HESC3592

Neuromuscular Rehabilitation

Course Outline

Term 3, 2023

School of Health Sciences

Faculty of Medicine & Health

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1. Staff

Position	Name	Email	Consultation times and locations	Contact Details
Course Convenor	Dr Paulo Henrique Silva Pelicioni	paulo.silvapelicioni@unsw.edu.au	By appointment	By e-mail or Teams
Guest Lecturers	Mr Alex Batho Mr James Czencz			
Tutors	Dr Kelly McLeod Ms Muneeba Chaudhry Mr Key Nahan Dr Paulo Henrique Silva Pelicioni			

2. Course information

Units of credit: 6 UOC

Pre-requisite(s): HESC2452 (Movement Assessment and Instruction) and NEUR3101 (Muscle and Motor Control)

Teaching times and locations: https://timetable.unsw.edu.au/2023/HESC3592.html

2.1 Course summary

This course provides the opportunity for students to learn exercise prescription and relevant clinical skills in the context of neurological rehabilitation. Specific information about a range of neuromuscular disorders is provided, and students are encouraged to apply their knowledge to case studies and scenarios in order to develop the scientific and clinical attributes necessary to contribute effectively to a multi-disciplinary neuromuscular rehabilitation team. This course offers a mixture of traditional and interactive/case study approaches to learning, including a series of case presentations and reports that emphasise the application of theory to clinical situations. These assessments are designed as a bridge between the lifestyle change project with an apparently healthy client in HESC3504 and the year 4 clinical practicum courses in the workplace.

2.2 Course aims.

The aim of this course is to enable you to understand the pathophysiology of a range neurological diseases. This knowledge, coupled with case-based learning, is designed so that you can apply the principles of exercise prescription in a safe, effective, and socially relevant manner.

2.3 Course learning outcomes (CLO)

At the successful completion of this course you (the student) should be able to:

1. Apply knowledge of the pathophysiology of a range of neuromuscular disorders at a level sufficient for effective communication with health care professionals and patients.
2. Demonstrate knowledge of current and emerging neuromuscular rehabilitation approaches.
3. Competently administer and interpret basic functional, psychological, biomechanical or neurological tests relevant for neuromuscular rehabilitation.
4. Effectively prescribe appropriate and safe exercise programs for patients with neuromuscular disorders.
5. Demonstrate sound clinical reasoning to inform targeted therapeutic exercise programs specific to patient presentation.

2.4 Relationship between course and program learning outcomes and assessments

Course Learning Outcome (CLO)	**LO Statement**	**Program Learning Outcome (PLO)**	**Related Tasks & Assessment**
CLO 1	Apply knowledge of the pathophysiology of a range of neuromuscular disorders at a level sufficient for effective communication with health care professionals and patients	1, 6	1 – 3
CLO 2	Demonstrate knowledge of current and emerging neuromuscular rehabilitation approaches	1, 4	1 and 5
CLO 3	Competently administer and interpret basic functional, psychological, biomechanical or neurological tests relevant for neuromuscular rehabilitation	3	1, 3 and 4
CLO 4	Effectively prescribe appropriate and safe exercise programs for patients with neuromuscular disorders	1, 5	2 and 3
CLO 5	Demonstrate sound clinical reasoning to inform targeted therapeutic exercise programs specific to patient presentation	1, 3, 4	2 and 4

3. Strategies and approaches to learning

3.1 Learning and teaching activities

HESC3592 Neuromuscular Rehabilitation consists of the following weekly class schedule:

Class	Duration	Delivery method	Week (s)
Lecture	2 hours	Online (Recorded)	1 - 5, 7 and 10
Lecture	2 hours	Online (Live)	1, 5, 7 – 9
Laboratory (compulsory)	2 hours	In-person	1 – 5, 7 – 10
Tutorial (compulsory)	2 hours	In-person	5

Lectures - Two hours of synchronous and asynchronous lecture content each week on Monday from 1:00 pm to 3:00pm. Lectures will provide you with the concepts and theory essential for understanding how to safely assess and prescribe exercise in neuromuscular conditions. Importantly, the lectures present large amounts of information on specific topics throughout the course and align with assessment items. Attendance is expected to all live lectures sessions and is an excellent opportunity to clarify key concepts presented in the course material. Lectures will be interactive with multiple cases presented by experts working in the various fields who are happy to answer any questions you may have. Note - It is critical to stay up to date with lectures as the topics change from week to week and align with assessment which leaves little opportunity to catch up on content and compromises assessment performance.

