaching exercise here at *insert school,* can you tell us a bit more about what you teach, for example if you teach a specific exercise approach such as core stability for use in the clinical setting or more theory driven content.
- When & how do you deliver this? Is it based in clinic?
- Do you assess this aspect of the course? How do you assess? Should it be assessed?
- What do you think about the exercise education given to undergraduates in this institution?
- In what ways does the exercise education they (students) receive prepare them for professional life? Is it at the correct level? Is the content sufficient?

- Do you feel that exercise education should be developed further? What might the advantages and disadvantages to this be in the short and long term?

Student Group

- How does exercise therapy relate in your opinion, to osteopathic treatment & management?
- How important is exercise in the osteopathic management of patients?
- Does exercise have a place in osteopathic education? Is it important for students to be taught this?
- During your time as students here, have you been introduced to the use of exercise in osteopathic treatment & management? Have you experienced both the theoretical and practical aspects of exercise education?
- What approaches to exercise therapy have you experienced? For example, clinic-based tuition, theory-driven material taught in lectures or tutorials.
- Was it assessed? How was it assessed? Should it be assessed?
- What do you think about the exercise education you receive in this institution?
- In what ways do you think the exercise education you receive prepares you for professional life? Is it at the correct level? Is the content sufficient?

- Do you feel that exercise education should be developed further? What might the advantages and disadvantages to this be in the short and long term?

APPENDIX 10: PRACTITIONER INFORMATION SHEET

Exploring the use of exercise therapy in UK osteopathic practice.

Background

Incorporating exercise advice into patient management and treatment strategies is the focus of considerable attention within manual therapy. Osteopaths as health care professionals could be considered to be in a prime position from which to give advice on exercise and physical activity both as an adjunct to treatment and in the wider remit of health education. However, there is little published evidence to suggest that osteopaths are incorporating exercise into treatment and management.

As part of a study exploring exercise therapy in osteopathic practice we are running semi-structured interviews for volunteer practitioners across London and the South East of England. All volunteers are osteopaths who are willing to contribute to a discussion on exercise therapy in clinical practice. The interview will last no more than one hour and will be led by an experienced researcher. The session will be recorded to allow later analysis.

The interview will take place at a convenient location to you and the researcher is happy to travel to your practice location should you so wish.

Why have I been chosen?

All participants are volunteer osteopaths.

What happens next?

You will have already spoken to the lead researcher. If you are happy to participate, please date and sign the attached consent form.

What happens to the recording and transcription of the interview?

It will be stored in a locked cupboard at the lead researcher's home address. The recording will be transcribed. Transcriptions stored on computer will be password protected. Once the analysis is complete the original recording and transcription will be destroyed. Some participants will be asked to comment on our interpretation of the interviews. The information obtained will be used to develop a framework for best practice and education when including exercise as part of osteopathic treatment and management.

Will what is said be confidential?

The study team will keep the contents of the discussion confidential.

If I have any questions who do I ask?

Jo Dear can be contacted via email at j.dear@bso.ac.uk or by telephone on 07956 346031

APPENDIX 11: PRACTITIONER WRITTEN CONSENT

Participant Consent Form

Completed in advance by participant, therefore not witnessed by researcher

Exploring the use of exercise therapy in UK osteopathic practice.

Insert Name

Please read the statements below. If you agree with the statements, please sign and date the form. Please return one copy in the envelope provided and keep the other yourself.

I agree to take part in this research which is to contribute to a discussion exploring exercise therapy in osteopathic practice

The researcher has explained to my satisfaction the purpose of the study and the possible risks involved.

I have had the principles and procedure explained to me & I have also read the information sheet. I understand the principles and procedures fully.

I am aware that I will be required to answer questions.

I understand that any confidential information will be seen only by the researchers and will not be revealed to anyone else.

I understand that I am free to withdraw from the

investigation at any time.

Name (please print) …….

Signed …….

Date …….

Witnessed (please print name)…….

Signature of witness……..

Date……..

Jo Dear Email: j.dear@bso.ac.uk

APPENDIX 12: UNIVERSITY OF BRIGHTON ETHICS COMMITTEE APRROVAL AND CANDIDATE RESPONSE

APPENDIX 12: UNIVERSITY OF BRIGHTON ETHICS COMMITTEE APRROVAL AND CANDIDATE RESPONSE

Joanne Dear – Response to FHREG Ref: 07/14

1. The 1st 'yes' box should not be checked on the front page that questions whether the project has been subject to scientific or peer review. It is assumed to have been seen by the supervisory team.

Box on corresponding form has been unchecked (Front page FHREG 2).

2.On 'FHREG 4' related to the sponsor checklist, all the 'no' boxes have been checked when it might be expected that all the 'yes' boxes would be checked.

