



Faculty of Medicine
School of Medical Sciences

Exercise Physiology Program

HESC3532

Movement Rehabilitation

Semester 2, 2017
Course Outline

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Please read this outline in conjunction with the following pages on the

[School of Medical Sciences website:](#)

- [Advice for Students](#)
- [Learning Resources](#)

(or see "STUDENTS" tab at medicalsciences.med.unsw.edu.au)

Course Staff

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Course Details

6 UOC units of credit

Course Description

This course describes the use of exercise based interventions in the treatment and management of musculoskeletal pain and injury. The emphasis is on contemporary pain assessment and rehabilitation using a bio-psycho-social treatment approach. Students will also be introduced to functional assessment and workplace assessment and injury prevention. This course utilises a variety of teaching modalities including interactive case study tutorials which promote the application of knowledge and understanding to clinical practice. The case study tutorials are designed to bridge between the lifestyle change project with an apparently healthy client in HESC3504 and the year 4 clinical practicum placement.

Course Pre-requisites:

ANAT2451 Functional Anatomy for Health and Exercise Science (or ANAT3131 – Functional Anatomy 1 & ANAT3141 Functional Anatomy 2)
BIOM2451 Biomechanics for Sports Scientists
NEUR3101 Muscle and Motor Control

Course Aims

1. Develop a thorough understanding of the use of exercise and movement for musculoskeletal pain rehabilitation within a contemporary pain rehabilitation framework
2. Attain competencies with assessment and exercise prescription for a range of musculoskeletal pain conditions
3. Competency with problem solving skills and clinical reasoning
4. An ability to engage in independent and reflective learning for the betterment of professional clinical practice
5. Develop effective communication skills for patients and other allied health professions
6. Nurture a belief in evidence based and ethical clinical practice

Student Learning Outcomes

This term is used to describe what it is that you should be able to do, explain or understand if you have learned effectively in the course. For each lecture, tutorial, practical and assessment item, the expected learning outcomes will be explicitly stated. The assessment in the course will be matched as closely as possible to the stated learning outcomes. That is, the assessment will test how well you have achieved the learning outcomes of the course. The general learning outcomes for the course are as follows:

At the end of the course you should:

- Have an understanding of the physical and psychosocial factors underlying a range of musculoskeletal conditions and diseases commonly treated by Exercise Physiologists in clinical practice
- Be competent with the assessment, exercise prescription and management of a range of musculoskeletal conditions and diseases commonly treated by Exercise Physiologists in daily clinical practice
- Be competent with prescribing a progressive exercise program from simple to more demanding and specific functional exercise for a range of musculoskeletal conditions specific to each individuals needs
- Have an understanding of a number of common age related musculoskeletal conditions treated by Exercise Physiologists and considerations for exercise rehabilitation with aging
- Be able to provide a rational for a biopsychosocial treatment approach and explain key aspects of this approach
- Demonstrate an understanding of workplace and functional assessment
- Have an understanding of the musculoskeletal demands and risk factors associated with various work tasks and strategies to reduce the risk of injury
- Be competent with the routine professional requirements of clinical practice including: treatment approvals, communicating with other health professionals, reporting and maintaining detailed patient and treatment notes

Graduate Attributes developed in this course

- Understand the relationship between physical activity and health
- Deliver lifestyle change programs that use exercise for the primary prevention of disease and the management of chronic disease
- Apply clinical skills and knowledge relevant to cardiopulmonary, metabolic, musculoskeletal and neuromuscular rehabilitation
- Engage in independent and reflective learning for the betterment of professional clinical practice, following an evidence-based approach
- Communicate effectively with patients, colleagues and other health professionals
- Work as a member and a leader of a team
- Display a respect for diversity and a high standard of ethical practice

Rationale for the Inclusion of Content and Teaching Approach

How the course relates to the Exercise Physiology profession

Exercise interventions are commonly used in daily clinical practice to treat and manage a wide range of musculoskeletal injuries and disease. Clinical Exercise Physiology is a developing field and this course is concerned with developing the clinical skills and competencies required by practicing Exercise Physiologists. This course develops the students understanding of the use of active modalities for the treatment, prevention and management of musculoskeletal injury and disease. The cause, underlying pathology and treatment of a range of musculoskeletal injury and chronic diseases relevant to clinical Exercise Physiology are considered.

