**IFOMPT recommendations regarding the research project component of OMT programmes**

The starting position for the research project component of OMT programmes is evidence based practice (Sacket et al, 1996) which means that clinical expertise in OMT practice is built upon research evidence, patient preferences, and the clinical presentation and circumstances of the patient (Haynes, 2002), illustrated in the following model of clinical expertise.
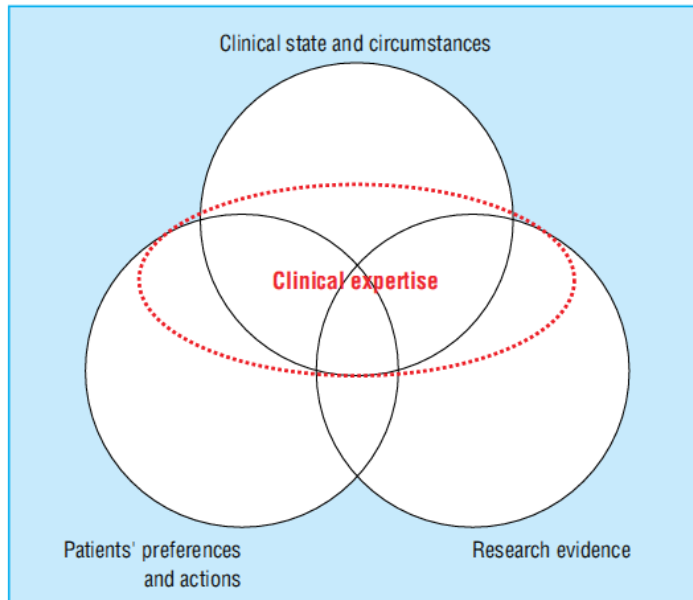
Dimension 9 of the IFOMPT Standards Document details the dimension of:

Demonstration of a critical understanding and application of the process of research

Dimension 9

Demonstration of a <u>critical</u> understanding and application of the process of research

By the end of the programme of study, the successful student will be able to

1. Recognise the need for the development of further evidence in OMT practice and the role of research in advancing the body of knowledge in OMT <u>Physical Therapy</u>

2. Critically evaluate common <u>quantitative</u> and <u>qualitative</u> research designs and methods

3. Generate an appropriate research question based on a <u>critical evaluation</u> of current <u>research evidence</u> relevant to OMT practice and NMS <u>dysfunction</u>

4. Systematically address all ethical considerations associated with research involving human subjects

5. Effectively execute a research project* relevant to OMT practice and NMS <u>dysfunction</u>, selecting appropriate data analysis procedures and disseminating the conclusions of the study

Examples of learning strategies that can be used to address learning outcomes:
- ✓ Lectures
- ✓ <u>E-learning</u>
- ✓ <u>Development of research proposal</u>
- ✓ <u>Execution of research project</u>

Examples of <u>assessment</u> strategies that can be used to assess learning outcomes:
- ✓ Research proposal
- ✓ Research article/oral presentation/poster presentation of research project findings

*NOTE

A research project is defined as a process of systematic enquiry that provides new knowledge aimed at understanding the basis and mechanism of NMS dysfunction, or improving the assessment and/or management of NMS dysfunction. The process of systematic enquiry is designed to address a research question. The process may use a range of methodological perspectives and methods including literature review, qualitative, and quantitative approaches to address the research question.

The associated competencies are:

Competencies Relating to Knowledge

Competency D9.K1	Demonstrate critical understanding of common quantitative research designs, including strengths and weaknesses
Competency D9.K2	Demonstrate critical understanding of common qualitative research designs, including strengths and weaknesses
Competency D9.K3	Demonstrate critical evaluation of ethical considerations relating to human research

Competencies Relating to Skills

Competency D9.S1	Demonstrate effective critical appraisal of research relevant to OMT Physical Therapy practice as it relates to NMS dysfunction
Competency D9.S2	Demonstrate generation of a research question based on a critical evaluation of the current literature relevant to OMT Physical Therapy practice and relating to NMS dysfunction
Competency D9.S3	Demonstrate development of a research proposal which meets the requirements of a human ethics committee as appropriate
Competency D9.S4	Demonstrate selection and application of appropriate data analysis procedures
Competency D9.S5	Demonstrate effective execution of a research project and dissemination of its conclusions*

Competencies Relating to Attributes

Competency D9.A1	Demonstrate appreciation of the need for the development of further evidence in OMT Physical Therapy practice through research
Competency D9.A2	Demonstrate critical awareness of the role of research in advancing the body of knowledge in OMT Physical Therapy

The key components of an OMT programme required to deliver and assess these research competencies include:

1. Research methods
2. Research project

Aim of this document

This document focuses on the requirements of a research project and provides suggestions re potential delivery of this component in programmes that are positioned outside of the University educational system within Member Organisations. It is assumed that the importance of research methods teaching is acknowledged and provided within all programmes, and it is therefore not detailed here.