Laboratories - Two hours of lab content will be delivered in person each week (in-person) in the Exercise Physiology Laboratory and offsite, such as at Neuroscience Research Australia in weeks 4 and 7, and UNSW Gym pool, in week 5. This content is designed to help you to develop clinical skills that are important when working with patients who have neuromuscular and neurological conditions. There are 3 labs that will be run off-site, as mentioned above, so please ensure that you wear appropriate close-toe footwear and your UNSW polo shirt during these labs at Neuroscience Research Australia and appropriate swimwear clothing for the UNSW gym pool. Further information on these labs will be provided on Moodle. Attendance at labs is compulsory except in cases of Special Consideration which will need to be applied for.

Tutorials – Over weeks 5 you will present in small group to the rest of the class for 10 minutes. This presentation will make up 20% of your course marks (assessment 1, discussed below). These presentations are an active learning approach involving student centred activities that demonstrate theoretical concepts in an applied setting. This approach is designed to not only enhance your learning experience but also to increase your engagement in learning. These presentations followed by case studies allow students to apply theoretical concepts, thus bridging the gap between theory and practice. This format is highly relevant to professional development and competencies as it exposes students to issues relevant to Exercise Physiologists in clinical practice. It develops the skills needed for case coordination and conferencing, which includes communication, information sharing, and collaboration, and occurs regularly with case management in practice between staff serving the client within and between agencies.

Independent study - Students are reminded that UNSW recommends that a 6 units-of-credit course should involve about 150 hours of study and learning activities. The formal learning activities are approximately 72 hours throughout the semester and students are expected (and strongly recommended) to do at least the same number of hours of additional study.

There may not be sufficient time in the lectures, labs and tutorials for you to develop a deep understanding of the concepts covered in this course. To achieve the learning outcomes that will be assessed, you will need to revise the material presented in the course regularly. You will probably also need to do additional reading beyond the lecture materials to learn effectively. Relevant additional resources will be cited in each activity.

3.2 Expectations of students

An integral part of this course is engagement in class activities as well as online lectures. Students are expected to attend all scheduled teaching activities, including clinical, laboratory and tutorial classes. Some courses have specific attendance requirements, and an Unsatisfactory Fail (UF) may be recorded as the final grade for the course if students fail to meet the requirements, as specified in the course and assessment information provided on the course Moodle page.

As stipulated in the course information on Moodle, course attendance expectations are determined by the requirements of the accrediting body for each health discipline.

Where a student is unable to attend, they are advised to inform the course convenor, according to the instructions outlined on your course Moodle page.

Attendance at labs and tutorials is compulsory. Attendance will be recorded at the start of each class. Arrival more than 15 minutes after the start of the class will be recorded as non-attendance. It is your responsibility to ensure that the demonstrator records your attendance. You must actively participate in online lectures, group work, and complete all set work to a satisfactory standard as discussed in class and in the course outline.Satisfactory completion of the work set for each class is essential. It should be noted that non-attendance for other than documented medical or other serious reasons or unsatisfactory performance during the session may result in an additional practical assessment exam or ineligibility to pass the course. Students who miss practical classes due to illness or for other reasons must apply for special consideration. Lectures will be delivered online live and pre-recorded. Attendance is highly recommended as students will be provided with the opportunity to ask lecturers questions that will be useful for their clinical practice and for their exams. All content, including questions answered during lectures, is assessable in the final exam.