There is an emphasis on developing competency with assessment and exercise prescription for a range of musculoskeletal conditions routinely encountered in clinical practice. In addition to the physical origins of injury and pain, the contribution of psychosocial factors to the cycle of pain and disability are also considered and the application cognitive behavioural exercise interventions developed.

The Exercise Physiologist's role in workplace assessment and injury prevention is also considered. The participants understanding of: the musculoskeletal demands and risk factors associated with different work tasks; functional capacity evaluation to define suitable works tasks; and active strategies to reduce the risk of injury are developed. A combination of theoretical and practical teaching components is used to achieve the learning objectives.

How the course relates to other courses in the Exercise Physiology program

The course will draw heavily on your knowledge of biomechanics (BIOM2451) and functional anatomy (ANAT2451) and will build upon your understanding of the role of the nervous system in the control of movement developed in Muscle and Motor Control (NEUR3101). Case study tutorial method is designed as preparation for the 4th year clinical practicum, which includes placements working with musculoskeletal disorders.

Teaching strategies

Online line learning activities – There are several self-directed learning online learning activities with feedback that students are required to complete.

Flipped Classrooms – The flipped classroom describes a reversal of traditional teaching where students gain first exposure to new material outside of class, usually by reading or lecture videos, and then class time is used to do harder work of assimilating that knowledge through strategies such as problem-solving, discussion or debates. **To optimise the flipped classroom learning experience, it is essential that students have completed the pre-learning material related to each class.** Completing the pre-learning for each class will allow you to make a positive contribution to the class and help foster a better learning experience.

Lectures –Several lectures will be delivered in the traditional theatre format with several guest lecturers specialising in particular areas of learning which contribute to the unit content. PDF copies of the lecture slides and the recorded lecture will be available online (see below in COURSE RESOURCES section), so you should be able to think about and develop an understanding of the lecture concepts as they are presented, rather than writing voluminous notes. However during the lectures there is a strong emphasis on student engagement and interaction and there will be information, explanations and demonstrations that might not be adequately

captured in lecture recording and PDF. During lectures, time will be allocated for interaction and activities that engage and promote learning and the application of key concepts to clinical practice. It will be helpful if you take these opportunities to develop your clinical skills by attending lectures.

Laboratories – The purpose of the practical components of the course are twofold. The first purpose is to help you to develop musculoskeletal rehabilitation skills relevant to an Exercise Physiologist in clinical practice. The laboratories promote competency with these skills by providing a practical and hands on learning experience and prepare you for clinical placement. The second purpose is practical application of theoretical content covered in lectures.

Case Study Tutorials - The case study tutorial (CST) is an active learning approach involving student centered activities of topics that demonstrate theoretical concepts in an applied setting. This approach is designed to not only enhance your learning experience but also to increase your enjoyment of the topic and hence, your desire to learn. Case study tutorials allow students to apply theoretical concepts, thus bridging the gap between theory and practice. **All students will be required to come prepared for each of the 4 CST's and to contribute to the discussion by reading the case study and associated questions provided in the weeks prior to the tutorial. The success of the CST is dependent on student preparation and participation and effective preparation requires each team to meet as a group before a CST to discuss and agree on key issues.** The assessment of each CST will involve an individual and group participation component so preparation is important. A CST learning format is highly relevant to professional development and competencies as it exposes students to issues relevant to Exercise Physiologists in clinical practice. Case studies also provide an opportunity for the development of key skills including communication, group work and problem solving and provide a motivating and enjoyable learning experience. **All students are required to attend all 4 CSTs.**

Independent study – There is insufficient time in the lectures, tutorials and laboratories for you to develop a thorough understanding of the concepts covered in this course. In order for you to achieve the learning outcomes that will be assessed, material presented in the course must be revised regularly. Students are also required to cover the readings and resources accompanying each lecture to enhance their understanding of lecture material and as a requirement for case study participation.

Assessment – These tasks have been chosen as tools to enhance and guide your learning as well as a way of measuring performance, and are therefore central teaching strategy in this course.

