



THE UNIVERSITY OF
NEW SOUTH WALES

Faculty of Medicine
School of Medical Sciences
Department of Health and Exercise Science

HESC4591

**NEUROMUSCULAR
REHABILITATION**

Session 2 2009

COURSE OUTLINE

Course Convenor: DR CINDY SHIN-YI LIN
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Course Description:

This course provides the opportunity for students to understand the potential of exercise as a tool for the rehabilitation of patients with neurological disorders. Specific information about a range of neuromuscular disorders is provided, and students are encouraged to apply their knowledge to case studies and realistic scenarios in order to develop the scientific and clinical attributes necessary to contribute effectively to a neuromuscular rehabilitation team. The course offers a mixture of traditional and interactive/case study approaches to learning. You will also gain practical experiences through Lifestyle clinic.

Course Pre-requisites:

HESC3101

How the course relates to the discipline:

This course aims to provide a holistic preparation for the management of exercise rehabilitation programs for patients with neurological disorders. The course will build upon your understanding of the role of the nervous system in the control of movement developed in Motor Control and Dysfunction, and upon the interview, assessment and exercise prescription skills developed in Movement Rehabilitation. You will be expected to apply and adapt knowledge gained throughout your degree to specific case studies and scenarios relevant to neuromuscular rehabilitation.

OBJECTIVES:

The major aims are to encourage development of

1. An appreciation for the role of exercise physiologists in the treatment process of neurological patients.
2. Knowledge and communication skills needed to communicate professionally with physicians, physiotherapists, and other allied health care professionals about the treatment of neurological patients.
3. Knowledge and practical skills relevant to specific neurological disorders to allow the design and management of appropriate exercise interventions.

Time Table

Time Place	Lecture Mon 11-12 CLB 1	Lecture Tuesday 2-3 CLB 8	Tutorial Wednesday 12-2, 3-5 Goodsell Lb225 / Life Style Clinic	Tutorial Friday 10-12, 2-4 Goodsell Lb225 / Life Style Clinic
Week 1 (20 – 24 July)	L1 – Introduction	L2 – EP roles, clinical approach		
Week 2 (27 – 31 July)	L3 – Physiotherapist perspective on EP	L4 – Peripheral neuropathy	Tutorial	Tutorial
Week 3 (3 –7 August)	L5 – Stroke	L6 – Brain Injury		
Week 4 (10-14 August)	L7 – Motor control & Movement disorder	L8 –Motor Neurone Disease	Tutorial	Tutorial
Week 5 (17-21 August)	L9 – Paediatric muscular disorders	L10 – Parkinson's Disease		1st Assignment Due
Week 6 (24-28 August)	L11 – Spinal cord injury	L12 – Multiple Sclerosis	Tutorial	Tutorial
Week 7 (31 August - 4 September)	L13 – Ageing	L14 – Neuropsychology		Peer review due
Mid-session Break 7-11 September	Mid-session Break 7-11 September	Mid-session Break 7-11 September	Mid-session Break 7-11 September	Mid-session Break 7-11 September
Week 8 (14-18 September)	L15 – Neurorehabilitation	L16 – Symptom- specific rehabilitation	Tutorial	Tutorial
Week 9 (21-25 September)	L17 – Rehabilitation for Stroke	L18 – Rehabilitation in Spinal cord injury		2nd Assignment due
Week 10 (28 September – 2 October)	L19 – Therapeutic technology	L20 – Hydrotherapy	Tutorial	Tutorial
Week 11 (5-9 October)	Public holiday	L21 – mid-session exam		Peer review due
Week 12 (12-16 October)	L22 – Course summary	L23 – Course summary	Tutorial	Tutorial
Week 13 (19-23 October)	L24 – Revision	L25 – Revision		

TEACHING STRATEGIES AND SUGGESTED APPROACHES TO LEARNING:

Lectures – This approach is used to present relatively large amounts of information at a time on specific topics throughout the course. PDF copies of the lecture notes will **USUALLY** (some guest lecturers may choose not to make their notes available) be available on Web CT (see below in STUDENT RESOURCES section) prior to each lecture, 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, there will be information and explanations presented in lectures in addition to those covered in the notes that you should take down if they help you to understand the material. The lecturer will also try to allow some time for interaction and activities in each lecture to provide you with an opportunity to clarify or reinforce the ideas that have been presented. You should take these opportunities to think about the information that has been presented and ask questions to enhance your understanding.