4. Course schedule and structure

Week	Topics	Tutorial Activities	Tutors	Related CLO
Week 1*	(i) Overview of concepts and principles of neurorehabilitation (ii) Introduction to neuroplasticity (iii) Clinical reasoning and decision making	(i) Exercise programming (ii) Report writing (iii) How to make a clinical decision	Wed 9-11am: KM & MC Wed 11am-1pm: KM & MC Wed 2-4pm: KM & MC Fri 9-11am: KM & KN Fri 11am-1pm: KM & KN	4
Week 2**	Traumatic Brain Injuries	Exercise prescription and monitoring	Wed 9-11am: KM & MC Wed 11am-1pm: KM & MC Wed 2-4pm: KM & MC Fri 9-11am: KM & KN Fri 11am-1pm: KM & KN	1 – 5
Week 3**	Spinal Cord Injuries	Functional test, clinical scales and exercise prescription for Spinal Cord Injuries	Wed 9-11am: KM & MC Wed 11am-1pm: KM & MC Wed 2-4pm: KM & MC Fri 9-11am: KM & KN Fri 11am-1pm: KM & KN	1 – 5
Week 4*	(i) Cerebral Palsy (ii) Gait and balance assessments	Gait and Balance assessments **This lab will happen at Neuroscience Research Australia, 139 Barker Street, Randwick**	KM & PP for all pracs this week	1 – 5

Week 5*	(i) Hydrotherapy (ii) Social aspects of disability	Hydrotherapy **This lab will happen at the UNSW gym pool in the lower campus**	Wed 9-10:30am: KM Wed 10:45am-12:15pm: KM Wed 12:30–2pm: KM Fri 9-10:30am: KM Fri 11am-12:30pm: KM	2, 4 and 5
Week 7*	(i) Stroke (ii) Technology in neurorehabilitation	Technology in neurorehabilitation **This lab will happen at Neuroscience Research Australia, 139 Barker Street, Randwick**	KM & PP for all pracs this week	1 – 5
Week 8*	(i) Dementia (ii) Falls prevention	Screening and assessment for fall risk	PP only for all pracs this week	1 – 5
Week 9***	Parkinson's disease	Parkinson's disease assessments and exercises	PP only for all pracs this week	1 – 5
Week 10**	(i) Multiple sclerosis (ii) chronic fatigue syndrome	Activity pacing and graded exercise	KM only for all pracs this week	1 – 5

Legend: *1 hour of lecture live, staring at 1:00pm on Monday and recorded content; ** lecture(s) fully recorded; ***2 hours of lecture live, starting at 1:00pm on Monday. KM: Dr Kelly McLeod; MC: Ms Muneeba Chaudhry; KN: Mr Key Nahan; PP: Dr Paulo Henrique Silva Pelicioni

Exam Period: 24 November – 7 December 2023
Supplementary Exam Period: 8 January – 12 January 2024

5. Assessment

5.1 Assessment tasks

Assessment task	Mode	Length	Weight	Due date
Assessment 1: Case Study presentation	Group	15 minutes	20%	Week 5 tutorials
Assessment 2: Simulated Case Study Report: GP Report with Exercise Program	Individual	1000 words	20%	Week 7, October 27, at 11:00pm
Assessment 3: Clinical skills assessment	Individual	30 minutes	30%	Final exam period
Assessment 4: End of semester exam	Individual	80 multiple-choice questions	30%	Final exam period

Assessment 1: Case Study Presentation

Weighting: 20%

Due date: Week 5 (during tutorial time)

Length: 10 minutes (with 5 minutes question time)

Description:

Students will be given 6 neurological diseases and will be required to in small groups on the physiopathology, signs and symptoms, assessment of outcomes and exercise management from an AEP perspective. The presentation will be during week 5 tutorials. Students are expected to use visual aids, such as PowerPoint, to assist in presenting their case. 5 minutes of question time will follow where other students and academic staff can engage further with the case. Within groups, students will undertake a peer review to ensure equity of work towards this assessment. Feedback will be provided at the end of the presentation.