All approaches to research are important for providing evidence in support of OMT practice. The following approaches to a research project are proposed as appropriate for a programme outside of the University environment, and each approach can be adapted / developed to suit the needs and constraints of an individual Member Organisation.

The important context to the document is an OMT programme outside of the University context.

Summary of the proposed stages for the research project

1. Request that students provide a very brief outline of the topic that they might wish to undertake for their research project. The purpose of supplying this information is to allocate students to appropriate supervisors so that they have support throughout the research process. The Member Organisation can require an individual research project or could also consider a joint project between small groups of students.

2. Request that students submit a research proposal (the Member Organisation is advised to provide a template and word limit) for consideration by a small panel of experienced supervisors (the Member Organisation is advised to carefully consider transparency and accountability in the working of this panel). This research proposal must be agreed by the supervisor before it is submitted to the panel.

3. The research proposal must be deemed satisfactory by the panel before ethical approval is sought (where appropriate, with the panel review constituting methodological review and quality monitoring). Details of dates and the submission process can be circulated in advance. Students must not start work on their project (data collection) until this part of the quality assurance process has been fulfilled.

4. Submission of the actual assignment. This is proposed as a poster prepared in accordance with guidelines. The poster could be assessed without its presentation by the student or it could be presented at an annual national conference. A poster is recommended as it is potentially the easiest and yet resourceful (possesses opportunity for dissemination at meetings / conferences etc if dissemination is important for the Member Organisation) method of assessment for a broad range of students. The Member Organisation could consider replacing the poster with a journal article, or oral presentation if appropriate. Students could also present to each other via a web-based platform (e.g. Blackboard Collaborate, or other free platforms), or submit the project as written work for marking.

Research proposal

It is recommended that before embarking on the research project, all students undertake a research proposal and submit it to a small panel of experienced supervisors for feedback and approval. This proposal is recommended as formative in nature and so does not count towards the final mark. However, requiring students to complete it is a vitally important stage in the research process and it will provide a focused and defined framework for the research project, as well as being essential to obtaining ethical approval (if required).

The proposal will identify early on any major problems with the planned research project. The aim of the panel is quality assurance and will ensure that all research projects meet requirements and are of a suitable standard for postgraduate level work. In the event of an unsatisfactory proposal which requires resubmission, it is recommended that the panel will consider the resubmission as a matter of urgency to ensure the student can progress in a timely manner. It is recommended that while this proposal is formative, it is a requirement and therefore must be completed satisfactorily before the student commences any data collection. If required, students should only apply for ethical approval, once the proposal has been agreed by the panel. Programmes may also to choose to assess the proposal as a summative component.

Every research project will face the challenge of access to literature databases and journal articles. It is important that non-university programs have addressed this issue to ensure their students are able to access the literature.

Methodological options for the research project

The following methodological approaches are recommended to the Member Organisation. The research project can be established using one or several of these options. The literature review and the single case study, n=1 approach are recommended as the most resourceful options:

1) Literature review

2) Empirical project

3) Single case study, n=1 design

Literature review

When a literature review is undertaken as a methodology, a research question is identified to then seek to answer the question by searching for and analysing relevant literature following a systematic approach. This process of review contributes to the development of new insights and understanding.

The required components of a literature review and the key methodological issues will vary depending upon the nature of the review. The presentation of the project will also vary dependent upon the nature of the review. A literature review as a methodology to address a research question may take many forms. The two most common are:

- Systematic review
- Narrative review

Other approaches to a literature review would also be appropriate. A range of approaches can be seen in the current literature.