Yes boxes on corresponding form have been checked (Sponsor Checklist FHREG 4).

3. There appeared to be a lot of aims linked to this proposal and it would be helpful if a distinction is made between the overall purpose and the re examining secondary aims and whether these aims carry equal importance.

Section 2.0 Purpose of the Study (pg.2) has been restructured to include an overall purpose of the study with supporting primary aims and objectives. After some consideration, it was decided that the aims and

objectives outlined in this section do carry equal importance and should not be sub sectioned into secondary aims and objectives.

4. Although recognising the potential for bias, the research team are encouraged to modify the advert and subject information further to lessen the likelihood of bias and leading the subject into what they think you want to hear. That is, by trying to 'explore the use of exercise therapy by osteopaths in clinical practice' you might get a skewed sample where only those using exercise respond to your advert. In your subject information sheet, the language appears to direct the subject, by identifying 'osteopaths as health care professionals are in a prime position…'.

Advert has been reworded to be read as **"**Using semi structured interviews with practitioners; I hope to gain an insight into the potential role of exercise therapy in osteopathic treatment and management." This adequately reflects the stated objectives of the study and encourages responses from practitioners who utilise exercise therapy and those who do not. The recruitment statement has also been reworded to reflect this. "At this stage, we would like to hear from practitioners who do utilize exercise therapy and equally from those who do not".

.

The statement "Osteopaths as health care professionals are in a prime position from which to give advice on exercise and physical activity both

as an adjunct to treatment and in the wider remit of health education" has been removed from the information sheet.

5. There was some concern whether an N=15 was reflective enough.

Pg. 4 stated proposal did state that 15 interviews would be the minimum number of interviews. The number of interviews carried out will be dependent upon data saturation. The absolute maximum number of interviews (in the absence of data saturation) will be 40. This has been added to pg. 4 of the proposal.

6. Dr Anne Mandy's name should be removed from the subject information sheet and the postcode is incorrect.

Details have been removed from the participant information sheet. Page 4 (Information for participants) of the guidelines for completing the FHREG forms request that a contact be offered independent of the study hence the inclusion of Dr. Mandy's details.

APPENDIX 13: RECRUITMENT ADVERT PLACED IN THE NATIONAL OSTEOPATHIC PRESS

Exploring Exercise Therapy in Osteopathic Practice

As part of a doctoral thesis under the supervision of the University of Brighton, I am exploring the role of exercise therapy in osteopathic practice.

Using semi structured interviews with practitioners; I hope to gain an insight into the role of exercise therapy in osteopathic treatment and management.

Participation in the study would involve your being interviewed for up to 45 minutes in a location that is convenient to you. At this stage, we would like to hear from practitioners who do utilize exercise therapy and equally from those who do not.

If you are interested in taking part and would like more information on the study, please do not hesitate to contact Jo Dear on 07956 346031 or email j.dear@bso.ac.uk

APPENDIX 14: INTERVIEW SCHEDULE FOR PRACTITIONERS

- How does exercise therapy relate in your opinion, to osteopathic treatment & management?
    - Explore scope of practice
- How important is exercise in the osteopathic management of patients?
    - Explore aims/ goals of exercise therapy.
- How would you define exercise therapy?
- What factors influence your decision to utilize exercise therapy in osteopathic treatment? And management?
- Conversely what factors influence your decision not to utilize exercise therapy in osteopathic treatment? And management?
- What modes of exercise therapy might you utilize in a) your treatment room and b) outside of the treatment room?
- When utilising exercise therapy with a patient, how do you decide on mode of exercise?
- Do you prescribe exercise for your patients?
    - Dependent on response explore elements of prescription to include frequency of exercise; duration of exercise; progression.
    - Prescription within the context of osteopathic philosophy – do you consider the prescription of exercise therapy to be osteopathic?

    - Use of resources – written guidance, diagrams, other visual aids, equipment.
    - Monitoring progress; revision of the prescription.
    - Barriers to implementation.
- Do you consider your use of exercise therapy to be evidence-based?
    - Explore use of guidelines for physical activity and specific exercise therapy i.e. guidelines for low back pain.
    - If evidence-based, where do you source your evidence?
    - If not evidence-based, why not? Explore barriers.
- Do you empower your patients to continue with exercise and physical activity as part of their daily routine?
    - How? Why not?
- As an osteopath, do you have all of the required resources to adequately utilize exercise therapy?
    - Explore physical resources i.e. equipment
    - Explore personal resources i.e. knowledge, confidence, scope of practice.
- Do you feel adequately prepared to utilize exercise therapy as part of your clinical practice?
    - Desires for the future
    - Provision of continuing professional development
    - Barriers to implementation.
- Is there anything else you would like to add to the discussion?

