

Body Composition & Obesity
KINE 5390
Spring 2009

Instructor: **Dr. Barry C. McKeown**
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231 Exercise Science Research Laboratories (ESRL)
Maverick Activities Center

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Meetings: Lecture/Laboratory Wednesday (5:00 pm – 9:50 pm)
222 ESRL

Office Hours: T & Th 12:30 – 2:00 pm and W 4:00 – 5:00 pm or by appointment

Credit: 3 semester credit hours

Textbook: Applied Body Composition Assessment. Vivian Heywood and Dale R. Wagner,
Second Edition, Human Kinetics, 2004.

Human Body Composition. Steven B. Heymsfield, Timothy G. Lohman, ZiMian Wang and Scott B. Going, Editors, Second Edition, Human Kinetics, 2005.

Purpose of the Course:

The classroom and laboratory experiences of this course are intended to develop knowledge of techniques used to evaluate body composition and structure and skill in their use. It is also expected that students will understand how these measurements are to be utilized in the sports sciences.

Course Objectives:

Upon successful completion of this course, the student should have achieved the following:

1. Be able to identify landmarks for all sites as described in class or in the textbook.
2. To demonstrate ability to take any of the measurements.
3. Know the limitations of these measurements and be familiar with applications of anthropometry in exercise science.
4. Understand the scientific rationale for body composition measurements.
5. Understand the theoretical models and assumptions underlying body composition assessment.
6. Understand the importance of body composition for health and fitness.
7. Critically evaluate the laboratory and field methods used to measure body composition in terms of validity, reliability, and practicality.
8. Understand the effects of age, ethnicity, gender activity level, and level of body fatness on body composition and be able to select the appropriate method for assessing body composition of various subgroups of the population.
9. Accurately measure body composition using the following methods: hydrostatic weighing, bioelectrical impedance, skinfolds, and anthropometry.

Bariatrics: The branch of medicine that deals with the cause, prevention, and treatment of obesity. The term “bariatrics” was created circa 1965 from the Greek root baros (“weight,” as in barometer) and suffix –iatrics (“a branch of medicine, “as in pediatrics). Besides the pharmacotherapy of obesity, it is concerned with obesity surgery.

Overweight and obesity are rising medical problems of pandemic proportions. There are many detrimental health effects of obesity: heart disease, diabetes, many types of cancer, asthma, obstructive sleep apnea, chronic musculoskeletal problems, etc. There is also a clear effect of obesity on mortality, though this not so clear for those who are overweight.

Therefore, my proposed name for this course is **Pediatric to Geriatric Bariatrics**.

Subject Matter to be Presented:

This will include information from the textbook as well as additional lecture topics that will supplement the text. The tentative schedule will be as follows:

Chapter 1	Body Composition Basics	
Chapter 2	Regression	
Chapter 3	Body Composition Reference Methods	Labs
Chapter 4	Skinfold Methods	Skinfolds
Chapter 5	Anthropometry	Anthropometry
Chapter 6	Bioelectrical Impedance	BIA, NIR
Chapter 7	Near Infrared Interactance Method	
	Hydrostatic Weighing and residual volume	UWW, RV
	Estimating Muscle Mass	
Chapter 2	Statistical Methods for predictive equations	Data from BP labs
Chapter 8	Body Composition and children	
Chapter 9	Body Composition in older adults	
Chapter 10	Body Composition and ethnicity	
Chapter 11	Body Composition and athletes	BMI, WHR
Chapter 12	Body Composition and special pops	Somatotyping
Chapter 15	Assessing changes, imaging, ultrasound	Phantom analysis
	Genetic and hormonal influences on BC	

Principle Learning Activities

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|---------------------------------|--------------------------|
| A. Class Lecture and Discussion | B. Textbook Assignments |
| C. Laboratory Experiences | D. Supplemental Readings |

Possible laboratory experiences: Measurement of classmates, Kinesiology undergraduate majors, students in activity classes, athletes, adult fitness programs, other special populations.

Participation in UTA ACES and/or Department of Kinesiology Student Research Day (last Wednesday of semester) with either poster or oral communication, UTA Department of Kinesiology Journal of Obesity, presentation at TACSM – 2.1.09 deadline with conference 2.26-27 at UTT, TAHPERD – 12.2-5 at Arlington Convention Center, manuscript in TAHPERD Journal, JOPERD, American Journal of Health Education, etc..

Evaluation:

A. Class Presentations	30%
B. Laboratory Experiences	30%
C. Research	40%
Poster (10)	
Oral (15)	
Manuscript (15)	

Wednesday May 13, 2009 – 5:00 pm

Assessment of Performance in Course:

90% = A 80% = B
70% = C 60% = D

Quality of written assignments will be enhanced by following correct writing techniques which will include, but is not limited to correct spelling, sentence structure, paragraph usage, capital letters, punctuation and noun-verb agreement. All written work including exams, quizzes, laboratory assignments and papers will be evaluated according to these rules of writing with the incorrect parts appropriately noted. Each final assessment will reflect a one-fourth point decrement in evaluation per incorrect notation.

Laboratory Write-ups

- A. **Introduction** – a brief introduction into the background and purposes of the experiment. Include definitions of key terms and how they relate to the experiment. The Introduction should always conclude with a statement of the purpose (or purposes) of the experiment.
- B. **Methods** – include (in order) a description of the subjects, data collection procedures (with instrumentation), and which statistical procedures were performed. Another investigator should be able to reproduce your experiment **exactly** by reading your methods section.
- C. **Results** – findings of the experiment should include the data and statistical analysis.
- D. **Discussion** – each assignment has a series of questions that should be addressed in this section. The results of the experiment should be used in answering the questions and the purposes of the study.
- E. **Conclusion** – briefly summarize the major findings of the study. What can be concluded from these findings?