Systematic review

Definition	A review of a clearly formulated question that uses systematic and explicit methods to identify, select and critically appraise relevant research, and to collect and analyse data from the studies that are included in the review. Statistical methods (meta-analysis) may or may not be used to analyse and summarise the results of the included studies (Higgins and Green, 2011). A systematic review can be focused to effectiveness or a diagnostic tool or outcome measures etc.
Freely available resources to inform methodology	Cochrane Handbook CRD Centre York PEDro PubMed COSMIN etc
Key resources to inform presentation of project	PRISMA GRADE
Key issues for delivery outside of University context	No ethical approval required Flexibility of timing Consistent process to train supervisors A framework for assessment criteria is straightforward to establish Some freely available resources, but as a negative point, some search engines may not be accessible to students. The Member Organisation will need to address how this issue will be managed for students.

Key references:

Aveyard H (2010). Doing a Literature Review in Health and Social Care: A Practical Guide Open University Press.

Centre for Reviews and Dissemination [CRD]. Systematic reviews: CRD's guidance for undertaking reviews in healthcare, 3rd edition, CRD University of York, York Publishing Services Ltd, 2009.

Furlan A, Pennick V, Bombardier C et al, from the Editorial Board of the Cochrane Collaboration Back Review Group. Updated method guidelines for systematic reviews in the Cochrane Collaboration back review group. Spine 2009;34:1929-1941.

Higgins JPT, Green S (editors). Cochrane Handbook for Systematic Reviews of Interventions Version 5.1.0 [updated March 2011]. The Cochrane Collaboration, 2011. Available from www.cochrane-handbook.org.

Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group. Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(6): e1000097 2009; doi:10.1371/journal.pmed1000097

Shamseer, L., Moher, D., Clarke, M., Ghersi, D., Liberati, A., Petticrew, M., Shekelle, P. and Stewart, L.A., 2015. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015: elaboration and explanation. *Bmj*, *349*, p.g7647.

Narrative review

Definition	The informal selection, assembly and summary of studies for review. Narrative reviews can take a variety of forms e.g. a narrative summary that typically involves the selection, chronicling and ordering of evidence to produce an account of the evidence, often including some kind of commentary or interpretation. Narrative techniques of summary can be combined with systematic techniques for searching and appraisal (Abbott, 1990).
Key resources to inform methodology	Cochrane Handbook CRD Centre York PubMed etc
Key resources to inform presentation of project	Textbooks and articles
Key issues for delivery outside of University context	No ethical approval required Flexibility of timing Consistent process to train supervisors A framework for assessment criteria is straightforward to establish Some freely available resources, but as a negative point, some search engines may not be accessible to students. The Member Organisation will need to address how this issue will be managed for students.

Key references:
Abbott, Andrew (1990). Conceptions of time and events in social science methods: Causal and narrative approaches. Historical Methods, *23*, 140-150.
Aveyard H (2010). Doing a Literature Review in Health and Social Care: A Practical Guide Open University Press
Centre for Reviews and Dissemination [CRD]. Systematic reviews: CRD's guidance for undertaking reviews in healthcare, 3rd edition, CRD University of York, York Publishing Services Ltd, 2009.
Collins JA, Fauser BC (2005). Balancing the strengths of systematic and narrative reviews. Hum Reprod Update. Mar-Apr; 11 (2); 103-4.
Crombie IK (1996). The pocket guide to critical appraisal: a handbook for health care professionals. BMJ.
Dixon-Woods M, Agarwal S, Young B, Jones D, Sutton A. (2004) Integrative approaches to qualitative and quantitative evidence. London: Health Development Agency.
Higgins JPT, Green S (editors). Cochrane Handbook for Systematic Reviews of Interventions Version 5.1.0 [updated March 2011]. The Cochrane Collaboration, 2011. Available from www.cochrane-handbook.org.

Empirical project

An empirical project as a methodology to address a research question may take many forms including:

- Exploratory
- Descriptive
- Explanatory

Exploratory project - qualitative

Definition	A project designed to address an exploratory research question that is broad and focused to an area that is poorly understood (Sim and Wright, 2000). The project may prepare for a future descriptive study. Data collected are mainly qualitative.
	Include a range of methods: interviews, non-participant observation, focus groups, case study (single or multiple) etc
Key resources to inform methodology	Any qualitative research methodology textbook
Key resources to inform presentation of project	Any qualitative research methodology textbook
Key issues for delivery outside of University context	Ethical approval required
	Requires planning of period of data collection.
	A framework for assessment criteria is straightforward to establish.
	Some freely available resources, but as a negative point, some search engines may not be accessible to students. The Member Organisation will need to address how this issue will be managed for students.

Key references:

Bowling A, Ebrahim S, Bryman A (2005). Handbook of health research methods: Investigation, measurement and analysis. Open University Press.

