



THE UNIVERSITY OF NEW SOUTH WALES

Health and Exercise Science School of Medical Science Faculty of Medicine

UNIT TITLE : EXERCISE PHYSIOLOGY

UNIT CODE: HESC2501 Semester 2 2009

LECTURER: DR MARIA MATUSZEK
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RATIONALE: This unit explores the changes in human physiology when the body is exposed to exercise stress. The subject extends the basic principles of physiology covered in Physiology for Health and Sport Science A (PHPH2501) and Physiology for Health and Sport Science B (PHPH2502).

OBJECTIVES: The students will:
(i) develop comprehensive knowledge of the human physiological response to an acute bout of exercise
(ii) develop an understanding of measurement principles and techniques commonly utilised in exercise physiology

ORGANISATION : 2 hours per week Lecture (Wednesday 10am -12pm, Central Lecture Block-1)
2 hours Laboratory (Wednesday 2-4 pm or 4-6 pm)

ASSESSMENT	WEIGHTING	DATE
Exam 1	45%	Week 8 (Wed 16 th Sept)
Exam 2	50%	End semester examination period
Exam 3 (Skills)	5%	Week 12 or 13 (see timetable pg 6.)

Examination format: EXAM 1 and EXAM 2: Written exam comprised of multiple choice and/or short answer questions, and analytical interpretation of typical experimental situations. All written exams will cover both lecture and laboratory material. Exam 1 will cover week 2-7 of session, exam 2 will cover the ENTIRE semester. EXAM 3 will be held in weeks 12 and 13 during the laboratory and lecture timeslot and will be based on the assessment of a range of practical skills (which may include blood pressure, body composition, blood taking and ECG measurement). Further details will be provided by Dr Maria Matuszek during session.

UNIT ATTENDANCE

80% attendance is expected at lectures and **100% ATTENDANCE is expected at all laboratories** as specified by the lecturer. Attendance at laboratories is required to develop analytical skills using available equipment, and thus will be recorded each week. Students unable to participate for any reason other than medical, will be marked absent and will be awarded a grade of FAIL for the entire unit. If absent for medical reasons, a medical certificate must be lodged with the lecturer, Maria Matuszek **within 7 days** of the time period of the certificate's expiry. No consideration will be given after this time. It is the student's responsibility to demonstrate that he/she has met all

requirements of full-time attendance. A substitute laboratory or written assignment will be set by the lecturer, in place of a laboratory which has not been attended.

MISSED EXAMS

If you miss an examination due to medical reasons, medical certificates must be lodged with the lecturer Maria Matuszek **within 7 days** of the time period of the certificate's expiry. 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.

Without a medical certificate no supplementary exam will be scheduled and you will be awarded a grade of zero for that portion of the semester. 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.

CONDUCTION AT LABORATORY CLASSES

Students are required to bring to class, a printed copy of the laboratory which they are to download from webCT. It is recommended that students take the time to read the laboratory before coming to the designated laboratory session. All students must come prepared for active participation wearing clothing which is suitable for exercise, such as shorts or track pants, T-shirt or light sweater, and runners or cross-trainers. Students who do not have suitable attire with them (eg. open footwear) or do not have a legitimate reason for not participating (eg. medical complaint or injury) will be refused entry to the class and will then be marked absent. No consumption of food or drink is permitted in class. Late arrival may also result in refused entry to the class.

LABORATORY ASSIGNMENTS

It is your responsibility to write up the assignment following the completion of each laboratory. Laboratory material will be examined in each exam.

PRESCRIBED TEXT

- **McArdle WD, Katch FI, Katch VL (2007)** Exercise physiology. Energy, nutrition and human performance. (6th edition) Williams and Wilkins: Baltimore, USA.
- **Gore C, Edwards D (1992)** Australian fitness norms: a manual for fitness assessors. Health Development Foundation: South Australia.