Presentations must cover:

- Physiopathology

- Main signs and symptoms

- Exercise management plan (including relevant assessments and exercise prescription)

- Justification for the exercise management plan

Assessment 2: Simulated Case Study Report: GP Report with Exercise Program

Weighting: 20%

Due date: Week 7, Friday at 11:00 pm

Length: 1000 words in total

Description:

This assessment task provides an opportunity to demonstrate your written communication skills based on a clinical scenario. The report is comprised of two parts:

Part A: A report to the patient's treating doctor regarding the outcomes of their initial exercise physiology assessment.

Part B: Outline your initial exercise program.

The report must be submitted via Turnitin. You will receive written feedback within two weeks from the due date.

Assessment 3: Clinical Skills Assessment

Weighting: 30%

Due Date: Final exam period

Length: 30 minutes (10 minutes of reading, 15 minutes of assessments and 5 minutes of feedback)

Description:

The clinical skills assessment examines student's practical application of the knowledge and skills covered in the course and involves an oral and hands on skills assessment specific to AEP clinical practice in neuromuscular rehabilitation. The assessment involves responding to questions posed by an examiner regarding two case scenarios. Students will be required to demonstrate physical assessments (case 1) and describe exercise prescriptions relevant to the case (case 2). Students will be given the cases and provided time to read and consider the case prior to the assessment. Feedback will be provided at the end of the exam.

Assessment 4: End-of-semester exam

Weighting: 30%

Due date: Final exam period

Length: 2 hours

Description: End of Semester Exam

This assessment task is designed to test your theoretical knowledge and will consist of 80 multiple-choice questions based on the pathologies covered during the term and clinical scenarios. This exam will cover **all content** presented between weeks 1 to 10. All materials presented in the lectures, tutorials, and prescribed and recommended readings are examinable.

Further information

UNSW grading system: https://student.unsw.edu.au/grades

UNSW assessment policy: https://student.unsw.edu.au/assessment

5.2 Assessment criteria and standards

Rubrics for assessments are on the course Moodle page under the assessment hub tab.

5.3 Submission of assessment tasks

Late Submission

UNSW has standard late submission penalties as outlined in the UNSW Assessment Implementation Procedure, with no permitted variation. All late assignments (unless extension or exemption previously agreed) will be penalised by 5% of the maximum mark per day (including Saturday, Sunday, and public holidays). For example, if an assessment task is worth 30 marks, then 1.5 marks will be lost per day (5% of 30) for each day it is late. So, if the grade earnt is 24/30 and the task is two days late the student receives a grade of 24 – 3 marks = 21 marks.

Late submission is capped at 5 days (120 hours). This means that a student cannot submit an assessment more than 5 days (120 hours) after the due date for that assessment.

Students must attend all assignments. Students unable to attend the tutorial and present Assessment 1, which is a group assessment, must contact the course convenor before the tutorial and apply for special consideration. Late submissions of Assessment 2 will be penalized at 5% per day for five days. Submissions received after 5 days will receive zero marks but may be given feedback.

Special Consideration

If you experience a short-term event beyond your control (exceptional circumstances) that impacts your performance in a particular assessment task, you can apply for Special Considerations.

You must apply for Special Consideration **before** the start of your exam or due date for your assessment, except where your circumstances of illness or misadventure stop you from doing so.

If your circumstances stop you from applying before your exam or assessment due date, you must **apply within 3 working days** of the assessment, or the period covered by your supporting documentation.

More information can be found on the Special Consideration website.

5.4. Feedback on assessment

Feedback will be provided for each assessment task in a timely manner. Written feedback will be given for assessments 1 and 2, and the feedback is scheduled to be given up to 2 weeks after each assessment. Verbal feedback will be given for assessment 3. Students can book in with course convenors to discuss assessments.