Appendix 1

Model of Curriculum Analysis

Section 1

Institution _____

Course title _____

Award _____

Length of course _____

Mode of Delivery (more than one answer possible)

- ○ Full Time
- ○ Part Time
- ○ Extended Pathway

Number of students per cohort (where applicable)

1st Year	2nd Year	3rd Year	4th Year	5th Year
_____	_____	_____	_____	_____

Section 2

In accordance with S2K, the osteopath should be able to demonstrate the ability to assist patients to undertake and become committed to self care activities including exercise and lifestyle adjustments.

Is exercise included in the osteopathic curriculum?

○ Yes ○ No

Unit/ Module Information

Unit Name:	_____	Level/ Year	_____
Credit Points:	_____	Core or Pre requisites required	_____
Teaching hours	_____	Total study hours	_____
Semester/ Year	_____		_____

Section 3

Are the aims of including exercise in the course clearly stated?

○ Yes ○ No ○ Unclear

Are the objectives of including exercise in the course clearly stated?

○ Yes ○ No ○ Unclear

Are the learning outcomes associated with exercise content clearly stated?

○ Yes ○ No ○ Unclear

Is the exercise content (more than one answer possible)

○ subject related (in the context of another subject area - physiology)

○ profession related (related to osteopathic practice)

○ general education (for background)

○ practice related (includes practical use)

Section 4

Is the exercise content theoretically assessed?

○ Yes ○ No ○ Unclear

Assessment type _____

Word Count _____ Time to complete _____

Is the assessment

○ Continuous ○ Terminal

○ Formative ○ Summative

○ Academic ○ Practical

Is the use of exercise practically assessed?

○ Yes ○ No ○ Unclear

Which tools are used for practical exercise assessment?

- Skills Inventory
- Portfolio
- Viva
- Other

Section 5

What teaching methods are stated explicitly?

_____

What learning methods are stated explicitly?

_____

Is exercise content taught practically?

- Yes
- No
- Unclear

If yes, what methods of teaching are used?

_____

Is exercise theory taught?

- Yes
- No
- Unclear

If yes, what methods of teaching are used?

_____

Appendix 4 - Exercise Therapy in UK Undergraduate Osteopathic Education

This questionnaire is designed to gather information about your role in and contribution to undergraduate osteopathic education in the UK. We are specifically looking at the exercise therapy content in both academic and clinical education.

Section 1: Professional Background

This section of the questionnaire gathers information relating to your professional background. If you are a non clinician please complete questions 1-4 and tick non clinician for the remaining questions in that section. If you are a clinician but not a registered osteopath (clinician non osteopath), please complete all questions indicating the most appropriate response.

1. Are you a .....

- ○ Registered practicing osteopath
- ○ Registered non practicing osteopath
- ○ Clinician (non osteopath)
- ○ Non clinician

2. Gender

○ Male ○ Female

3. Highest educational level in any subject area (tick one only)

○ Diploma ○ Bachelor's Degree ○ Hons. Degree ○ Master's Degree

○ Doctoral Degree ○ Professional Doctorate ○ Other

4. If you do not hold a qualification in osteopathy, please state the title of the course completed at the highest educational level

_____

5. Site of your osteopathic education

○ BCOM ○ BSO ○ COET ○ ESO ○ LCOM ○ LSO

○ OBU / OSU ○ SIOM ○ Other ○ Non Clinician ○ Clinician non osteopath

6. Number of years since professional training

_____

Section 2: Exercise Therapy in Undergraduate Osteopathic Education

This section of the questionnaire explores exercise content delivered within the undergraduate osteopathic curriculum. To gain a full picture, we need information from those who do not have direct involvement in teaching exercise as well as those who do. Exercise content can include both practical and theoretical material. Examples of exercise content includes material covering principles of exercise (exercise physiology, conditioning), the use of exercise as part of treatment (rehabilitation, exercise prescription), the use of named exercise approaches (strength training, stretching exercises) and the management & treatment of injury as a consequence of sports participation.

7. Which osteopathic school do you currently teach at? (More than one answer possible)

O BCOM O BSO O COET O ESO O LCOM

O LSO O OBU/OSU O SIOM O Other

8. Which aspect of undergraduate education do you deliver?

O Academic education

O Clinical education (teach in a clinical setting)

O Both

9. Do you currently deliver exercise related content in...

Academic Education
O Yes O No

Clinical Education
O Yes O No

If you do not deliver any form of exercise content, please move to section 4, page 8, Focus Group Study. .

