



HESC3592

Neuromuscular Rehabilitation

Course Outline
Term 3, 2024

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
Lecturer	Dr Paulo Henrique Silva Pelicioni Dr Kelly McLeod Dr Lloyd Chan			
Tutors	Dr Paulo Henrique Silva Pelicioni Dr Kelly McLeod			

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/2024/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 of 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
	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	1 or 2 hours	Online (Recorded)	1 – 5 & 7 – 10
Laboratory (compulsory)	2 hours	In-person	1 – 5 & 7 – 10
Tutorial (compulsory)	1 hour*	In-person	1 – 5 & 7 – 10

*2 hours in Week 5 as part of Assessment 1 (group presentation).

Lectures - Two hours of weekly online asynchronous lecture content, released each Monday. Lectures will provide the concepts and theory essential for understanding how to safely assess and prescribe exercise in neuromuscular conditions. Importantly, the lectures present information on specific topics throughout the course and align with assessment items. Offline attendance is expected at all lecture sessions and is an excellent opportunity to clarify key concepts in the course material. Note - It is critical to stay updated with lectures as the topics change from week to week and align with the 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 Integrated Acute Services Building (IASB) Level 4, Room 112 and offsite, such as at Neuroscience Research Australia (NeuRA) in week 3 and at UNSW Gym pool in week 4. This content is designed to help you develop important clinical skills when working with patients with neuromuscular and neurological conditions. Two labs will be run off-site, as mentioned above, so please ensure that you wear appropriate close-toe footwear and your UNSW polo shirt during the lab at NeuRA 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 – To assist in developing skills related to assessing people with neuromuscular disorders and to design and implement an exercise program, tutorials will occur from week 1 through week 10. Across these tutorials, we will review (i) how to make clinical decisions; (ii) how to write exercise programmes and reports to other allied/ medical health professionals; (iii) how to prescribe exercise and monitor your clients, (iv) how to assess balance and gait; (v) how to integrate items I through iv in clinical populations with neuromuscular disorders. These tutorials will help to provide students with the skills required to work with clients with neuromuscular disorders in clinical settings. The tutorials can also be used as an opportunity to discuss any assignments and have any questions answered.

Independent study—Students are reminded that UNSW recommends that a 6-unit-of-credit course involve 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 assessed, you must revise the material presented in the course regularly. You will probably need additional reading beyond the lecture materials to learn effectively. Relevant additional resources will be cited in each activity.

3.2 Expectations of students

Engagement in-class activities and online lectures is an integral part of this course. You must actively participate in group work and complete all set work satisfactorily, as discussed in class and the course outline.

Attendance at labs and tutorials is compulsory. Attendance will be recorded at the start of each class. Arrival more than 5 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. 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 (laboratories or tutorials) due to illness or other reasons must apply for special consideration. Lectures will be delivered online and pre-recorded. Off-line attendance is highly recommended as students will watch new content that will guide them and will be useful for their clinical practice and exams. All content is assessable in the final exam.

3.3 Attendance requirements

Students are expected to attend all scheduled clinical, laboratory and tutorial classes. An Unsatisfactory Fail (UF) may be recorded as the final grade for the course if students fail to meet the minimum requirement of 80% attendance for clinical, laboratory and tutorial classes (unless otherwise specified on Moodle). The requirements of the program accrediting body determine course attendance expectations. Where students cannot attend, they are advised to inform the course convenor as soon as possible but no later than three days after the scheduled class and, where possible, provide written documentation (e.g. medical certificate) to support their absence.

4. Course schedule and structure

Week	Lectures	Tutorials	Laboratories	Related CLO
Week 1	(i) Introduction to neuroplasticity (Dr Tushar Issar) (ii) Clinical reasoning and decision making (Dr Paulo Pelicioni)	Course introduction (Dr Paulo Pelicioni)	(i) Exercise programming (ii) Report writing (iii) how to make a clinical decision (Dr Kelly McLeod)	4
Week 2	(i) Social aspects of disability (ii) Gait and balance assessments (Dr Paulo Pelicioni)	(i) Exercise programming (ii) Report writing (iii) how to make a clinical decision (Dr Kelly McLeod)	Overall exercise prescription and monitoring (Dr Kelly McLeod)	1 – 5

Week 3	(i) Hydrotherapy (Dr Kelly McLeod) (ii) Technology in neurorehabilitation (Dr Paulo Pelicioni)	Overall exercise prescription and monitoring (Dr Kelly McLeod)	Gait and balance assessments (Dr Paulo Pelicioni) This lab will happen at NeuRA, 139 Barker Street, Randwick	1 – 5
Week 4	Falls prevention (Dr Paulo Pelicioni)	Gait and balance assessments (Dr Paulo Pelicioni)	Hydrotherapy (Dr Kelly McLeod) This lab will happen at the UNSW gym pool on the lower campus	1 – 5
Week 5	(i) Cerebral palsy (Mr James Czencz) (ii) Chronic Fatigue Syndrome (Dr Kelly McLeod)	Assessment 1 (group presentation) (Dr Paulo Pelicioni and Dr Kelly McLeod)	Screening, assessing and reducing fall risk (Dr Paulo Pelicioni)	2, 4 and 5
Week 7	(i) Traumatic Brain Injury (Dr Callum Baker) (ii) Spinal Cord Injury (Mr Alex Batho)	Clinical cases (Dr Paulo Pelicioni)	(i) Traumatic Brain Injury (ii) Spinal Cord Injury (Dr Kelly McLeod)	1 – 5
Week 8	(i) Dementias (Dr Morag Taylor) (ii) Stroke (Dr Lloyd Chan)	Clinical cases (Dr Kelly McLeod)	(i) Dementias (ii) Stroke (Dr Paulo Pelicioni)	1 – 5
Week 9	Parkinson's disease (Dr Paulo Pelicioni)	Clinical cases (Dr Paulo Pelicioni)	Parkinson's disease (Dr Paulo Pelicioni)	1 – 5
Week 10	Multiple Sclerosis (Dr Phu Hoang)	Clinical cases (Dr Paulo Pelicioni)	(i) Multiple Sclerosis (ii) Chronic Fatigue Syndrome (Dr Kelly McLeod)	1 – 5

