



THE UNIVERSITY OF NEW SOUTH WALES

**Health and Exercise Science
School of Medical Science
Faculty of Medicine**

Unit Title : Clinical Exercise Physiology (6 units of credit)

UNIT CODE: HESC3541 Session 1 2009

**LECTURER Dr DAVID SIMAR (Course Co-ordinator)
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Course Aims and Description:

This course will provide you information about the epidemiology and the pathophysiology of ageing, immune, respiratory, metabolic and cardiovascular diseases. You will gain knowledge of how to set up and implement exercise testing and programming in these special populations in order to provide symptomatic relief, as well as to manage the underlying disease. You will also learn how to manage the interaction between exercise and medications in these special populations. By the end of the semester you will be able to successfully use exercise testing and programming in individuals with these diseases to improve their health and quality of life. The teaching and learning approaches used in this course will include problem-based learning as well as more traditional evidence-based information provided during the lectures.

Student learning outcomes:

The main objectives of this course are to provide you knowledge and practical skills on:

1. the epidemiology and the pathophysiology of ageing, immune, respiratory, metabolic and cardiovascular disorders
2. the specificity of those populations based on their symptoms and treatments
3. the specificity of exercise testing and prescription in those populations
4. interaction between medications, medical interventions and exercise

TEACHING STRATEGIES AND SUGGESTED APPROACHES TO LEARNING:**Course structure**

This is a 6 units course and consists of 3h of lectures per week and up to 2h of practical and 1h of tutorial per week (for a total of 5 tutorials and 4 pracs for the whole course).

The teaching strategies described below have been developed to allow the student to gain competencies covering general graduate attributes:

- development of analytical and critical thinking
- capacity and motivation for intellectual development
- competency in peer reviewing and effective communication
- ability to work independently and collaboratively
- skills to locate, evaluate and use relevant information
- respect for ethical practice and social responsibility

Students are reminded that UNSW recommends that a 6 units of credit course should provide 150h of study and learning activities. The formal learning activities provided in this course are around 60-70h. It is then expected that students should at least dedicate the same number of hours to additional study using the material made available through this course.

Lectures

The lectures will provide you information on the epidemiology and the pathophysiology of ageing, immune, respiratory, metabolic and cardiovascular diseases. This information will be further used to implement exercise testing and prescription in those populations by taking into account the specificity of each populations and the interaction with the medications used. Lecture notes will be available in PDF format on **Web CT VISTA** (<http://vista.elearning.unsw.edu.au/webct/entryPage.dowebct>)

Tutorials

During the tutorials, a problem based learning strategy will be used to discuss testing exercise capacity in specific populations. Those tutorials will also help you to learn how to use scientific literature to improve exercise testing and prescription in those populations and how to analyse data collected during exercise tests.

Practicals

During the practicals you will learn clinical skills concerning exercise testing in clinical conditions that will consist of:

- lung function assessment (spirometry)
- cardiac activity monitoring (electrocardiography)
- exploring the metabolic and respiratory adaptations (gas analysis)

Timetable for HECS3541 – Session 1 – 2009.

Time	Lecture 1	Lecture 2	Lecture 3	Tutorial	Lab (225)
Week 1	Introduction - Ageing	Ageing	Ageing		
Week 2	Ageing	Asthma	Asthma	ECG	Pulmonary function assessment
Week 3	Chronic obstructive pulmonary diseases	Chronic obstructive pulmonary diseases	Cystic fibrosis		ECG
Week 4	Rehabilitation in respiratory diseases	Rehabilitation in respiratory diseases	Metabolic syndrome	Exercise testing in clinical population	Demonstration for exercise testing
Week 5	Metabolic syndrome	Type 2 diabetes	Type 2 diabetes	Exercise testing in clinical population	Demonstration for exercise testing
Week 6	Type 2 diabetes	Mid semester exam	Rehabilitation in metabolic diseases		Exercise testing
Week 7	Rehabilitation in metabolic diseases	Endothelial dysfunction	Hypertension	Exercise testing in metabolic diseases	Exercise testing
Week 8	Atherosclerosis	Coronary artery diseases	Myocardial infarction	Exercise testing in metabolic diseases	Exercise testing
Week 9	Peripheral arterial diseases	Chronic heart failure	Chronic heart failure		Exercise testing
Week 10	Immune system and exercise	Immune system and exercise	Immune system and exercise		Exercise testing
Week 11	Cancer	Cancer	Cancer		Exercise testing
Week 12	Cancer-HIV	HIV	Revision		

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.

- **TASK ONE:** Quiz offered at the end of each block of lectures on the 5 main topics to test your knowledge on the information delivered on these topics (weeks 2, 4, 6, 9, 12). Answers will need to be submitted through WebCT.

Submitting your answers (5% of final grade).