10. Is the exercise content you deliver (More than one answer possible)

- ○ Subject related (in the context of another subject area i.e. physiology)
- ○ Included within a clearly defined exercise unit/ module
- ○ General education (forms part of background material and information)
- ○ Practice related (includes practical teaching and use in clinical education)

11. Can you give details of the undergraduate educational experiences in which you deliver exercise content?

<u>Educational experiences may be in the form of units/ modules within the course, clinic tutorials, a lecture or a seminar.</u>

If you deliver more than one educational experience, please list details for all. Space is provided below for you to give details of up to 5 educational experiences in which you deliver exercise content. In addition, please indicate the academic year(s) in which you deliver the named educational experiences.

Educational Experience 1

_____

Delivered in year:

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

Educational Experience 2

_____

Delivered in year:

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

Educational Experience 3

_____

Delivered in year:

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

Educational Experience 4

_____

Delivered in year:

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

Educational Experience 5

_____

Delivered in year:

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

12. Is the/ are the educational experience(s) you deliver compulsory, electives chosen by the student or opportunistic/ informal content? Please answer for all the educational experiences you detailed in Question 11. Remember each educational experience is numbered and this relates back to those identified in Question 11.

Educational Experience	Compulsory	Elective	Opportunistic/ Informal
1.	❑	❑	❑
2.	❑	❑	❑
3.	❑	❑	❑
4.	❑	❑	❑
5.	❑	❑	❑

13. For all the educational experiences you deliver which include exercise content, please indicate whether the experience is assessed or not and the nature of the assessment where applicable. More than one answer possible.

Educational Experience	Formative	Summative	Academic/ written	Practical	Not Assessed
1.	❑	❑	❑	❑	❑
2.	❑	❑	❑	❑	❑
3.	❑	❑	❑	❑	❑
4.	❑	❑	❑	❑	❑
5.	❑	❑	❑	❑	❑

14. For all the practical educational experiences you deliver which include exercise content and are assessed, please tick the mode of assessment used. More than one answer possible.

	Educational Experience	Skills Inventory	Portfolio	Viva	Clinic tutor report	Other	N/A
1.		❑	❑	❑	❑	❑	❑
2.		❑	❑	❑	❑	❑	❑
3.		❑	❑	❑	❑	❑	❑
4.		❑	❑	❑	❑	❑	❑
5.		❑	❑	❑	❑	❑	❑

15. Below is a list of exercise approaches delivered in undergraduate osteopathic education. Please indicate which of the exercise approaches you deliver (if at all) and whether the content of your delivery is practical, theoretical or both. Practical content can be defined as that delivered as part of clinical education and/ or osteopathic technique. Theoretical content does not necessarily imply practical application.

Exercise Approach	Theoretical delivery	Practical delivery	Not at all
Stretching exercises	❑	❑	❑
Core stability exercises	❑	❑	❑
Strength/ resistance exercises	❑	❑	❑
Flexibility exercises	❑	❑	❑
General aerobic conditioning	❑	❑	❑

Other (please state)

_____

16. Below is a list of examples of exercise content identified in the undergraduate osteopathic curriculum. Please indicate to what extent you are involved in teaching the following topics. Think about the content across all units/ modules that you deliver.

I am involved with the delivery of

Exercise Content	Not at all	A little	Somewhat	Quite a bit	Very much
Muscle Physiology	❑	❑	❑	❑	❑
Exercise as part of health education	❑	❑	❑	❑	❑
Exercise as part of health promotion	❑	❑	❑	❑	❑
Principles of training and performance	❑	❑	❑	❑	❑
Exercise Physiology	❑	❑	❑	❑	❑
Sports Psychology	❑	❑	❑	❑	❑
Biomechanical Principles	❑	❑	❑	❑	❑
Exercise as part of rehabilitation	❑	❑	❑	❑	❑
Exercise prescription	❑	❑	❑	❑	❑
Sports Injury treatment	❑	❑	❑	❑	❑
Sports Injury management	❑	❑	❑	❑	❑
Tests of maximal aerobic capacity, power and strength	❑	❑	❑	❑	❑
Contraindications to exercise	❑	❑	❑	❑	❑
Exercise progression	❑	❑	❑	❑	❑

Section 3: Exercise Experience & Knowledge

This section of the questionnaire is designed to gain an insight into the sources of your exercise experience and knowledge. Please answer this section in relation to your own education and experience of exercise.

17. In relation to your own education, which of the following options contributed to your knowledge of exercise and enabled you to deliver exercise related content in the undergraduate osteopathic curriculum? If some of the options indicated are not applicable, please indicate this using the final column. For example, if you are not an osteopath so have never completed a course in osteopathy.

Source of Knowledge	Important Contribution	Contributed	No contribution	N/A
Osteopathic degree	❑	❑	❑	❑
Osteopathic diploma	❑	❑	❑	❑
Osteopathic CPD course	❑	❑	❑	❑
Course other than osteopathy	❑	❑	❑	❑
Knowledge gained through osteopathic clinical experience and practice	❑	❑	❑	❑
Knowledge gained through non osteopathic experience and practice i.e. sports partcipation, coaching.	❑	❑	❑	❑
Access to published evidence in peer reviewed journals	❑	❑	❑	❑

18. If you have any other comments about the delivery and content of exercise in the undergraduate curriculum, please write them below.