Course Resources

See also [Learning Resources](#) on the SoMS website

Suggested Reference Texts

- Houglum, Peggy A. (2010). *Therapeutic exercise for musculoskeletal injuries*. Human Kinetics
- Voight, M. L., B. J. Hoogenboom and WE Prentice (2014). *Musculoskeletal interventions: techniques for therapeutic exercise 3rd edition*. McGraw-Hill.
- McGill, S. (2002). *Low back disorders: evidence-based prevention and rehabilitation*. Human Kinetics.
- D. Butler and GL. Moseley (2003). *Explain pain*. Noigroup publications.
- Waddell G (2004). *The back pain revolution*. Churchill Livingstone.

Assessment

Assessment of your learning in the course will be achieved through examinations (oral viva, multiple choice questions, clinical skills assessment), participation in case study tutorials and the completion of clinical reports and exercise programs arising from the case study tutorials. The examination format tests your ability to apply and communicate knowledge to the management of musculoskeletal conditions in a time-constrained context.

These requirements are similar to those encountered when dealing with a patient in a face-to-face setting, communicating with a clinician or colleague or during a job interview. The examinations will be designed to determine how well you have achieved the general learning outcomes that are outlined above, and the specific learning outcomes outlined in each learning experience. The emphasis will be the application of course content to clinical practice.

The case studies will be concerned with developing your clinical reasoning skills with detailed management plans for patients with specific musculoskeletal conditions. The majority of assessment for the case study tutorials is completed as individuals with teams that have discussed and shared ideas prior to the CST favouring better individual performances. Team preparation and cohesiveness encourages sharing of ideas and knowledge as well as critical analysis of patient management plans.

Summary of Assessments	% Total Marks	Due Date
<i>ASSESSMENT TASK 1 - CASE STUDY TUTORIAL (CST) PARTICIPATION AND REPORT (submitted for 2 case studies from the 4 case studies in the course scheduled in weeks 4, 6, 8, 10)</i>	40% participation 10% written report 10% X 2	week 5,7,9, 11 <u>Monday</u> <u>5pm</u>
<i>ASSESSMENT TASK 2 – WEEK 8 QUIZ</i>	15%	Week 8
<i>ASSESSMENT TASK 3 - CLINICAL VIVA & SKILLS ASSESSMENT</i>	30%	Exam period
<i>ASSESSMENT TASK 4 – WEEK 13 QUIZ</i>	15%	Week 13

ASSESSMENT TASK 1 – Case Study Tutorial Participation and Report

Students will be active in 2 of the 4 CSTs during which your participation and contribution will be assessed. For the other 2 case studies where you are passive, you will be required to complete 2 assignments. For each case study the class will be quartered and divided into an active and passive group. All active students will require a 12 cm x 6cm name tag. Students in the active group (approx. 20) will contribute to the CST as part of group of 4-5 students. The CST groups will be designated by the commencement of your week 2 laboratory. Each individual in a group will be marked by students in the passive group and academic observers. Adequate contribution by each individual and group will require a high level of preparation. During the unit each individual in the passive group will be required to submit a report to a GP for one CST and an exercise program for the other CST.

Learning Outcomes for the Case Study Tutorials

- To develop understanding and competency with clinical EP practices in musculoskeletal rehabilitation
- To develop clinical reasoning skills in musculoskeletal rehabilitation
- To enhance skills in group work and peer assessment
- To foster independent student learning in musculoskeletal rehabilitation
- To develop effective oral and written communication skills for clinical practice

Marking Criteria:

Case Study Tutorial Participation Students will contribute to the case study tutorial as part of a group. Each student's participation in the case study tutorial session will be assessed by their peers (i.e. the passive observer groups) and academic staff. The average of these marks will be calculated for each individual student. The academic observer provides a mark for each individual student (60%) and a group mark (10%). The passive observers submit an individual student mark (20%) and a group mark (10%). *It is important that each member of the group is well prepared and that preparation involves a coordinated effort by each group. It is also important that members of each team meet to discuss the key issues to be explored in the CST beforehand to avoid contradicting your team members which can negatively impact on your group mark.*