To get credited for doing this assessment, you will need to submit your answers by Friday 4pm the following week.

- **TASK TWO:** mid semester exam (after mid semester break – 1h)

First lecture in week 6 (25% of final grade).

This exam will test your knowledge on the diseases pathophysiology, the effects of exercise of the pathologies or symptoms and the potential interactions with medications during ageing and in respiratory or metabolic conditions.

- **TASK THREE:** Poster on individualised exercise testing in cardiovascular conditions to assess your capacity to set an individualised exercise test in this population and analysed the information obtained from this test (1 poster for 4 students, week 12). Data used for this poster should be acquired during the labs dedicated to Exercise testing (weeks 6-11).

Poster due on Monday 9am week 12 (25% of final grade).

To be able to prepare this document you will need to submit your group of four students working together, to select a specific condition amongst cardiovascular disorders and submit this information to the course coordinator by Friday 4pm in week 4.

Failure to provide timely information concerning your group and topic of interest will result in a penalty of 25% on your mark for this assignment.

This document should be presented as a power point or publisher document (A2 landscape format) and printed as a PDF file. It should be divided into four different sections.

The introduction should describe the physiopathology, epidemiology, symptoms, diagnosis of a given cardiovascular condition.

The methodology that should include

- **description of the pre testing procedures:** risk assessment, regular physical activity evaluation, spirometry, ECG/BP...
- **description of the protocol:** type of equipment, rationale for the test, parameters measured, precautions in the population, etc....

The analysis of the results: important information from the pre screening (categorisation, characteristic values, description of the profile of the patients), results from the test and analysis of the parameters of interest (graphs and tables).

References: no more than 5 references that should be fully quoted as footnotes

You will be asked to mark and provide feedbacks for 3 assignments (mark and feedback due by the end of week 12). Failure to provide timely marks and feedback will result in a penalty of 25% on your mark for this assignment.

- **TASK FOUR:** final exam (exam period – 2h)

During exam period (45% of final grade).

This exam will test your knowledge about the diseases pathophysiology, the effects of exercise of the pathologies or symptoms and the potential interactions with medications. It will also test your practical skills for testing patients, analysing the data obtained using the test, prescribing exercise using data from the tests and information from scientific literature.



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Clinical Exercise Physiology – HESC 3541 2009

Guidelines for marking the poster on exercise testing in cardiovascular disorders

This document should be presented as a power point or publisher document (A2 format) and printed as a PDF file. It should be divided into four different sections.

The introduction should describe the physiopathology, epidemiology, symptoms, diagnosis of a given cardiovascular condition.

The methodology that should include

- **description of the pre testing procedures:** risk assessment, regular physical activity evaluation, spirometry, ECG/BP...
- **description of the protocol:** type of equipment, rationale for the test, parameters measured, precautions in the population, etc....

The analysis of the results: important information from the pre screening (categorisation, characteristic values, description of the profile of the patients), results from the test and analysis of the parameters of interest (graphs and tables).

References: no more than 5 references that should be fully quoted as foot notes

Four sections need to be assessed:

Introduction (60 marks):	Epidemiology / Population affected / Risk factors Physiopathology / Alterations (cellular/organ level) / Treatments Symptoms / Diagnosis (method, values, etc...) / Categorisation Limitations / Complications
Method (60 marks):	Anthropometry Medical history / Previous examinations / blood tests / exercise tests Lifestyle / Classification Description of the testing procedure and parameters measured and / or monitored during the testing Special considerations / condition and treatments of the client
Results analysis (60 marks):	Anthropometry and categorisation / general population Analysis of the data collected and determination of specific parameters to determine physical capacity and condition of the patient (aerobic fitness e.g. VO ₂ max, metabolic or respiratory response to the test e.g. ventilatory threshold, double product break point, cross over point, lipoxmax) Inclusion of pertinent graphs and description of the method to calculate specific parameters
Document (20 marks):	Clear, concise and informative Creative, engaging and useful Adapted to AEP audience Individualised testing procedure Address a condition in the range of cardiovascular disorders References fully quoted as footnotes

ADMINISTRATIVE MATTERS

Consultation hours

The course co-ordinator will be available for consultation in his office between 4-5pm on Monday throughout the session. To meet with the lecturer outside these hours, please arrange a mutually convenient time via e-mail.

Communication via email

Students are advised that e-mail is the official means by which the School of Medical Sciences at UNSW will communicate. All emails will be sent to the official UNSW e-mail address (e.g. z1234567@student.unsw.edu.au). Getting the official correspondence forwarded from the UNSW email address to a different email address must be organised by the student.

Correspondence with the course coordinator or any other UNSW member should always include a signature allowing the recipient to identify the sender.

It is recommended to check this address at least every other day. Facilities for checking e-mail are available in the School of Medical Sciences and in the University library. Further information and assistance is available from DIS-Connect, ph. 9385 1777.