_____

_____

_____

_____

_____

Section 4: Focus group study exploring exercise therapy in the osteopathic curriculum

As part of a study exploring exercise content in the osteopathic curricula we are running discussion (focus groups) for faculty and student groups representing UK osteopathic schools. All members of your focus group will be faculty members who are willing to contribute to a discussion on exercise in the osteopathic curriculum and no more than eight people will take part. All members of faculty are invited to partcipate regardless of whether or not they deliver exercise related material in the curriculum. Full details of the focus group are outlined in the information letter accompanying this questionnaire. If you are interested in partcipating, please indicate this at the bottom of the page, giving your name and contact details. You will be telephoned by a member of the study team who will answer any questions you have about the study and confirm that you are willing and able to attend the discussion group.

Name

_____

Contact address

_____

Telephone - daytime

_____

Telephone - evening

_____

Email

_____

This completes the questionnaire. Please return it to us in the S.A.E provided by Monday 10th October 2005.

Thank you for taking the time to complete the questionnaire and contribute to research in osteopathy.

Questionnaire Feedback

We would be grateful if you could give the study team some feedback about the questionnaire.

Below is a list of statements concerning the clarity and design of the questionnaire. Please tick the box which most accurately describes how much you disagree/ agree with each statement.

	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
The questionnaire instructions were clear.	❑	❑	❑	❑	❑
The questions were clear.	❑	❑	❑	❑	❑
The layout of the questionnaire was clear.	❑	❑	❑	❑	❑

How long did it take you to complete this questionnaire?

○ 0-5 minutes ○ 6-10 minutes ○ 11-15 minutes ○ More than 15 minutes

Are there any areas vital to this study about which you were not questioned? Please provide details.

_____

_____

_____

_____

_____

_____

APPENDIX 9: AUDIT TRAIL OF TRANSCRIPT QUOTES AND HOW THEY RELATE TO THEMATIC CODES GENERATED – FACULTY MEMBERS AND STUDENTS

FACULTY MEMBERS

Theme	Verbatim example
Aims of Exercise Therapy	*"I suggest certain exercises to hopefully maintain any improvement or any changes we have been able to achieve in the treatment." Ost F2*
Exercise therapy in osteopathic care/ management	*"We do talk about lifestyle factors as well so I like to think we are fairly broad in our outlook." Ost F2*
Exercise therapy approaches	*"Other exercises say maybe strengthening exercises to stabilise, stretching exercises to improve say segmental function between the vertebrae in the back". Ost F1*
	"Types of stretches. Well I use a lot of muscle chain stretches." Ost F3
Exercise therapy as treatment	*"I think I would try and give them, show them the exercises there within the actual treatment room and getting them feeling them so that they could actually feel what it is they are meant to be doing and feel the benefits of it." Ost F4.*
Core Practice Elements	*"But it (exercise) is a fundamental part of practice really." Ost F5*
	"I think that's (exercise) a core element of osteopathic practice especially when you are dealing with existing situations." Ost F4
Role of the osteopath	*"I will be demonstrating the exercise first then secondly I will ask them to do the exercise and I will go through (it) and give them some feedback." Ost F4*

Other Professionals	*"Set up an appointment with one of the personal trainers here, if they are members, so that we can work out a proper programme." Ost F5*
	"If I feel they have got a big problem actually doing the exercises, I haven't got enough time in treatment to spend a long time and we have a set up here where we have specialists in exercise therapy." Ost F3
Education – Delivery	*"I will get them (the students) to demonstrate in their groups, they try out some stretches, then we improve upon the stretches at the front (of the classroom), we demo them. So it is all done by demo and experience." Ost F6*
	"Most of my teaching of anything exercise based will be in clinic, clinic oriented in the treatment room." Ost F1
	"It's (exercise education) not very structured". Ost F5
	"I think unfortunately it is not done well." Ost F1
	"I think most students just pick it up erm as sort of ad hoc because different osteopaths teach in the clinic use exercise in different ways and in different levels." Ost F1
Education - Assessment	*"I mean if there were say theoretical explanations of what certain exercise modalities were meant to achieve then you could almost have a written paper on it. Or a hypothetical patient you know presentation which maybe of value." Ost F2*
	"Assessing exercise is probably down our list of priorities unfortunately – I think it is partly down to student quality." Ost F1