Clifford C.(1997). Nursing and health care research. 2nd Ed. London Prentice Hall.

Creswell JW. (2003). Research design: qualitative, quantitative and mixed methods approaches. (2nd Ed.) Sage publications.

Norman K. Denzin and Yvonna S. Lincoln, eds (2011). The Sage Handbook of Qualitative Research, 4th Edition, Thousand Oaks, CA: Sage.

Pope C, Mays N and Popay J (2007). Synthesizing qualitative and quantitative health research: A guide to methods. Open University Press, McGraw Hill Education.

Sim J, Wright C (2000). Research in Healthcare: concepts, designs and methods, Stanley Thornes, Cheltenham.

Descriptive project – quantitative and / or qualitative

Definition	A project designed to address a descriptive research question provides a descriptive account of phenomena within a framework informed by existing knowledge (Sim and Wright, 2000). The project may build upon the knowledge gained from exploratory studies or prepares for a future explanatory study. Data collected are mainly quantitative but may also be qualitative. Include a range of methods: survey, questionnaires, interviews, observation, focus groups, consensus techniques, documentary analysis etc
Key resources to inform methodology	Any quantitative or qualitative research methodology textbook
Key resources to inform presentation of project	Any quantitative or qualitative research methodology textbook
Key issues for delivery outside of University context	Ethical approval required Requires planning of period of data collection. A framework for assessment criteria is straightforward to establish. Some freely available resources, but as a negative point, some search engines may not be accessible to students. The Member Organisation will need to address how this issue will be managed for students.

Key references:

Bowling A, Ebrahim S, Bryman A (2005). Handbook of health research methods: Investigation, measurement and analysis. Open University Press.

Clifford C.(1997). Nursing and health care research. 2nd Ed. London Prentice Hall.

Creswell JW. (2003). Research design: qualitative, quantitative and mixed methods approaches. (2nd Ed.) Sage publications.

Grimes DA, Schultz KF (2002). Descriptive studies; what they can and cannot do The Lancet Vol 359 Jan 12.

Pope C, Mays N and Popay J (2007). Synthesizing qualitative and quantitative health research: A guide to methods. Open University Press, McGraw Hill Education.

Sim J, Wright C (2000). Research in Healthcare: concepts, designs and methods, Stanley Thornes, Cheltenham.

Explanatory project – quantitative

Definition	Projects designed to address an explanatory research question are specific and frequently address a hypothesis. Data are collected and analysed through statistical testing to either retain or reject the hypothesis (Sim and Wright, 2000). Cause and effect is evaluated. Data collected are quantitative.
	Include a range of experimental designs e.g. randomized controlled trial
	Owing to the scope of project possible the research project will be a pilot or feasibility study.
Key resources to inform methodology	Cochrane
	CONSORT
	Good Clinical Practice (GCP) guidelines
	Any quantitative or qualitative research methodology textbook
Key resources to inform presentation of project	CONSORT
Key issues for delivery outside of University context	Ethical approval required
	Requires planning of period of data collection.
	A framework for assessment criteria is straightforward to establish.
	Some freely available resources, but as a negative point, some search engines may not be accessible to students. The Member Organisation will need to address how this issue will be managed for students.
	May require resources and equipment

Key references:

Arain et al (2010). What is a pilot or feasibility study? A review of current practice and editorial policy BMC Medical Research Methodology;10:67.

Hicks C (2004). Research methods for clinical therapists: applied project design and analysis. 4th Ed. Churchill Livingstone, Edinburgh.

Peat, J., Mellis, C., Williams K, Xuan W (2002) Health Science Research - A handbook of quantitative methods. Sage Publications.

Sim J, Wright C (2000). Research in Healthcare: concepts, designs and methods, Stanley Thornes, Cheltenham.

Single case study n=1 design

Definition	A quasi-experimental project designed to address an explanatory research question. Inferences are made based upon analysis of a single case (person or department or ward etc) (Sim and Wright, 2000). The sequential introduction and modification/removal of an intervention is evaluated. Data collected are quantitative. A series of single case studies may be conducted. Include a range of designs e.g. ABA
Key resources to inform methodology	Good Clinical Practice (GCP) guidelines Any quantitative research methodology textbook
Key resources to inform presentation of project	Any quantitative research methodology textbook
Key issues for delivery outside of University context	Ethical approval required Requires planning of a limited period of data collection, and therefore easier to manage. A framework for assessment criteria is straightforward to establish. Some freely available resources, but as a negative point, some search engines may not be accessible to students. The Member Organisation will need to address how this issue will be managed for students. May require resources and equipment

Key references:

Hicks C (2004). Research methods for clinical therapists: applied project design and analysis. 4th Ed. Churchill Livingstone, Edinburgh.