Tutorials/Scenario-Based Sessions – This format provides a more informal, small-group learning environment than a lecture. You will be encouraged to consider a range of case studies and scenarios from a holistic perspective. Sessions will be structured to encourage your participation in activities and discussions designed to enhance your learning. You may be required to employ knowledge and skills derived from throughout the entire program. Independent and innovative thinking will be encouraged, and you will be required to explain the reasons for any exercise treatment or testing you suggest, as well as the correct practical implementation of specific exercises or tests. In most cases, you will benefit most if you do some preparation prior to attending the session. This is especially the case in sessions designed to help you prepare for the exams and assignments.

Practicals – The purpose of the practical components of the course is to help you to develop technical skills that will be important when dealing with neuromuscular patients. It is important to obtain hands-on experience with basic neurological and functional testing, you will be expected to do total of **20** hours of practical experiences (18 hours from “Lifestyle clinic” and 2 hours from attending lectures/grand rounds, signed off by the appropriate supervisors).

Independent study – There is insufficient time in the lectures, tutorials and practicals for you to develop a deep understanding of the concepts covered in this course. In order for you 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 in order to learn effectively. Relevant additional resources will be cited in each lecture.

Assessments – 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.

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 as a whole are as follows:

At the end of the course you should:

- Be able to communicate a mature understanding of the pathophysiology of a range of neuromuscular disorders at a level sufficient for effective communication with health care professionals.
- Have an awareness of current and (potential) future neuromuscular rehabilitation approaches and an ability to perform independent **RESEARCH** to address questions related to the field that may arise in your future professional activities.
- Be competent in the administration and interpretation of basic functional, psychological and electrophysiological tests relevant for patients undergoing neuromuscular rehabilitation.
- Have the necessary skills and contextual knowledge to effectively interview and communicate with neurological patients.
- Be able to deliver safe and effective exercise programs for patients with neuromuscular disorders.

ASSESSMENT IN THE COURSE

Assessment of your learning in the course will be achieved through examinations, case study work and practical hours. The examination format tests your ability to apply and communicate knowledge to the management of neuromuscular disorders in a time-constrained context. These requirements are similar to those encountered when dealing with a client or 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 lecture/practical/tutorial. The emphasis will be on the application of clinical principles to hypothetical scenarios. The case studies will assess your ability apply your knowledge to provide a detailed management plan for specific patients with neuromuscular disorders. This ability is fundamental to effective practice as an exercise physiologist in the neuromuscular rehabilitation field. You will also be required to critique case study management plans designed by your peers. This will encourage sharing of ideas and knowledge as well as critical analysis of patient treatment plans.

CASE STUDIES (1 & 2) – MID-SESSION 22% each

Due 2 weeks after each case study assigned

The class will be subdivided into groups of 5 or less to carry out the assignments. You will be assigned 2 unique (i.e. different from other group members) case studies based on hypothetical patient/real case). You are to develop a holistic management plan for your specific case, and submit a written description/report. It is essential that you justify why you have chosen any specific tests/ exercises. See marking criteria for additional information. You will also have to present your management plan to the rest of the class during the second scenario session for your topic, including practical demonstrations of exercises and tests. There will be no marks allocated – it is an informal opportunity to share ideas and get feedback from staff and peers.

PEER CASE STUDY EVALUATION (1&2) 8% each

Due 1 week after peers submit each case study

You will write 2 short critiques on case management plans submitted by one group of your peers. You should comment on the strengths and weaknesses of the plan, and offer alternative suggestions where appropriate.

Mid-session Multiple choice exam 12%

EXAMINATION 2 – END-SESSION 28% (Exam period)

The purpose of this exam is to test your understanding of the concepts covered in the course during the ENTIRE COURSE. The format will be multiple choices, short answer, and long answer/essay questions. The exam will be held during the end of session exam period.