Outstanding Contributor (10%)	Contributions in class reflect exceptional preparation. Ideas offered are always substantive; provide one or more major insights as well as direction for the class. Challenges are well substantiated and persuasively presented. If this individual were not active, the quality of discussion would be diminished markedly
Good Contributor (8%)	Contributions in class reflect thorough preparation. Ideas offered are usually substantive; provide good insights and sometimes direction for the class. Challenges are well substantiated and often persuasive. If this individual were not active, the quality of discussion would be diminished.
Adequate Contributor (6%)	Contributions in class reflect satisfactory preparation. Ideas offered are sometimes substantive, provide generally useful insights but seldom offer a new direction for the discussion. Challenges are sometimes presented, fairly well substantiated, and are sometimes persuasive. If this individual were not active, the quality of discussion would be diminished somewhat.
Unsatisfactory Contributor (4%)	Contributions in class reflect inadequate preparation. Ideas offered are seldom substantive; provide few if any insights and never a constructive direction for the class. Integrative comments and effective challenges are absent. If this individual were not active, it would have little impact on the learning outcomes.
Non-Participant (2%)	This group has made minimal contribution during the case study. If this individual was not in attendance, it would make no difference to the learning outcomes

Marking criteria for participation

Case Study Tutorial Report and Exercise Program – By 5 pm on the Monday following each CST, all individuals in the passive groups are required to submit one of the following: 1) a written report in the form of a letter to the patient’s physician and treating parties or 2) an exercise program in a suitable form to guide the patient and for clinician record keeping. With each class member being in a passive group for 2 of the 4 case study tutorials, a written report will be submitted for 1 case study tutorial and an exercise program will be submitted for the other case study tutorial.

Marking criteria for the report on the case study tutorial

Components	Developing (1 - 4%)	Functional (5 - 6%)	Proficient (7 - 8%)	Advanced (9 - 10%)
Understanding/ Conceptualisation of the patient’s condition	Inadequate understanding of the primary issues for the patient highlighted during the CST	Developing understanding of the primary issues for the patient highlighted during the CST	Adequate standard understanding of the primary issues for the patient highlighted during the CST	High level of understanding of the primary issues for the patient highlighted during the CST
Opinion on management approach	Unclear, in concise, illogical and inadequately constructed opinion, inappropriate patient management	Opinion has merit but requires better logic and greater relevance to the CST	Adequately constructed and logical opinion relevant to the CST	Very well constructed opinion and logic with strong relevance to the CST
Quality of the writing and presentation	Poorly written and organised; frequent spelling or grammatical errors; does not adhere to the required format (esp. length).	Developing writing and organisation skills; minimal errors in written expression; follows the required format (esp. length).	Acceptable standard of writing concise and organised; few errors in written expression; adheres to the required format (esp. length).	High level of competency clear, fluent, concise and well organised writing; no errors in written expression; adheres to the required format (esp. length).
Terminology appropriate to the discipline	Inadequate and relevant medical terminology	Developing use of the relevant medical terminology	Competent with relevant medical terminology	High level of competency with relevant medical terminology

Marking criteria for the exercise program for the case study tutorial patient

Components	Developing (1 - 4%)	Functional (5 - 6%)	Proficient (7 - 8%)	Advanced (9 - 10%)
Suitability of the exercise prescription – commencement	Ineffective and/or unsafe and not individualised to patient	Safe and somewhat effective exercise	Safe and effective exercises that commences at a suitable level and is mostly specific to the patient	Safe and effective exercises that is highly individualised to patients presentation
Suitability of the exercise prescription – progression	Inappropriate exercise progression that may be ineffective and/or unsafe, not patient specific	Safe and somewhat effective progression that requires more attention to patient presentation.	Safe and effective exercise progression, that is mostly specific to the patient	Safe and effective exercise progression, that is highly individualised to patients presentation
Clarity of the presentation for the patient and professional colleagues	Poorly presented program, that will be difficult for the patient and/or professional colleagues to follow	Adequately presented program although patients and/or professional colleagues may experience some difficulty interpreting	Neatly presented program that can be mostly followed by the patient and professional colleagues	High quality presentation of a program that can be easily followed by the patient and professional colleagues
Evidence of research and/or originality in the exercise prescription	Non evidence based exercise prescription and little evidence of thoughtful exercise prescription	Exercise prescription somewhat evidence based and thoughtful	Mostly evidence-based and thoughtful exercise prescription	Clearly evidence-based exercise prescription that is logical and thoughtful

ASSESSMENT TASK 2 – WEEK 8 QUIZ

This quiz will test your understanding and practical application of and concepts covered in the Week 1-5 lectures and clinicals. The format will be 30 multiple choice questions in 30 min. The quiz will be held during lecture 2 week 8.