	"I think what I would hate to see is exercise therapy being taught and then the weaker students hiding their inability to differentially diagnose and come up with an effective treatment plan by just jumping straight from symptoms and collection of clinical data straight to oh lets do some exercise therapy." Ost F1
Education - Desires	*"I think that is probably one area (tutorials) that we are looking to have a bit more standardised so that students receive a more equal erm tutorial experience within the clinic." Ost F1* *"It should be more formalised so that everyone gets the same level of information." Ost F2* *"I think it is a good thing to be inclusive rather than exclusive. I think it is a good thing to have our ideas, our dogma challenged because often there isn't a basis for it." Ost F1*

STUDENTS

Theme	Verbatim example
Aims & Benefits of Exercise Therapy	"*I think exercise alongside osteopathic treatment is vital because it does help develop the muscular system, place demands on the muscular system to help that patient overcome heir daily pressures" S4* *"I think exercise is vital in promoting well being on a personal level" S4* *"I think that it is a lot more beneficial(to include exercise) because otherwise what you are doing is you are treating them, sending them back out and then they are just automatically going to bounce back anyway." S3*
Exercise therapy in osteopathic care/ management	*"The more chronic the patient, the severity of the problem, I think you end up using exercise a bit more and making it about their life rather than what osteopathic treatment can do."S31* *"Find out about how they (the patient) think about exercise and putting an exercise regime into their schedule." S4*
Exercise therapy as treatment	*"They (the patient) might have a very busy schedule and so the exercise will have to be focussed on short term goals and in small doses." S4* *"You can have exercise and you can have exercise that is detrimental to health if it is not taught correctly or not performed correctly." S4* *"It is very difficult to prescribe an exercise programme to a patient and make sure they adhere to it." S4*

	"I think patients come in expecting to have a bit of a rub and a click, not expecting to do exercise." S1 *1*
Core Practice Elements	*"I think it is hugely important to most patients. Some form of exercise I think is highly beneficial and necessary." S3* *"I'd like to consider taking osteopathy into the 21st century and introduce exercise prescription and rehabilitation." S11*
Education – Delivery	
	"Not as much as I would have liked. I think the only real exercise class we came across was a rehabilitative class for exercise." S4 *"We have not had any specific teaching in exercise theory." S3* *"If we get anything (exercise education) it tends to be more practical." S3* *"Tutorials are taken by osteopaths who sometimes themselves do not have the experience in exercise so they are really quite unable to fulfil the needs of an osteopathic student requiring exercise advice."S4* *"It is quite difficult for tutors to sit down and go through an exercise regime in the given time they have." S4* *"You do get it (exercise education) if you ask – but it is wrong, it should be across the board." S21*
Education - Assessment	*"I think the key is assessing people on providing a safe start on how they would advise people." S4*

	"I think it should be assessed in the clinic scenario, so you shouldn't just be assessed on diagnosis and treatment, it should be diagnosis and management too." S41
Education - Desires	*"You know showing student osteopaths how to adapt central knowledge of exercise and the fundamentals of exercise to whatever situation they are in." S3* *"You know how to work multifidus and transverses abdominus. How can anyone show someone to do that if they have not really tried it for themselves?" S3* *"Well structured, well formatted and focussed education for the particular task is always a good thing." S4*

APPENDIX 15: AUDIT TRAIL OF TRANSCRIPT QUOTES AND HOW THEY RELATE TO THEMATIC CODES GENERATED – PRACTITIONERS

PRACTITIONERS

Theme	Verbatim example
Aims of Using Exercise Therapy in Practice	*"If I am going to give somebody (exercise), for example with a low back problem, I might give them some lumbar flexion, bringing the knees to the chest to try and help them get some pain relief."* OstPI8a *"It depends what I am treating them (the patient) for. So sometimes it might be strength, sometimes it might be mobility, sometimes it might be range of movement to lengthen the muscles to make sure that the joint itself has got the freedom. Other times it might be balance."* OstPI4a *"There is also weight loss. Weight gain. So both of those things I would use exercise for."* OstPI4a
Elements relating to use of exercise therapy	*"It is much more about advising. Yes, I do say to the certain patient you do need to do twenty abdominal crunches going this way for this length of time and for this amount of reps. There will be one a week that I do that with. The rest is just advising, do some of this, do some of that."* OstPI7a *"Usually you know, I might say you need to do a particular strengthening exercise and I want you to do ten of those on each leg three times."* OstPI8a *"I do tell them to do that many exercises for that long and count how many you do."* OstPI6a *"I guess I do try to build it (exercise) into their daily life. I try to because I think that is a good way of doing it."* OstPI5a