Janosky JE (2005). Use of the single subject design for practice based primary care research. Postgrad Med J;81: 549-551.

Peat J, Mellis C, Williams K, Xuan W (2002) Health Science Research - A handbook of quantitative methods. Sage Publications.

Portney LG, Watkins M (2008). Foundations of Clinical Research: Applications to Practice, 3rd edn.

Sim J, Wright C (2000). Research in Healthcare: concepts, designs and methods, Stanley Thornes, Cheltenham.

Supervisor

It is proposed that all students will have an identified supervisor allocated to support them through the research process. The research supervisor should have research training and an appropriate qualification e.g. MSc, MRes or PhD. All students should be asked to complete a brief outline of their research project at a specified time point within the programme. The purpose of this brief outline is simply to enable the allocation of an appropriate supervisor (location, methodology, area of subject expertise etc) early on, so that students can seek advice from the supervisor to start developing their proposal.

It is recommended that each student should nominally receive 10 hours of supervisory support for the research project and that this 10 hours of support be costed into the programme fees. The supervisory support may include: face-to-face tutorials, email communication, telephone conversations and supervisors reading/commenting on draft submissions. This recommendation is not intended to be rigid or prescriptive, but rather, to be indicative of the amount of help a student should normally receive. The integration of the research project and its management into the OMT programme is therefore an important consideration for the Member Organisation.

It will be useful to articulate the role of the supervisor and student as part of the research project documentation to provide a guiding framework to the process of supervision. It is recommended that a supervisory log/record be maintained collaboratively and that the Member Organisation make this a mandatory requirement.

It is proposed that commencing the research project with literature reviews as the only possible methodology provides the greatest potential for developing supervisors alongside implementation. Most physiotherapists will be aware of the principle of literature review and therefore training will be less than for other potential projects. Having one option initially also permits time to develop a research project handbook, assessment guidelines, marking criteria etc (Further information is available through the Standards Committee if required).

Assessment of the project

Poster

A poster is proposed as the means of presentation of the research project for assessment. The poster does not need to be delivered orally and can therefore address geographical limitations. A poster is a straightforward means of presentation that most students and supervisors will be experienced with. The posters will also provide a valuable resource for the Member Organisation and can be disseminated more widely at conferences if to a good level. The requirements for the poster can be specified in detail, with a range of resources freely available through the web. A useful guide to producing posters with PowerPoint is available at:
http://www.cmer.wsu.edu/~yonge/ce465/poster.pdf

Assignment guidelines and marking criteria will need to be developed. Electronic submission of posters will facilitate resolution of geographical issues for marking processes.

A group of markers for the posters will need to be established and trained. A system of independent double marking is recommended involving the supervisor as one marker (bring familiarity of the project and the research process) and a blind second marker (no insight into project). A process of internal moderation needs to be established to ensure quality of marking processes.

Research Governance

Governance is a wide-ranging term denoting the way that an organisation, for example a Member Organisation manages the research process from the initial project idea, through to the execution of the research project, and to its dissemination. It describes how standards are set in order to achieve research quality. Governance involves planning and resourcing of activities, ensuring ethical review where appropriate, enhancing the scientific quality of research, maintaining the safety of student researchers and third parties, ensuring high quality of research procedures and practices, reducing the potential for adverse incidents, and preventing poor quality and misconduct. There may also be external standards for research that students may need to fulfill e.g. if they have funding for this component of the programme.

Processes to ensure research governance are the processes by which the Member Organisation sponsors research and establishes sound governance processes for the research projects that students carry out.

Ethical guidance for students

The Member Organisation would need to establish an ethical review process for research projects if the range of projects available to students is beyond the scope of literature reviews. Further guidance is available from the Standards Committee if required, and there are other examples of Member Organisations establishing these processes that can be used as a resource. If establishing an ethical review process is difficult, the scope of the project can be limited to a literature review.

Recommendation from the Standards Committee

Commencing the research project with literature reviews as the only methodology addresses issues of governance, sponsorship and ethical review, to simplify implementation for the Member Organisation when the existing infrastructure may be limited. It also limits issues of training supervisors, capacity building and the range of issues that may arise for attention.