

University of Florida
Department of Applied Physiology and Kinesiology
PET5936 Nutrition Guidelines for Human Performance

Fall 2017

Class Day/Time: Tues 10:40AM - 1:40PM

Instructor: Dr. Blain Harrison
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 Office hours: MWF 9:30 - 10:30, or by appointment

Course Syllabus

Course Description

This course offers an advanced overview of the roles nutrient selection, metabolism, and timing play in supporting and improving human physical performance. Emphasis will be placed on applying evidence-based strategies and recommendations to realistic case studies as well as on preparing students to sit for certification exams within the exercise sciences that include nutrition as a component. In addition, current controversies within the field will be critically evaluated and topics of student interest within the field will be explored.

Course Objectives

At the end of this course the student will be able to:

- Apply knowledge of exercise bioenergetics to performance training programs.
- Conduct an energy and nutrient intake analysis on a healthy adult engaging in athletic endeavors.
- Explain the major functions of individual macronutrients and micronutrients in the maintenance of homeostasis.
- Select appropriate macronutrient intake strategies to maximize anaerobic and aerobic exercise performance.
- Plan vitamin and mineral intakes based on the current body of scientific knowledge regarding the ergogenic properties of each vitamin and mineral with respect to athletic endeavors.
- Analyze the scientific literature related to the effectiveness of various dietary strategies that have been used for weight loss or weight gain.
- Provide a rationale for a nutrition intervention strategy to be used before, during, and after a bout of either aerobic or anaerobic training.
- Select any safe and effective supplemental nutritional ergogenic aids that may enhance the physical performance of a given individual based on current scientific evidence.
- Create a sample nutrition periodization program for either an aerobic or anaerobic athlete.
- Discuss the special nutritional needs of active youth, women, and master's athletes.
- Identify nutrients that support the recovery from athletic injuries or illnesses.
- Recommend nutritional strategies to aid the traveling athlete in maintaining physical readiness for competition.
- Clarify the scope of practice of an exercise professional as it relates to nutrition, and the importance of collaborating with licensed nutrition professionals (RDNs).

Required Textbooks

Burke, L. and Deakin, V. *Clinical Sports Nutrition 5th Edition*. McGraw Hill, 2015. (e-book of select chapters)

Campbell, B. and Spano, M. (Eds.). *NSCA 's Guide to Sport and Exercise Nutrition*. Human Kinetics. 2011.

Additional Readings (to be provided on Canvas)

- La Bounty, et al. *International Society of Sports Nutrition position stand: meal frequency*. Journal of the International Society of Sports Nutrition 2011, 8:4.
- Kerksick, et al. *International Society of Sports Nutrition position stand: Nutrient Timing*. Journal of the International Society of Sports Nutrition 2008, 5:17.
- Campbell, et al. *International Society of Sports Nutrition position stand: Protein and Exercise*. Journal of the International Society of Sports Nutrition 2007, 4:8.
- Goldstein, et al. *International Society of Sports Nutrition position stand: Caffeine and Performance*. Journal of the International Society of Sports Nutrition 2010, 7:5.
- Wilson, et al. *International Society of Sports Nutrition position stand: beta-hydroxy-beta-methylbutyrate (HMB)*. Journal of the International Society of Sports Nutrition 2013, 10:6.
- Trexler, et al. *International Society of Sports Nutrition position stand: Beta-Alanine*. Journal of the International Society of Sports Nutrition 2015, 12:30.
- Buford, et al. *International Society of Sports Nutrition position stand: Creatine supplementation and exercise*. Journal of the International Society of Sports Nutrition 2007, 4:6.
- Campbell, et al. *International Society of Sports Nutrition position stand: energy drinks*. Journal of the International Society of Sports Nutrition 2013, 10:1.
- Kreider, R.B., et al. *ISSN exercise & sport nutrition review: research & recommendations*. Journal of the International Society of Sports Nutrition 2010, 7:7.
- Jeff S. Volek, Timothy Noakes & Stephen D. Phinney (2015) *Rethinking fat as a fuel for endurance exercise*, European Journal of Sport Science, 15:1, 13-20.
- Benjamin T. Wall, James P. Morton & Luc J. C. van Loon (2015) *Strategies to maintain skeletal muscle mass in the injured athlete: Nutritional considerations and exercise mimetics*, European Journal of Sport Science, 15:1, 53-62
- Daniel J. Owens, William D. Fraser & Graeme L. Close (2015) *Vitamin D and the athlete: Emerging insights*, European Journal of Sport Science, 15:1, 73-84
- Caoileann H. Murphy, Amy J. Hector & Stuart M. Phillips (2015) *Considerations for protein intake in managing weight loss in athletes*, European Journal Sport Science, 15:1, 21-28
- Jonathan D. Bartlett, John A. Hawley & James P. Morton (2015) *Carbohydrate availability and exercise training adaptation: Too much of a good thing?*, European Journal Sport Science, 15:1, 3-12
- Thomas DT, Erdman KA, Burke LM. Position of the Academy of Nutrition and Dietetics, Dietitians of Canada, and American College of Sports Medicine: Nutrition and Athletic Performance. *J Acad Nutr Diet*. 2016;116:501-528. (Available at: <http://www.eatrightpro.org/~media/eatrightpro%20files/practice/position%20and%20practice%20papers/position%20papers/nutritionathleticperf.ashx>)
- Alaunyte, I, et al. *Iron and the female athlete: a review of dietary treatment methods for improving iron status and exercise performance*. Journal of the International Society of Sports Nutrition 2015, 12:38
- Purcell, L. K. *Sport nutrition for young athletes*. Paediatr Child Health Vol 18 No 4 April 2013.