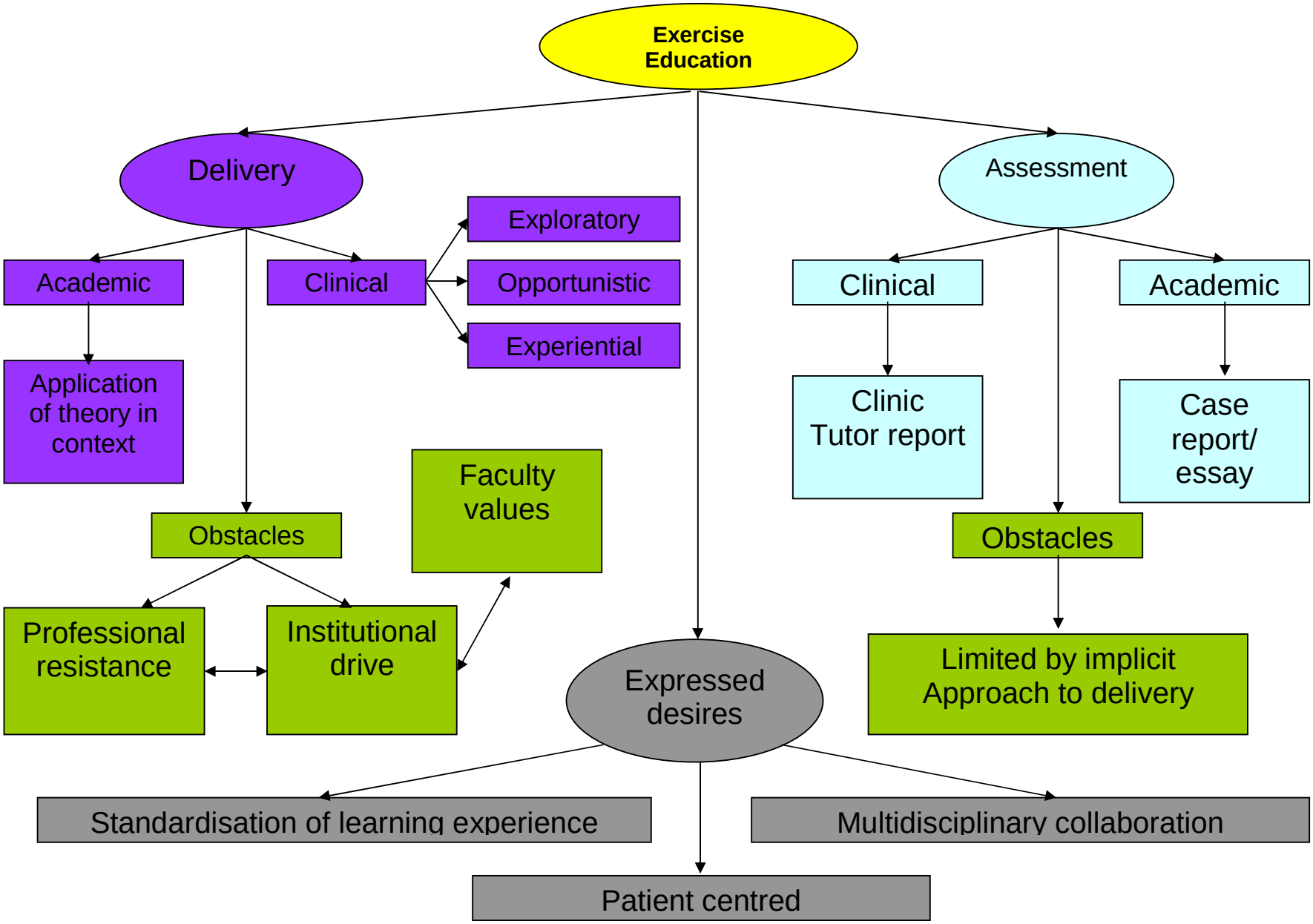
	"I will try and tailor it (exercise) to their everyday life. So if they are sitting in an office you know, I will try and work it (exercise) around what they do. You know they (the patient) can't always go out and run up and down stairs or something like that." OstPI3a
	"I think it is the fact that you can't prescribe exercise because it has to be the patient's own free will (to participate). But you can educate and explain to them why they need to do it and how it is going to help their recovery." OstPI4a
	"Whenever they get off the bed, then I generally hop on and show them what they should be doing with regards to a crunch or if it is a pelvic floor thing." OstPI7a
	"And sometimes I will get down on the floor and show them exactly what to do." OstPI5a
Modes of Exercise Therapy	*"Within the clinic – no I don't use resources. I don't provide them with a piece of equipment or tell them they need a piece of specific equipment."* OstPI4a
	"It will be mainly core stability, sometimes strengthening exercise." OstPI5a
	"Stretches is one of the most common ones that I use both whilst I am treating patients. I can use stretching in the treatment room Itself." OstPI13a
	"Generally more walking, cross trainer, I tend to recommend cardiovascular work." OstPI7a
	"I could send them (the patient) to the swimming pool or send them to a gym. Other times I might find ways that it (the exercise) could be free. You know if they have a dog, increase walking of the dog." OstPI14a
	"Pilates, yoga, if I think their problem is a stress–tension type thing. Tai Chi for that as well."

