

McMASTER UNIVERSITY
Department of Kinesiology

KINESIOLOGY 3L03

EXERCISE TESTING & PRESCRIPTION

Term 1

Fall 2017

Dr. K.R. Howarth (howartkr@mcmaster.ca; IWC 207; ext. 21868)

Office Hours: Thursdays 1pm – 3pm or by appointment

I. COURSE DESCRIPTION

The emphasis of this course will be on exercise testing and prescription for the healthy adult population. Field and laboratory techniques for exercise testing, interpretation, and exercise program prescription are major topics. Particular emphasis on test protocols for exercise assessment screening, counseling skills, cardiorespiratory endurance, musculoskeletal fitness, body composition and flexibility. The course features a blend of theory and practice. Students can apply this information to advanced fitness appraisal and prescription certifications (e.g. Canadian Society for Exercise Physiology: Certified Personal Trainer, Certified Exercise Physiologist). The course builds on the foundation of knowledge constructed in Kinesiology 1A03, 1AA3, 2E03, 2C03 and 2CC3 (anatomy and physiology and exercise physiology) and students will be expected to be familiar with concepts previously introduced in those courses.

II. COURSE OBJECTIVES

Course Content Objectives

Upon completion of this course, the student will be able to:

1. Describe the theoretical background related to the implementation of exercise testing for the healthy adult population (aged 15-69) according to the Canadian Society for Exercise Physiology (CSEP) Guidelines.
2. Explain the scope of practice of a CSEP Certified Personal trainer (CPT) and a CSEP Certified Exercise Physiologist (CEP) and the requirements for certification of each.
3. Describe the link between physical activity and health as it could be explained to a client as well as general anatomical and physiological changes that occur with exercise and training.
4. List and describe the components of a pre-appraisal screening.
5. Describe approaches to counseling including appropriate communication with clients, behavioral change and motivational interviewing.

6. Assess the validity, reliability and objectivity of an exercise test and related prediction equations.
7. Explain the importance of body composition assessment and describe the various assessment tools/protocols available.
8. Calculate percent body fat using data from various body composition assessment methods.
9. Describe how to develop an exercise prescription with the purpose of body composition changes, including calculations of energy expenditure.
10. List and describe the protocols for cardiovascular assessment used in the CSEP-PATH as well as a variety of field tests.
11. Describe/calculate how VO_2 max can be predicted from these cardiovascular tests.
12. Explain the various principles of exercise prescription.
13. Explain the basic guidelines and tools used for aerobic exercise prescription for health.
14. Explain the methods used for musculoskeletal fitness assessment used in the CSEP-PATH as well as predicting 1-RM.
15. Explain the basic guidelines and tools used for musculoskeletal exercise prescription for health.
16. Describe methods for performing various exercises including the proper use of exercise equipment, spotting, and exercise modifications.
17. Describe the assessment and prescription for flexibility and balance.
18. Describe the purpose and components of an emergency action plan for different exercise environments, including proper recognition and responses for a variety of adverse health events related to stable health conditions.
19. Explain the concept of professionalism and describe how it specifically pertains to a qualified exercise professional.
20. Describe the purpose and procedures for appropriate note taking and data storage including the use of SOAP notes and confidentiality.
21. Explain the basic legal considerations associated with being an exercise professional including liability, negligence, standard of care and risk management.

Skill and Value-Based Learning Objectives:

Upon completion of this course, the student will demonstrate competencies in:

- **The CSEP-PATH exercise testing protocol** which includes exercise test screening, counseling, assessment of body composition, assessment of cardiorespiratory fitness, assessment of musculoskeletal fitness and assessment of flexibility.
- **Interpret individual exercise test results** and incorporate these results into exercise prescriptions.
- **Counselling techniques for behaviour change** including motivational interviewing.
- **Development of exercise prescriptions and demonstration/modification of exercises** for body composition changes, aerobic fitness, MSK fitness and flexibility.
- **Development of emergency action plans and demonstration of safe exercise monitoring** for aerobic, MSK, flexibility and balance exercises.
- **Assessment of the validity, reliability and objectivity of an exercise test** and related prediction equations.
- **Other methods for assessment of body composition** including skinfold measurements, BodPod and bioelectrical impedance analysis (BIA).
- **Laboratory and exercise testing safety procedures** to ensure the safety of exercising individuals and during recovery from exercise.
- **Professionalism, proper record keeping and discretion** when dealing with subject privacy and data collection from the laboratory exercise testing.
- **Personal organization and time management** to multi-task, set priorities, and allocate time effectively to meet deadlines such as tests, pre-lab quizzes, exams, and lecture/lab attendance.
- **Professional interaction and communication** via email, online forums, and face to face meetings with professors, staff, teaching assistants, and peers.
- **Teamwork and interpersonal skills** by engaging in laboratory exercises and discussion boards.
- **Displaying appropriate and respectful behaviour** towards the instructor, staff, teaching assistants, and peers.
- **Reading** relevant course materials and demonstrating comprehension by completing lab reports, pre-lab quizzes, mid-term test, and final exam.