ASSIGNMENT/CASE STUDY MARKING CRITERIA

	High Distinction	Distinction	Credit	Pass	Pass Conceded	Fail	Mark
Individual Assessment	Clearly written Concise Well justified and realistic outline of an appropriate assessment	Clearly written Concise Appropriate approach with good rationale	Acceptable written expression Reasonable approach with clear rationale	Some errors in written expression Reasonable approach with some rationale	Poorly written Reasonable approach with no rationale	Poorly written Questionable approach with no rationale	20
Response to Exercise and Functional Considerations	Clearly written Concise Comprehensive and individually relevant	Clearly written Concise Individually relevant coverage of most points	Acceptable written expression More general coverage of most points	Some errors in written expression General coverage of some points	Poorly written General coverage of few points Some errors	Poorly written Poor coverage of relevant points Some errors	10
Goals of Management Plan	Clearly written Concise Achievable and well justified goals for specific case	Clearly written Appropriate goals for specific case with good justification	Acceptable writing Reasonable goals for specific case with ok rationale	Acceptable writing Reasonable goals for specific case with weak rationale	Poorly written Reasonable goals for specific case with no rationale	Poorly written Questionable goals for specific case with no rationale	20
Management Plan Including Rationale	Clearly written Concise Detailed plan tailored well to individual case with evidence based rationale	Clearly written Concise Appropriate plan for individual case, good rationale	Acceptable writing Reasonable plan for individual case with ok rationale	Acceptable writing Reasonable plan for specific case with weak rationale	Poorly written Reasonable plan for specific case with no rationale	Poorly written Questionable plan for specific case with no rationale	40
Precautions and Indicators for Referral	Clearly written Concise Comprehensive and accurate consideration of risks/ complications	Clearly written Concise Accurate consideration of most risks/ complications	Acceptable writing Mostly accurate consideration of risks/ complications	Acceptable writing Consideration of some risks/ complications	Poorly written Cursory consideration of risks/ complications	Poorly written Errors in consideration of risks/ complications	10

Learning Outcomes for the Research Assignment

- To develop and refine the ability to generate exercise based management plans in the neuromuscular rehabilitation field.
- To improve your ability to integrate information on a topic in neuromuscular rehabilitation from many sources
- To gain a detailed understanding of a specific scenario that could be encountered while practicing as an EP in the neuromuscular rehabilitation field
- To develop your ability to communicate effectively in a the format of a clinical report

Tips for Preparing your Assignment

- Make sure you tailor the management plan to your specific case. You will need to read and think about issues that are not strictly “neural”.
- Make sure you present the evidence base and rationale for your management plan.
- Treat the assignment as an opportunity to develop knowledge and skills that will be required in your future career. It might help

- to write the report as if it were a document for peers in a rehabilitation clinic or sporting organisation.
- Ensure that you read and quote ORIGINAL sources (journal articles) in addition to textbooks and review articles.
 - Address the marking criteria!
 - Make sure your writing style is appropriate for a scientific report. The meaning of each sentence should be clear in isolation, and the language should be as simple as possible to make your point.
 - **MAKE SURE YOU DO NOT PLAGARISE THE WORK OF OTHERS!!!**

STUDENT RESOURCES

WEBCT

Information about the course and a number of electronic study resources can be accessed via the UNSW WebCT system. WebCT is an internet-based set of Course Tools designed to enable online learning. You access the system from the following site:<http://vista.elearning.unsw.edu.au/webct/entryPageIns.dowebct>

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

PRESCRIBED TEXT

Neurorehabilitation for the physical therapist assistant/ edited by Darcy Umphred, Connie Carlson. Thorofare, NJ: SLACK, c2006

SUGGESTED REFERENCE BOOKS

ACSM's resources for clinical exercise physiology: musculoskeletal, neuromuscular, neoplastic, immunologic, and hematologic conditions / American College of Sports Medicine ; [editors, Jonathan N. Myers, William Herbert, Reed Humphrey]. Philadelphia : Lippincott Williams & Wilkins, c2002.

Textbook of neural repair and rehabilitation: Volume 2, Medical Neurorehabilitation / edited by Michael E. Selzer ... [et al.]. Cambridge : Cambridge University Press, 2006.