RECOMMENDED TEXT

- **Powers SK, Howley ET (2001)** Exercise physiology. WCB/McGraw-Hill, Boston: USA.
- **Wilmore JH, Costill DL (1999)** Physiology of sport and exercise. (2nd edition) Human Kinetics. Champaign, IL.
- **DeVries HA, Housh TJ (1994)** Physiology of exercise. (5th edition) WCB Brown and Benchmark: USA.
- **Australian Sports Commission (2000)** Physiological tests for elite athletes. (Gore CJ. Editor) Human Kinetics. Champaign, IL.
- **ACSM guidelines for exercise testing and prescription (2000)** (6th edition)
- **Robergs RA, Keteyian SJ (2003)** Fundamentals of Exercise Physiology. WCB/McGraw-Hill, USA
- **Brooks GA, Fahey TD, White TP, Baldwin KM (2000)**. Exercise physiology: human bioenergetics and its applications. Mayfield Publishing Company. Mountain View. CA.
- **Schell J, Leelarthaepin B (1994)** Physical fitness assessment in exercise and sport science (2nd ed.) Leelar Biomediscience services, Sydney.
- **Jones DA, Round JM (1990)** Skeletal muscle in health and disease. Manchester University Press, Manchester, UK.
- **Hampton JR (1998)** The ECG made easy. Churchill Livingstone, Edinburgh, UK.
- **Houston ME (1995)** Biochemistry primer for exercise science. Human Kinetics, Champaign IL, USA.
- **Borer KT (2003)** Exercise endocrinology. Human Kinetics, Champaign, IL.
- **Baechle TR, Earle RW (2000)** Essentials of strength training and conditioning. Human Kinetics, Champaign IL, USA.
- **Batman P, van Capelle M (1995)** The exercise guide to resistance training. FIT4U Publications, Sydney, Australia.
- **Batman P, van Capelle M (1994)** Exercise analysis made simple. FIT4U Publications, Sydney.

Students are strongly advised to read the relevant chapters prior to attending lectures and laboratories. This will aid in the understanding of the content and concepts covered in this unit.

The above texts have been placed on reserve in the library. The reference list can be accessed online through the library home page. Go to [MyCourse@UNSW Library](#) and enter the 'Course Number' [drop-down menu] and [HESC2501](#) [students need to type in this number].

SUGGESTED JOURNALS

Journal of Applied Physiology
Medicine and Science in Sport and Exercise
Exercise and Sports Science Reviews
Australian Journal of Health, Physical Education and Recreation
Australian Journal of Science and Medicine in Sport
The Journal of Sports Medicine and Physical Fitness

Referencing

Referencing is a process that identifies the sources of information used in your assignment. Some of the main purposes of referencing are: to justify/support the position you take in your assignment, to show the arguments put forward by different writers, and to allow the reader to locate the sources used.

How to cite a source in your work

In the body of text you need to provide the author(s) surname and year of publication for a direct quote or paraphrase

A study investigating the preferred mode of exercise amongst cancer sufferers found that walking is the most popular (Jones and Courneya, 2002). Winningham et al (1986) recommends a moderate intensity performed 3 to 5 days per week for approximately 30 minutes per session.

When you provide a direct quotation, place the quote within “quotation marks” and acknowledge the author’s surname and year of publication

Brooks (2000) stated that “both biological and environmental factors jointly influence and individual’s personality development”.

Recent research shows that “children who are read to at home have a greater awareness of language and text” (Smith, 2001).

One author

Biological and environmental factors influence human development (Brooks, 2000).

Two authors

Green and Brooks (2001) noted that human development is a complex issue.

Three or more authors, use ‘et al’ which means ‘and others’

Winningham et al (1986) recommends a moderate intensity performed 3 to 5 days per week for approximately 30 minutes per session.

Several sources

Research shows that human development is a complex and multifaceted issue (Brooks et al, 1999; Green and Brooks, 2000; Harvey et al 1998).

Two or more works from the same author

When an author has written two or more pieces of work in the same year, distinguish each piece of work by sorting the titles of each book/article alphabetically and then identifying them as:

(Clarke, 2000a) (Clarke, 2000b) (Clarke, 2000c) (Brooks et al 2001a) (Brooks et al 2001b)

Authors with the same surname

Boutcher and Boutcher (2004)

Corporate author, when an organization or a group is the same author

First citation: (National Institute of Health [NIH], 1998); Subsequent citations: (NIH, 1998)

How to format sources for your list of references

Books

One author

Reents S. (2000) Sport and exercise pharmacology. Human Kinetics, Champaign, IL.

Mottram DR (2003) Drugs in sport . Routledge, London.

Two or more authors

Antonio J, Stout JR. (2001) Sports supplements. Lippinott Williams and Wilkins, Baltimore, Maryland.

Rang HP, Dale MM, Ritter JM (1999) Pharmacology. (4th edition) Churchill Livingstone, Edinburgh.

Edition other than first edition

Rang HP, Dale MM, Ritter JM (1999) Pharmacology. (4th edition) Churchill Livingstone, Edinburgh.