III. RESOURCES AND REFERENCE MATERIAL

- Canadian Society for Exercise Physiology – Physical Activity Training for Health (CSEP-PATH)© 2013 ISBN 978-1-896900-32-2 (1-896900-32-1)
- Lab exercises posted on Avenue
- Additional course readings as posted on Avenue

IV. TOPIC OUTLINE

Topics that will be covered include:

- CSEP: Objectives and certifications
- CSEP certifications: CPT and CEP scope of practice
- CSEP Path – Foundations: PA and health
- Pre-appraisal screening
- Emergency action plans
- Behavior change theories and motivational interviewing
- Determining validity, reliability and objectivity of exercise tests
- SOAP notes
- Principles of exercise prescription
- Body composition
 - theory, assessment techniques, calculation of body fat, interpretation of results and exercise prescription for body composition changes.
- Cardiorespiratory fitness
 - theory, assessment techniques including field tests, prediction of VO_2 max, interpretation of results and exercise prescription for aerobic fitness.
- Musculoskeletal (MSK) fitness
 - theory, assessment techniques, prediction of 1RM, interpretation of results and exercise prescription and monitoring for MSK fitness.
- Professionalism and legal issues

V. EVALUATION

The following system shall be used to determine the student's final grade. Changes to the grading scheme are NOT permitted under any circumstances.

Term Test - <u>Saturday, October 28, 2017 - 9:00-11:00am</u>	25%
Final Exam – scheduled by the registrar	25%
In-class iclicker	6%
Pre-Lab Quizzes	(6 quizzes x 1% per lab) total 6%
Laboratory Reports	(3 reports x 9% per report) total 27%
Exercise Prescription Report	11%
<u>Due December 8 by 6pm on Avenue</u> (see full submission instructions on Avenue)	

The term test and exam will consist of multiple choice, short answer and essay questions.* Calculations from sample exercise test data will be included. All material covered in the course including the posted readings and labs will be represented on the test.

* *The instructor reserves the right to change the format of any deferred term test.*

iclicker assessment - Due to the possibility of absences or technical difficulties, 90% of the questions correct over the term will equal 100% (eg. if 30 questions are asked, 27 correct responses would count as 100%). Marks will then be calculated as a percentage of this maximum. **MSAF will not be accepted for missed iclickers.** Not all iclicker questions in class will be for grades; only those specified by the instructor.

iclicker Testing Rules:

1. All class notes and any other reference material are not allowed during iclicker testing
2. No electronics allowed during iclicker testing (aside from your iclicker remote)
3. Testing is an independent assessment, so no talking at that time.
4. Absolutely no recording devices during iclicker testing. If you use one, I will charge you with academic dishonesty.

VI. LABORATORY EXERCISES

1. Purpose

Integral part to this course are the laboratory exercises, which are designed to give students an opportunity to gain practical experience in each of the main areas of exercise testing contained in the CSEP-PATH protocol. Each student will have an opportunity to act as a Personal Trainer and as a client during each laboratory and it is imperative from a safety and efficiency perspective that students arrive prepared for the labs.

Specific lab dates are during the weeks of: Sept 18, Sept 25, Oct 16, Oct 23, Nov 6 and Nov 13.

2. Lab Exercises

The laboratory exercises and assignments will be posted on Avenue throughout the term. Also refer to Section B of the CSEP-PATH Manual for detailed descriptions of testing procedures used in many of the lab exercises.

3. Pre-Lab Quizzes

Pre-Lab quizzes will be conducted at the start of each lab session and will relate to the posted laboratory exercise material and readings.