Case studies in rehabilitation / Patricia A. Ghikas, Michele Clopper. Thorofare, NJ: Slack, c2001.

Movement disorders in neurology and neuropsychiatry / edited by Anthony B. Joseph and Robert R. Young. Boston: Blackwell Scientific Publications, 1992.

Handbook of neurorehabilitation / edited by David C. Good, James R. Couch, Jr. New York: Marcel Dekker, c1994.

Physical medicine and rehabilitation: principles and practice / editor-in-chief, Joel A. DeLisa ; editor, Bruce M. Gans ; managing editor, Nicholas E. Walsh. Philadelphia : Lippincott Williams & Wilkins, c2005. v. 1.

Physical medicine -- v. 2. Rehabilitation medicine ACSM's exercise management for persons with chronic diseases and disabilities/ American College of Sports Medicine ; senior editors J. Larry Durstine , Geoffrey E. Moore. Champaign, Ill. : Human Kinetics, c2003.

Exercise in rehabilitation medicine / editor-in-chief, Walter R. Frontera ; associate editors, David M. Dawson, David M. Slovik. Champaign, Ill. : Human Kinetics, c1999.

SUGGESTED REFERENCE JOURNALS

Brain, Annals of Neurology, Progress in Neurobiology, Stroke, Physical Therapy Archives of Physical Medicine and Rehabilitation

ADMINISTRATIVE MATTERS

For additional detail, refer to the STUDENT HANDBOOK

CONSULTATION HOURS

The lecturer will be available for consultation between 10-11 am on Monday, and 10-11 am on Tuesday throughout the session. To meet with the lecturer outside these hours, please arrange an appointment via phone or e-mail.

UNIT ATTENDANCE

100% ATTENDANCE is expected at all lectures, laboratories and tutorials specified in the table above. Attendance at lectures, laboratories, and tutorials will be recorded (roll call) each lecture/tutorial each week. Students who are not in attendance for any reason other than medical, will be marked absent and will be awarded a grade of **FAIL** for the entire course. If absent for medical reasons, a medical certificate must be lodged with the lecturer within 7 days of the time period of the certificate's expiry. No consideration will be given after this time. If students attend less than 80% of tutorial and lecture classes, they will be refused final assessment and therefore FAIL the entire course. **BOTTOM LINE: If you miss any laboratories, or more than 7 lectures and/or tutorials you will FAIL THE COURSE.**

MISSED EXAMS

If in any circumstances you unavoidably miss an examination, you must inform the lecturer immediately. If you miss an exam without a documented medical reason you will be given an absent fail. If you arrive late for an exam no time extension will be granted. It is your responsibility to check timetables and ensure that you arrive with sufficient time.

DEFERRED EXAMS

If you miss an exam for medical reasons you must supply adequate documentation (including a medical certificate). Your request for consideration will then be assessed and a deferred exam may be granted. You cannot assume you will be granted supplementary assessment. The deferred exam may include a significant oral element.

CONDUCT IN LABORATORY CLASSES

All students must come prepared for active participation in laboratories. No open footwear is permitted, runners or cross trainers are the most appropriate. Students should be wearing clothing that is suitable for exercise such as shorts or track pants, with T-shirt or light sweater. Students who do not have suitable attire and do not have a legitimate reason for not participating (eg. medical complaint or injury) may be refused entry to the class and will then be marked absent. Students are permitted to bring bottled water into the laboratory. No consumption of food is permitted in class.

PENALTIES FOR LATE SUBMISSION OF WORK

In cases where an extension has NOT been granted, the following penalties will apply: For assignments submitted after 4.00pm on the due date, a penalty of 50% of the maximum marks available for that assignment will be incurred. Assignments received two (2) or more days after the due date will not be allocated a mark, however, these assignments must still be submitted to pass the unit.

PLAGIARISM

Plagiarism from another student's work or other material (e.g. a text book, journal or web article) will not be tolerated. Students who submit the work of others as their own will fail the unit and risk expulsion from the university. A number of recent cases have been detected. It is your responsibility to ensure you understand what constitutes plagiarism and eliminate it from your submissions. Please refer to your university handbook for further information. You may also find the following site useful:

<http://www.lc.unsw.edu.au/plagiarism/index.html>