ASSESSMENT TASK 3 – Clinical Viva and Skills Assessment – Exam Period

The purpose of the practical assessment is to assess your competency with the practical application of the knowledge and skills covered in the unit. The assessment will be undertaken in groups of 3 and encompass material presented in the CST's, laboratories, lectures and readings. This will involve a 40 min oral and skills assessment specific to daily clinical practice in rehabilitation.

The oral assessment will involve verbal responses to questions posed by the examiner. The clinical skills demonstration will be performed on your partner and involve a physical assessment or exercise prescription technique commonly used by EP's in MS rehabilitation. Before commencing the assessment students will be given 15 min to read their case study and consider the specific questions and skills that will to be assessed. Each student will be complete a single case study randomly selected from a bank of 6 cases with ~10 min, 20 min, 10 min respectively, for the patient assessment, exercise prescription and clinical reasoning components.

Learning Outcomes for the Clinical Viva and Skills Assessment

- To demonstrate detailed knowledge of the unit content and the clinical application of this content to a variety of musculo-skeletal conditions
- To demonstrate competency with assessment, exercise prescription and clinical reasoning relevant to clinical practice in musculo-skeletal rehabilitation
- To demonstrate effective communication with patients and allied health professionals

Marking criteria for the clinical viva and skills assessment

Assessment component	Grade
Patient assessment - knowledge	7%
Provided correct and complete responses to the questions with minor mistakes	5-7%
Partially answered the questions	3-4%
Unable to adequately answer the questions	< 3%
Exercise prescription - clinical skills <i>Procedural</i>	16%
Demonstrated the required techniques with competency and a strong application to clinical practice	12-16%
Demonstrated the required techniques with confidence and moderate application to clinical practice	7-14%
Needs to further develop exercise prescription to the standard required for clinical practice	0-7%
Patient management - clinical reasoning	7%
High level of clinical reasoning, knowledge and understanding	5-7%
Developing level of clinical reasoning, knowledge and understanding	3-4%
Needs a better understanding of key concepts that underpin sound clinic reasoning	<3%

ASSESSMENT TASK 4 – WEEK 13 QUIZ

This quiz will test your understanding and practical application of and concepts covered in the Week 6-11 lectures and clinicals. The format will be 30 multiple choice questions in 30 min. The quiz will be held during lecture 2 week 13.

Submission of Assessment Tasks

Assignments are to be submitted electronically through Turnitin via Moodle.

Penalties for late submission of assignments – In cases where an extension has NOT been granted, the following penalties will apply: For assignments submitted after the due date, a penalty of 50% of the maximum marks available for that assignment will be incurred. A further 25% of the maximum possible allocated marks (i.e., a total of 75%) will be deducted from assignments which are two (2) days late. Assignments received more than two (2) days after the due date **will not be allocated a mark**, however, these assignments **must** still be submitted to pass the unit.

Assessment breakdown:

<i>Item</i>	<i>Grade %</i>	<i>Due date</i>	<i>Feedback</i>
Case study tutorials (each of the 4 CSTs will involve one of the following 3 items) A – Participation by active groups in the 2 designated CSTS - <i>(participation: individual 80% and team 20%, judged by an academic observer and passive groups observers)</i> B – Written report to referring health professional C– Exercise program (Reports and exercise programs are submitted by individuals who were in the passive groups for the relevant case study tutorial. In a given week, half of the group members will submit a report and the other half an exercise program. This will be switched for the second round of written submissions.)	10% CST1 10% CST2 10% CST1 10% CST2	Week HESC3532 5, 7, 9, 11	Participation marks are submitted at the end of each CST and collated grades appear on Moodle within 10 working days of the CST. Reports or exercise programs are due by 5pm on the Monday following each CST and grades will appear on Moodle within 10 working days of the CST.
Multiple choice quizzes Multiple choice questions	30%	Week 6 Week 13	Grades will appear on Moodle within 10 working days of the quiz.
Clinical viva and skills assessment Patient assessment – knowledge (7%) Exercise prescription - clinical skills procedural (16%) Patient management - Clinical reasoning (7%)	30%	Exam period	