4. Lab Submission Procedure

(A) The format of each report will include the raw data from the laboratory exercises for a two week block, the interpretation of the data and the response to the associated questions contained in the laboratory description. Students should make every effort to test the same “client” (classmate) for each of the labs so that they data can be associated between labs.

(B) Lab reports are considered individual assignments and normal University policies regarding academic honesty will apply (see below). In this course we will be using a web-based service (Turnitin.com) to reveal plagiarism. Students can submit their work electronically via the Avenue course dropboxes which use Turnitin.com to check for academic dishonesty. Students who do not wish to submit their work through

Turnitin.com must instead submit a hard copy to their TA by the same deadline as for the electronic dropboxes. No penalty will be assigned to a student who does not submit work through Turnitin.com. To see the Turnitin.com policy, please go to www.mcmaster.ca/academicintegrity

(C) Each lab report will cover content from two consecutive lab sessions (ie six lab sessions, but only three reports total). Each report should be handed in ON AVENUE before the beginning of your next scheduled lab session (i.e., report for labs #1/2 is due before the start of lab #3). The submission for the final lab report will be 1 WEEK from the start of the final lab (i.e. during the week of Nov 20).

(D) All lab reports **MUST** be submitted in WORD or PDF format.

(E) Lab reports **MUST** be typed otherwise they will NOT be accepted. Each lab report **MUST** include a separate cover page that lists student name, ID number, lab number, name of lab instructor, and lab time slot.

(F) Failure to hand in your lab before your next lab session will result in a mark of ZERO being assigned for that report, unless there is a legitimate reason (see below). Normally there should be no excuse for failing to hand in a report, since every student is expected to attend all labs during their assigned time slot.

(G) If you are unable to attend a lab for a legitimate reason such as illness, the appropriate documentation must be submitted to the Office of the Associate Dean (ie MSAF). In this instance, you **MUST** advise the instructor of your absence as soon as possible. You should also arrange with the instructor and your laboratory partner to conduct the laboratory exercise at a mutually convenient time.

VII. ATTENDANCE

Attending all sections of the course will be key to your success. All students are expected attend lectures and labs as well as complete all pre-lab quizzes and post-lab exercises, and exams. **Attendance is MANDATORY at your lab.** If you do not attend your scheduled lab, you will not be given the grades you achieve on your lab report.

VIII. LABORATORY SAFETY

Laboratory Safety procedures will be reviewed during the first lab of the year. A number of the labs involve testing on your classmates and various forms of exercise. You are expected to adhere to the laboratory guidelines at all times. Failure to do so will result in removal from the laboratory setting. Several labs will also involve examination of physiological responses on student volunteers. All risks and procedures are outlined in the labs posted on Avenue and it is your responsibility to review these prior to attending the lab. Participation in the labs both as a “Personal Trainer” and as a “Client” are requirements of this course. If you are unable to participate fully in all aspects, you should reconsider your registration in this course.

IX. EXERCISE PRESCRIPTION REPORT

The purpose of the exercise prescription report is use the exercise testing data collected in the labs along with the theoretical prescription knowledge learned in lectures to design a full prescription for your “client” in a timely manner. Prescriptions will include aerobic, resistance, balance and flexibility components and the report will also include explanations of those chosen components. Students will also submit videos demonstrating exercise monitoring techniques. Further details on the exercise prescription report will be provided on Avenue during the term.

X. POLICY REGARDING DEFERRED TESTS

Students who miss the midterm for legitimate reasons such as illness may be allowed to write a deferred or "make-up" test. The format is usually different from the regularly scheduled test/exam and typically requires written responses to short-answer or essay-type questions. For all instances, appropriate documentation must be submitted to the Office of the Associate Dean, Faculty of Science (BSB 129) within 3 business days of the missed work. The MSAF cannot be used without this documentation being submitted and approved because the midterm is 25% of the final grade (see <http://academiccalendars.mcmaster.ca/content.php?catoid=13&navoid=2208#Requests for Relief for Missed Academic Term Work>).