6. Academic integrity, referencing and plagiarism

Referencing is a way of acknowledging the sources of information that you use to research your assignments. You need to provide a reference whenever you draw on someone else's words, ideas or research. Not referencing other people's work can constitute plagiarism. Please use Vancouver or APA referencing style for this course. Further information about referencing styles can be located at https://student.unsw.edu.au/referencing

Academic integrity is fundamental to success at university. Academic integrity can be defined as a commitment to six fundamental values in academic pursuits**:** honesty, trust, fairness, respect,

responsibility and courage.[1] At UNSW, this means that your work must be your own, and others' ideas should be appropriately acknowledged. If you don't follow these rules, plagiarism may be detected in your work.

Further information about academic integrity and **plagiarism** can be located at:

- The Current Students site https://student.unsw.edu.au/plagiarism**,** and
- The ELISE training site https://subjectguides.library.unsw.edu.au/elise

The Conduct and Integrity Unit provides further resources to assist you to understand your conduct obligations as a student: https://student.unsw.edu.au/conduct.

7. Readings and resources

Moodle

Information about the course as well as lectures, practical notes and information regarding assignments can be accessed via the UNSW Moodle system from the following site: https://moodle.telt.unsw.edu.au/login/index.php

You can use Moodle to download notes, access your grades, find reference material in the course (such as this document), and communicate with the course convenors and your peers. Please see the course convenors if you would like more information to help you to make the most of this resource.

UNSW Library

The University Library provides a range of services to assist students in understanding how to identify what information is required for assignments and projects; how to find the right information to support academic activities; and how to use the right information most effectively.

Homepage: https://www.library.unsw.edu.au/

These resources will take the form of textbooks, journal articles or web-based resources. If available, links to the electronic form of these resources will be put on the course Moodle page. In each week's online learning activities (available through Moodle), students are directed to specific readings associated with that week's content and desired learning outcomes.

Suggested Reference Books

• American College of Sports Medicine (2018) ACSM's Guidelines for exercise testing and prescription 10th Edition Philidelphia, PA Wolters Kluwer

• ACSM's resources for clinical exercise physiology: musculoskeletal, neuromuscular, neoplastic, immunologic, and hematologic conditions (2nd Ed). Editors, Jonathan N. Myers, William Herbert, Reed Humphrey. Philadelphia: Lippincott Williams & Wilkins, 2010.

• Motor Control: Translating research into clinical practice (5th Ed). Shumway-Cook and Woollacott. Philadelphia: Lippincott Williams and Wilkins, 2017.

[1] International Center for Academic Integrity, 'The Fundamental Values of Academic Integrity', T. Fishman (ed), Clemson University, 2013.

• Exercise in rehabilitation medicine (2nd Ed.). Editor-in-chief Walter R. Frontera, Associate Editors David M. Dawson, David M. Slovik. Champaign, Ill: Human Kinetics, 2006.

• Neurorehabilitation for the physical therapist assistant. Edited by Darcy Umphred, Connie Carlson. Thorofare, NJ: SLACK, 2006.

• Neuromechanics of human movement (5th ed.). Roger M. Enoka. Champaign IL: Human Kinetics, 2015. ISBN-13: 9781450458801

8. Administrative matters

- School of Health Sciences – Wallace Wurth
- https://staff.med.unsw.edu.au/health-sciences

9. Additional support for students

- The Current Students Gateway: https://student.unsw.edu.au/
- Academic Skills and Support: https://student.unsw.edu.au/academic-skills
- *Student Wellbeing and Health* https://www.student.unsw.edu.au/wellbeing
- UNSW IT Service Centre: https://www.myit.unsw.edu.au/services/students
- *UNSW Student Life Hub:* https://student.unsw.edu.au/hub#main-content
- *Student Support and Development: https://student.unsw.edu.au/support*
- *IT, eLearning and Apps: https://student.unsw.edu.au/elearning*
- *Student Support and Success Advisors: https://student.unsw.edu.au/advisors*
- *Equitable Learning Services (Formerly Disability Support Unit): https://student.unsw.edu.au/els*
- *Transitioning to Online Learning https://www.covid19studyonline.unsw.edu.au/*
- *Guide to Online Study* https://student.unsw.edu.au/online-study