COURSE SCHEDULE

HESC3532 Semester 2, 2017

	Lecture/Workshop Matthews THC Tues 11-12 noon	Lectures/flipped classrooms VAL 121 Tues 12-1pm	Case Method Tutorials Thur 3-4.30pm; 4.30 -6pm (CLB 1)	Clinicals Tues 9-11 am Tues 4-6pm Thur 11-1 pm Thur 1-3 pm (Ex Phys Lab)
Week 1 (24-28 July)	Pain – How's it work? Dr John Booth	Patient assessment and communication Dr John Booth	Patient centred treatment (online activity)	
Week 2 (31-4 Aug)	Rehabilitation for lumbar spine Dr John Booth	Flipped classroom - Rehabilitation for the lumbar spine (preview moodle) Dr John Booth		Assessing and screening patients with persisting pain
Week 3 (7-11 Aug)	Persisting Pain – How's it work now? Dr John Booth	Flipped classroom - A bio-psycho-social treatment model (preview moodle) Dr John Booth		Assessment and exercise prescription for the lumbar spine
Week 4 (14-18 Aug)	Common surgical interventions of the shoulder and knee – exercise considerations Dr John Booth	Flipped classroom - Exercise rehabilitation for the shoulder (preview moodle) Dr John Booth	Case study 1 Chronic low back pain Booth/Cashin	Exercise prescription for complex musculoskeletal conditions
Week 5 (21-25 Aug)	Exercise rehab for the lower extremity Dr John Booth	Hip and knee replacement – Post-operative exercise Kelly McLeod		Case study 1 report due Rehabilitation techniques for the shoulder
Week 6 (28-1 Sept)	Osteoporosis- assessment & exercise considerations Dr David Simar	Flipped classroom - Work related and functional exercise (preview moodle) Dr John Booth	Case study 2 Rotator cuff surgery Booth/Cashin	Rehabilitation of the knee and lower extremity
Week 7 (4-8 Sep)	Neurological assessment of the upper and lower extremity (pre-view moodle) Dr John Booth	Rehabilitation of the cervical and thoracic spin Dr John Booth		Case study 2 report due Work related and functional exercise
Week 8 (11-15 Sept)	Flipped classroom – exercise rehabilitation following spinal surgery (pre-view moodle) Dr John Booth	Quiz 1 Commonly used medications in chronic pain – exercise considerations (online activity) Dr John Booth	Case study 3 Knee arthroscopy Booth/Cashin	Rehabilitation for the cervical spine
Week 9 (18-22 Sep)	Arthritis-assessment & exercise considerations Dr Janette Thom	Flipped classroom - Rehabilitation for the deep abdominal muscles and pelvic floor disease/dysfunction (pre-view moodle) Dr John Booth		Case study 3 report due Neurological considerations – upper and lower
Sept 23- 1 Oct Mid semester break				
Week 10 (2-6 Oct)	Functional Capacity Evaluation John Booth	Pre-employment functional assessment Aidan Cashin	Case Study 4 Functional Capacity Evaluation & Return to work Booth/Cashin	Exercise prescription for the deep abdominal muscles and pelvic floor
Week 11 (9-13 Oct)	Functional capacity evaluation in workplace rehabilitation Dr John Booth	Workplace assessment – Dr John Booth		Case study 4 report due Functional capacity evaluation
Week 12 (16-20 Oct)	Flipped classroom - workplace Injury Prevention - SCROM package moodle Dr John Booth	AEP treatment and managing injured workers under NSW Workcover/SIRA - SCROM package moodle Dr John Booth		
Week 13 (23-27 Oct)	Quiz 2	No Lectures		