Teaching period: 9 Sep - 15 Nov 2024

Exam Period: 22 Nov – 5 Dec 2024

Supplementary Exam Period: 6 Jan – 10 Jan 2025

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 11:00 pm
Assessment 3: Clinical skills assessment	Individual	30 minutes	30%	Final exam period
Assessment 4: End-of-semester exam	Individual	60 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 five neurological diseases and required to work 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

Use of generative artificial intelligence in this assignment – Simple Editing Assistance

In completing this assessment, you are permitted to use standard editing and referencing functions in the software you use to complete your assessment. These functions are described below. You must not use any functions that generate or paraphrase passages of text or other media, whether based on your own work or not.

Please note that your submission will be passed through an AI-generated text detection tool. If your Convenor has concerns that your submission contains passages of AI-generated text or media, you may be asked to account for your work. If you are unable to satisfactorily demonstrate your understanding of your submission you may be referred to UNSW Conduct & Integrity Office for investigation for academic misconduct and possible penalties.

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

Weighting: 20%

Due date: Week 7, Sunday, October 27 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.

Use of generative artificial intelligence in this assignment – Simple Editing Assistance

In completing this assessment, you are permitted to use standard editing and referencing functions in the software you use to complete your assessment. These functions are described below. You must not use any functions that generate or paraphrase passages of text or other media, whether based on your own work or not.

Please note that your submission will be passed through an AI-generated text detection tool. If your Convenor has concerns that your submission contains passages of AI-generated text or media, you may be asked to account for your work. If you are unable to satisfactorily demonstrate your understanding of your submission you may be referred to UNSW Conduct & Integrity Office for investigation for academic misconduct and possible penalties.

Assessment 3: Clinical Skills Assessment

Weighting: 30%

Due Date: Final exam period

Length: 45 minutes (15 minutes of reading and 30 minutes of assessments, including feedback)

Description:

The clinical skills assessment examines students' practical application of the knowledge and skills covered in the course. It 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 before the assessment. Feedback will be provided at the end of the exam.

Use of generative artificial intelligence in this assignment – No Assistance

This assessment is designed for you to complete without the use of any generative AI. You are not permitted to use any generative AI tools, software or service to search for or generate information or answers.

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 60 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.

Use of generative artificial intelligence in this assignment – No Assistance

This assessment is designed for you to complete without the use of any generative AI. You are not permitted to use any generative AI tools, software or service to search for or generate information or answers.

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 earned 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, a group assessment, must contact the course convenor before the tutorial and apply for special consideration. Late submissions of Assessment 2 will be penalised at 5% per day for five days. Submissions received after 5 days will receive zero marks but may be given feedback.

Short Extension

UNSW has introduced a short extension procedure for submission of individual assessment tasks. This does not include timed assessments, exams, quizzes, group tasks, presentations, clinical skills assessments or practical assessments. Students must check the availability of a short extension in the individual assessment task information for their courses. Additional information on Short Extensions is available via this link [Special Consideration | Short Extensions](#).

Short extensions do not require supporting documentation. They must be submitted before the assessment task deadline. No late applications will be accepted. Late penalties apply to submission of assessment tasks without approved extension.

Special Consideration

In cases where short-term events beyond your control (exceptional circumstances) will affect your performance in a specific assessment task, you may formally apply for [Special Consideration](#) through myUNSW.

UNSW has a Fit to Sit rule, which means that by sitting an examination on the scheduled date, you declare that you are fit to do so and cannot later apply for Special Consideration. Examinations include centrally timetabled examinations and scheduled, timed examinations, tests and practical assessments managed by your School.

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 must 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 the 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 (2022) ACSM's Guidelines for exercise testing and prescription 11th Edition Philadelphia, PA Wolters Kluwer
- ACSM's resources for clinical exercise physiology (3rd Ed). Benjamin Gordon; American College of Sports Medicine (ACSM), 2022.

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

- Motor Control: Translating research into clinical practice (6th Ed). Anne Shumway-Cook; Marjorie H. Woollacott; Jaya Rachwani; Victor Santamaria. Philadelphia: Lippincott Williams and Wilkins, 2022.
- 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 (3rd Ed). Edited by Rolando Lazaro and Darcy Umphred. Routledge, 2020.
- Neuromechanics of human movement (5th ed.). Roger M. Enoka. Champaign IL: Human Kinetics, 2015. ISBN-13: 9781450458801

8. Administrative matters

Late enrolment

Each request will be escalated to the course convenor and considered on a case-by-case basis.

Student enquiries should be submitted via student portal <https://portal.insight.unsw.edu.au/web-forms/>

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>