General Rules for Major Lab Write-ups:

1. Never write in the first person (I, we, us etc...)
2. In Methods section, ALWAYS write in past tense. (“The skinfolds were taken on the right side of the body”). DO NOT describe in future tense (“The skinfolds will be taken on the right side of the body”).
3. DO NOT merely list the instruments that were used during data collection. Incorporate the instruments that were used within the body of the Methods section (“Ventilation, VO₂, and tidal volume were measured using a metabolic cart (SensorMedics MMC Horizon”).
4. Never give the subject’s identity (“The subject for this experiment was Jason W.”). Instead, give the subject characteristics (“The subject was a physically fit 22 year old female.”).
5. DO NOT number the discussion section. Answer in paragraph form without numbering.
6. DO NOT list and define the key terms. Define within the flow of the Introduction.

7. You will be counted off for poor sentence structure (Fragments and run-ons), and misspellings.

Refereed Article Reviews

The purposes of these assignments are:

- (1) to become familiar with the literature in the field of Body Composition,
- (2) to gain experience reading refereed journal articles and
- (3) to be able to summarize the article in your own words. Someone else reading your review of the article should gain a clear understanding of why the study was done, how it was done, the results and the conclusions which were drawn.

A topic will be assigned each week. You are to find a fairly recent article (post 1995 whenever possible) and write a one to two page article review that will be given to each member of the class. Also be prepared to give a 15 minute overview of the study. Visual aids are suggested. Please provide me with a copy of your article by Tuesday morning before you are scheduled to make your presentation. Utilize the correct writing technique (i.e. complete sentences) for the reviews. The refereed research article review should contain the sections listed below. Please identify the section by name. The point values are listed in parentheses.

- (10) 1. Reference – This part will be written according to the style (United States Library of Medicine and employed in Index Medicus) demonstrated in class and used in *Medicine & Science in Exercise and Sport*.

For Example:

Dougherty KA, Chow M, Kenney WL. Responses of lean and obese boys to repeated summer exercise in the heat bout. *Med Sci Sports Exerc.* 2009;41:279 – 289.

- (10) 2. Purpose of the Study – Why was the study done? The article will usually state, “The purpose of the investigation was...” (one sentence).

- (30) 3. Methods or Scope of the Study –

- a) Subjects: Please list the following: 1) number, 2) sex, 3) age, 4) height, 5) weight, 6) nature (e.g. obese, athlete, non-athlete, etc.)
- b) Protocol: How was the study conducted? List (enumerate, e.g. 1,2, etc.) those procedures pertinent to the study.
- c) Instrumentation: List (enumerate, e.g. 1,2, etc.) the types of instruments, which were used in the data collection.
- d) Training Program: If a training program was used, describe it. If a training program was **not** used, write NA for not applicable.

- (40) 4. Results or Findings of the Study – List (enumerate; 1,2, etc.) in your own words what was found in the investigation. Be thorough and specific (list physiological values).

- (10) 5. Conclusions—List those conclusions which were drawn from the results of this study. The conclusion must match the purpose of the study.

5. Departmental Lectures

There will be two departmental lectures. (The Anderson Sport Performance Lecture and The UTA-American College of Sports Medicine Lecture) scheduled during the Enrichment Hour (12:00 Noon Monday or Wednesday) that are required labs. If you cannot attend, there will be an article by the speaker for your review (the same format as for class). Additionally, there are the 12:00 Noon Wednesday Exercise Science Seminars that you are expected to attend.

Department of Kinesiology – Drop Policy

*It is the responsibility of the student to **add or drop classes or withdraw from school** within the appropriate time frame established by the University Registrar. (The departments are not allowed nor obligated to add or drop students from classes.) Deadlines can be found in the current Schedule of Classes. **Deadlines may differ for Graduate Students and Undergraduate Students.***

Americans with Disabilities Act

If you require an accommodation based on disability, I would like to meet with you in the privacy of my office the first week of the semester to be sure you are appropriately accommodated.

Grade Grievance Deadline Policy

The student has one calendar year from the date a grade is assigned to initiate a grievance. The normal channels are: Department Chair or Program Director; Academic Dean; and the Provost.

Student Support Services: The University supports a variety of student success programs to help you connect with the University and achieve academic success. They include learning assistance, developmental education, advising and mentoring, admission and transition, and federally funded programs. Students requiring assistance academically, personally, or socially should contact the Office of Student Success Programs at 817-272-6107 for more information and appropriate referrals.

Academic Dishonesty: Academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form at The University of Texas at Arlington. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include suspension or expulsion from the University.

“Academic dishonesty includes, but is not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.” (Regents’ Rules and Regulations, Part One, Chapter VI, Section 3, Subsection 3.2, Subdivision 3.22).

Bomb Threats: If anyone is tempted to call in a bomb threat, be aware that UTA will attempt to trace the phone call and prosecute all responsible parties. Every effort will be made to avoid cancellation of presentations/tests caused by bomb threats. Unannounced alternate sites will be available for these classes. Your instructor will make you aware of alternate class sites in the event that your classroom is not available.

Library Information: Helen Hough is the Department of Kinesiology Exercise Science Librarian. She can be reached at 817-272-7429 and by e-mail at hough@uta.edu. You will find online databases for researching Kinesiology at: <http://www.uta.edu/library/mavinfo/sport.html>