Free e-mail courses are run by the UNSW Library.

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 each week. Students who do not participate in laboratories 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 lecture classes, they will be refused final assessment and therefore fail the entire course.

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 (e.g. 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. Mobile phones should be turned off upon entry into the lab and should not be used during the lab sessions.

Penalties for Submission of Late Work

In cases where an extension has NOT been granted, the following penalties will apply:

1. For assignments submitted after **9.00am** on the due date, a penalty of 50% of the maximum marks available for that assignment will be incurred.
2. 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. Please refer to your university handbook for further information.

Application for special consideration for missed assessments / exams
Please note the following Statement regarding Special Consideration.

If you believe that your performance in a course, either during session or in an examination, has been adversely affected by sickness, misadventure, or other circumstances beyond your control, you should notify the Registrar and ask for special consideration in the determination of your results. Such requests should be made as soon as practicable after the problem occurs.

Applications made more than three working days after an examination in a course will only be considered in exceptional circumstances.

When submitting a request for special consideration you should provide all possible supporting evidence (eg medical certificates) together with your student number and enrolment details. Consideration request forms are available from Student Central in the Chancellery or can be downloaded from the web page linked below.

Note that normally, if you miss an exam (without medical reasons) 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 on time.

Students who apply for consideration to Student Central must also contact the course convenor immediately.

All applications for Special Consideration will be processed in accordance with UNSW policy (see: <http://my.unsw.edu.au/student/atoz/SpecialConsideration.html>). If you miss an assessment and have applied for Special Consideration, this will be taken into account when your final grade is determined. You should note that marks derived from completed assessment tasks may be used as the primary basis for determining an overall mark. Where appropriate, supplementary examination may be offered, but only when warranted by the circumstances.

Course evaluation and development.

Every year, feedback from the student is collected through the Course and Teaching Evaluation and Improvement (CATEI) organised online by UNSW. This evaluation and feedback are used to constantly improve the course content and make it more relevant to the students. Significant changes are then communicated to the following cohort of students.

This year additional tutorials on exercise testing analysis have been introduced to provide a better preparation for the assignment and a better training to the students.

TEXTBOOKS (Recommended):

Textbook 1: Brooks G.A., Fahey T.D. and Baldwin K.M. (2004). Exercise Physiology, human bioenergetics and its application. McGraw-Hill. 4th Ed.

Textbook 2: Hampton R.J. (2008). The ECG made easy. Churchill Livingstone Elsevier. 7th Ed.

Textbook 3: LeMura L.M. and von Duvillard S.P. (2004). Clinical Exercise Physiology: Application and Physiological Principles. Lippincott Williams and Wilkins. **(Purchase at the bookshop, Also in special reserve)**

Textbook 4: Ehrman J.K., Gordon P.M., Visich P.S. and Keteyian S.J. (2003). Clinical Exercise Physiology. Human Kinetics. **(Purchase at the bookshop, Also in special reserve)**

Textbook 5: American College of Sports Medicine (2006). ACSM's Guidelines for Exercise Testing and Prescription. Lippincott Williams and Wilkins. 7th Ed

Library support for Undergraduate students**Reference Services**

For basic reference enquiries come to the Level 2 Service desk, call 9385 2650, or email libraryinfo@unsw.edu.au. If your enquiry is more detailed you will be referred to a subject specialist who can provide a more in-depth response.

Online Tutorials

The ELISE tutorial <http://elise.library.unsw.edu.au/> is a beginners tutorial to help give you the basic knowledge about dealing with information appropriately.

The new Library Online Information Skills Tutorial <http://info.library.unsw.edu.au/skills/tutorials/InfoSkills/sitemap.htm> is a task-based approach to information literacy and the skills you need to be effective. It contains modules on searching databases (which include videos and screen captures), evaluating different types of resources like peer-reviewed journals and websites and citing references.

The ELISE postgraduate tutorial <http://pgelise.library.unsw.edu.au/> will help you develop your information skills to advanced undergraduate level. The five modules will step you through the fundamental processes of research and information seeking, they cover; selecting and searching, finding and using and critically evaluating all sources of information

Subject Guides

The Subject Guides <http://info.library.unsw.edu.au/web/guides/guides.html> are designed to be your starting place for research, or for when you have a topic and not much else. These bring together the core web and print resources in one place and provide a one click portal into the online resources.

How to use Guides

The How to use Guides <http://info.library.unsw.edu.au/skills/howto/howto.html> are excellent step-by-step guides on how to use the main library tools, the databases and catalogue. Guides have screen captures, FAQs and video footage of actual searches.

Database Help sheets

The Database Help sheets <http://info.library.unsw.edu.au/skills/helpsheets.html> include cheat sheets for specific databases. They help you learn the tips and tricks of individual databases.