	OstPI5a
	"I get lots of clients to do hydrotherapy. Jump in the pool and do some running up and down the pool and things like that." OstPI8a
	"If somebody came in who is a marathon runner then you know obviously they are going to want to get back to running sooner rather than later. What I might suggest is that they have had the injury, you have stopped running if they have stopped running, that they start off running maybe just two miles and then build up slowly rather than to go straight back into where they were beforehand." OstPI8a
Monitoring Patient Progression	*"I don't usually get too tied up on measuring, like not clinically measuring and monitoring things. I usually don't have that much time."* OstPI13a
	"Monitoring is really do they come back with less symptoms. If they do and say they were better straight after treatment and that the stretches have worked, then it may be a combination of the treatment and the exercise." OstPI7a
	"You do kind of monitor it (exercise adherence) because you can tell by the state of the muscles underneath your hand." OstPI8a
	"I do (monitor progression) but probably more just "how is it going?" and "let's see" and "let's palpate and see what is happening." OstPI3a
	"(Monitoring progress) is more about the quality of the movement that I am looking at and physically how they (the patient) are feeling. I will ask the person who has been training them as well as to how they (the patient) has been getting on." OstPI3a

Scope of Practice	*"I am reluctant to refer without actually knowing the person (the exercise professional)."* OstPI5a *"I think it is the lack of experience and knowing what to do. First of all lack of experience about whether the exercise will help with that specific condition and also I wasn't really taught exercise and how to use them at undergraduate level. I got it (knowledge) from clinic and hearing other people."* OstPI6a *"I would generally say you know, 80-90% of the people you see are with back problems, so I would say for most of those I advise to do some sort of Pilates or may be show them a few little exercises."* OstPI7a *"I think that you need to use exercise in the majority of cases."* OstPI4a *"By using exercise, it helps me in a way build up patients."* OstPI3a *"Well, in terms of treatment it would depend on what stage the patient is at, how acute they are."* OstPI5a *"Are they physically able to do it (the exercise)? I think they have got to be physically well enough to perform those exercises. You have got to justify, can the patient do it (the exercise) on their own if they are elderly."* OstPI7a *"Again it (the exercise) varies on severity, age of the client."* OstPI8a *"Simple walking. Fairly simple. I don't complicate things. See what the patients will be most likely be*

	doing, reinforce what they are already doing." OstPI6a
	"Exercise is not just physical, it is mental. If you consider a triangle, osteopathic treatment is not just a physical treatment, it's psychological, then exercise fits into that as well. Psychologically you can affect a patient, especially a patient who is chronic, you also psychologically benefit them by performing exercise. That can change their psychology behind their illness and so it is osteopathic (using exercise) because it is holistically involving the whole person." OstPI4a
Extent and Sources of Knowledge	*"A personal trainer who works for a local osteopath runs a CPD session once per month for all of the other osteopaths in the area. He does all different things that we can do with our patients but we turn up in our shorts and he lays out all of the exercises and we go through what works and how it works. We find it useful and we are learning."* OstPI7a
	"My knowledge comes from teaching at school, talking to others, patients' experience of what seems to work and talking to more experienced practitioners who have different views." OstPI13a
	"I do it (use exercise) because I am interested in exercise and do a lot of it myself." OstPI3a
Evidence-Based Practice	*"For me to sit down and read an article on exercise therapy, I get to the second paragraph and give up! If it hasn't gripped me then I have had enough. A lot of my experience comes from my experience in sport anyway."* OstPI8a
	"I feel confident when I suggest exercise because I have had a lot experience in exercise. If I hadn't had a lot of experience, I may well refer or research to find out what is appropriate." OstPI4a
Resources	*"We sometimes work on machines, therabands, you know give someone something very simple such as the wobble board."* OstPI9a
	"So maybe a little more cooperation between the two different professions (osteopathy and exercise

	professionals) would be very useful." OstPI4a
Practice Desires	*"I think it (exercise) needs to be covered in undergraduate training."* OstPI8a
	"Certainly CPD in rehabilitation techniques. They change and I might give different people different versions of the exercise depending on the age of the client for example. Adaptation of rehabilitation techniques really would be useful." OstPI8a
	"An osteopathic referral system. Where you could speak to that individual (an exercise professional) and say I am sending you a patient for this reason or write them a letter saying this is what I have suggested and this is what I am looking for." OstPI4a



Original in Colour

Figure 6.5: Exercise Education Conceptual Framework