Reports

Authored report

Candy P, Crebert R, O'Leary J (1994) Developing lifelong learners through undergraduate education. Canberra: AGPS

Organisational report

Australian Sports Drug Agency (2004) Anti-doping information handbook. ASDA, Curtin, Canberra.
Sports Medicine Australia (2000) Drugs in sport: A health professionals handbook. Sports Medicine Australia, Canberra.

Articles

Chapter or article in an edited book

Ward A, Kuta J, Sanborn L, Burt C (2004) Breast cancer. In: Le Mura AM, von Duvillard SP (Eds) Clinical exercise physiology, Chp 26. Lippincott Williams and Wilkins, Baltimore, Maryland.

Journal article, volume and issue number

Bessant B (1996). Higher education in Australia: The unified national system. Education Research and Perspectives, 23(1): 110-123.

Journal article, volume but no issue number

Biley F, Smith K (1998). Exploring the potential of problem-based learning in nurse education. Nurse Education Today, 18: 353-361.

Newspaper article

Murray J (2001, September 22-23). Faith built on solid pillars. The Weekend Australian, p. 24.

Electronic sources

Internet sources (eg. Articles, journals, reports) are obtained online, and these documents are cited and referenced according to the 'author-date' format. If the reference was obtained from a database or a web site, the name of the database (e.g. ProQuest) or the website's URL address (e.g www....) must be included.

Electronic journal article

Peters M (2000) Does constructivist epistemology have a place in nurse education? Journal of Nursing Education 39 (4) 166-170. Retrieved May 10, 2001, from CINAHL database.

Electronic report

Department of Education, Training and Youth Affairs (2000). Higher education report for the 2000 to 2002 triennium. Retrieved October 20, 2000, from DETYA Web site:
www.detya.gov.au/highered/he_report/2000_2002/html_1/htm

How to construct a reference list

Start your reference list on a new page, and list all citation entries alphabetically, according to author

You may use the hanging indent format

Single space within each citation entry in the list, double space between citation entries in the list.

Week	Date	Lecture Topic	Tutorials/Readings	Laboratory-Wednesdays
2	29 th July	Introduction to exercise physiology Measurement of force, work, power (MM)	McArdle et al. (2007) pg xviii. Measurements of work, power and energy expenditure (self directed worksheet, electronic course notes Powers and Howley (2001) Ch 6	
3	5 th Aug	Nutrient use during aerobic and anaerobic exercise, metabolic mill, ATP yield Nutrient intake recommendations for rest and exercise (MM)	(1) Metabolism of carbohydrate (2) Macronutrient metabolism (fats/protein) (both on electronic course notes) McArdle et al (2007) Ch 1, 5, 6 Burke and Deakin (2006)	
4	12 th Aug	Endocrinological management of nutrient use in exercise Measurement of energy expenditure by calorimetry, RER, RQ (MM)	McArdle et al (2007) Ch 8, 11, 20 Borer (2003)	1. Gas analysis using the Douglas bag technique 2. Respiratory response to exercise Room 202 Wallace Wurth
5	19 th Aug	Exercise and the ECG (SB)	Hampton (1998)	
6	26 th Aug	ECG <i>continued</i> (GT)		Measurement of the ECG Room 202 Wallace Wurth
7	2 nd Sept	Cardiovascular response to exercise (MM)	McArdle et al (2007) Ch 15, 16, 17, 20	Cardiovascular response to exercise Room 202 Wallace Wurth
	9 th Sept	Mid-session break		
8	16 th Sept	Mid-session exam		
9	23 rd Sept	Lactate – production and measurement Assessment of aerobic power (MM)	McArdle et al (2001) Ch 7, 9, 10, 11, 21 Australian Sports Commission (2000) Ch 4, 6	The lactate threshold and OBLA in exercise Room 202 Wallace Wurth
10	30 th Sept	Respiratory response to exercise (MM)	McArdle et al (2007) Ch 12, 13, 14	VO ₂ max lab demonstration Room TBA <i>Use data from respiratory response to exercise lab which was collected in week 4.</i>
11	7 th Oct	Muscle fibre typing (MM)	Jones and Round (1990)	Skills practice
12	14 th Oct	Muscle fatigue Muscle damage (MM)	Brooks et al (2000) www.sportsci.org/encyc/drafts/Muscle_damage.doc	EXAM : Skills assessment Room TBA
13	21 st Oct	EXAM: Skills assessment Room TBA		EXAM: Skills assessment Room TBA

Please note that there may be some slight alterations to the above schedule.

MM= Dr Maria Matuszek; SB=A/Prof Steve Boucher; GT=Dr Gail Trapp; TBA= to be announced