XI. MCMASTER STUDENT ABSENCE FORM

If you are absent from the university for a minor medical or personal reason, lasting fewer than 3 days, you may report your absence, without documentation, using the McMaster Student Absence Form (as long as the missed work is worth less than 25% of the final course grade). Absences for a longer duration or for other reasons (eg. Religious) must be reported to your Faculty/Program office, with documentation, and relief from term work may not necessarily be granted. When using the MSAF, report your absence to howartkr@mcmaster.ca. Then contact the instructor/lab TA immediately (normally within 2 working days) by email/in person to learn what relief may be granted for the work you have missed, and relevant details such as revised deadlines, or time and location of a make-up lab.

XII. ACADEMIC ACCOMMODATION OF STUDENTS WITH DISABILITIES

Students who require academic accommodation must contact Student Accessibility Services (SAS) to make arrangements with a Program Coordinator. Academic accommodations must be arranged for each term of study. Student Accessibility Services can be contacted by phone 905-525-9140 ext. 28652 or e-mail sas@mcmaster.ca. For further information, consult McMaster University’s Policy for Academic Accommodation of Students with Disabilities. <http://www.mcmaster.ca/policy/Students-AcademicStudies/AcademicAccommodation-StudentsWithDisabilities.pdf>

XIII. COMMUNICATION POLICY & ON-LINE LEARNING RESOURCES

Announcements regarding scheduled test and lab dates, potential changes to course content and other information or updates relevant to the course will be communicated to students during lectures. Students are expected to take all necessary steps to obtain this information, the primary means being regular class attendance. McMaster e-mail accounts and **Avenue to Learn** may also be used communicate information to students.

Avenue to learn: avenue.mcmaster.ca

- Students are expected to check **Avenue** at **least twice each week**. **Avenue** will be the instructor's main method of communication with students.
- Students are responsible for any course content that is delivered via **Avenue**. Details regarding this online content will be given in class.
- It is the responsibility of the student to take all necessary steps to find out about course changes including, but not limited to, class attendance, changes to schedules, announcements and instructions.
- Any instructions/announcements that are verbally given in lecture are the responsibility of the student.
- **The instructor will only communicate with students via their official McMaster email account.**

Students should be aware that, when they access the electronic components of this course, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course. The available information is dependent on the technology used. Continuation in this course will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure please discuss this with the course instructor.

XIV. ACADEMIC INTEGRITY

Academic dishonesty consists of misrepresentation by deception or by other fraudulent means and can result in serious consequences (e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript reading "Grade of F assigned for academic dishonesty", and/or suspension or expulsion from the university). It is your responsibility to understand what constitutes academic dishonesty. For information on the various kinds of academic dishonesty please refer to the Academic Integrity Policy, specifically Appendix 3, located at:

<http://www.mcmaster.ca/univsec/policy/AcademicIntegrity.pdf>

The following illustrates only three forms of academic dishonesty:

- Plagiarism (e.g. the submission of work that is not one's own or for which other credit has been obtained).
- Improper collaboration in group work.
- Copying or using unauthorized aids in tests and examinations.

XV. USE OF COURSE MATERIALS

Course materials provided by the instructor are for use by students registered in this class only. Under no circumstances are these materials to be shared, posted or sold to a third party without permission from the instructor. This includes, but not limited to, online posting of lecture/lab notes, online lectures, recordings of lectures, or any lab materials on a website other than the Avenue site designed for the course.

XVI. COURSE OUTLINES AS CONTRACTS BETWEEN STUDENTS AND THE UNIVERSITY

The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes. Also, the course instructor will maintain an Avenue to Learn component for the course and students are expected to monitor (i.e., check the Avenue to Learn notice board and postings) at least twice per week and be aware of any changes that are made.

XVII. STUDENT SUCCESS CENTRE

The Student Success Centre (SSC) is a resource for all McMaster students and offers services in several areas including Academic Concerns. SSC is located in Gilmour Hall (GH) 110 and their website can be found at: <http://studentsuccess.mcmaster.ca>

Students can speak to academic counselors or review materials online to help with:

- Marks, test results, academic performance
- Motivation, interest in courses, sense of direction
- Time management, study habits, personal organization
- Stress in dealing with the academic workload
- Listening and note taking in university lectures
- Reading for university courses
- Preparing for or writing tests and exams; multiple-choice tests

XVIII. FEEDBACK

It really helps us improve our services when we hear from our students, faculty and staff about what we can do better. A feedback process brings to our attention situations in which we may not have adequately considered accessibility and allows us to better plan for accessibility in the future.