Wagner, D.R. Eating on the Road: *Practical Nutrition Strategies for the Traveling Athlete*. Athletic Therapy Today, 14(5), 1-4.

Rosenbloom, C.A. and A. Dunaway. *Nutrition Recommendations for Masters Athletes*. Clinics in Sports Medicine. 2007 (26) 91-100.

Casa, D, et al. *National Athletic Trainers' Association Position Statement: Fluid Replacement for Athletes*. Journal of Athletic Training 2000;35(2):212-224.

(Additional Readings from those listed may be added at the discretion of the instructor)

Grading

| <u>Assessment</u> | <u>Points</u> | <u>Weight</u> |
|---|--------------------------|--------------------|
| Textbook Chapter Questions (15 x 10 points) | 150 points | 10% |
| Weekly Article Synopsis (15 x 5 points) | 75 points | 10% |
| Nutrition Supplement Presentation | 50 points | 20% |
| In-Class Assignments (10 x 10 points) | 100 points | 10% |
| Applied Sports Nutrition Project | 100 points | 30% |
| Final Exam | 100 points | 20% |
| Total | <u>450 points</u> | <u>100%</u> |

93.0% - 100% = A

90.0% - 92.9% = A-

87.0% - 89.99% = B+

82.0% - 86.99% = B

80.0% - 81.99% = B-

77.0% - 79.99% = C+

72.0% - 76.99% = C

70.0% - 71.99% = C-

67.0% - 69.99% = D+

62.0% - 66.99% = D

60.0% - 61.99% = D-

<60 = E

Information on current UF grading policies for assigning grade points:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>.

Textbook Chapter Questions

Each student will submit a minimum of 5 objective questions from each of the weekly assigned textbook readings. These questions will be due by Monday evening the day before each week's scheduled class meeting. A short 10-question quiz utilizing the pool of student-generated questions will be given at the start of each week's class.

Final Exam

A comprehensive final exam consisting of the types of objective questions that may be encountered on national certification exams in sports nutrition (i.e. multiple choice, matching, T/F, etc.) will be administered during the scheduled Final Exam period. All content from textbook and assigned article readings may be included in the questions.

In-Class Assignments

A total of 10 in-class assignments will be completed over the course of the semester. These assignments will relate to topics covered prior to, or during, that day's class. Assignments will be completed in groups and results presented to the rest of the class for discussion prior to the end of class.

Weekly Article Synopsis

Students will search for research articles representing primary evidence related to the topic of the week as indicated in the course schedule below. Upon selecting an article, the author and title of the author must be included in the discussion board for that week to prevent duplication of articles. Students will provide a summary of the background, purpose, methods, results, and conclusions of the study in a 5-7min time period.

Applied Sports Nutrition Project

Students will be expected to complete a 5-part project, to be turned-in by the last day of class, centered around a sports nutrition analysis of another individual. Instructions for completing each part of the project will be provided on Canvas and described in class.

Class Attendance Policy

Students are expected to attend all classes and to have completed assigned reading and associated outlines prior to class as scheduled by the instructor.

Nutrition Supplement Presentation

Students will give a 20-minute presentation describing the chemistry, metabolism, cost, potential ergogenic benefit, and evidence-based recommendations for use of a nutritional supplement of their choice. Details to be provided in class.

Rubrics

Supplement Presentation

| | 10 points | 5 points | 0 points |
|--|--|---|--|
| Explanation of chemical structure of principle compound(s) in supplement | Complete description of the chemical structure of the principle compound | Partial description of the chemical structure of the principle compound | No description of the chemical structure of the principle compound |
| Explanation of metabolism and potential ergogenic benefit | Complete explanation of the metabolism and potential ergogenic benefit | Partial description of the metabolism and potential ergogenic benefit | No description of the metabolism and potential ergogenic benefit |
| Evidence-Based Recommendations for use of supplement | More than 4 sources cited as references for recommendations | 2-4 sources cited as references for recommendations | Less than 2 sources cited as references for recommendations |
| Cost analysis of supplement | Complete cost analysis as outlined in instructions | Partial cost analysis as outlined in instructions | No cost analysis as outlined in instructions |
| Oral Communication of Findings | Findings explained at a level that could be understood by | Findings explained at a level that could be understood by | Findings explained at a level that would be understood by |

| | | | |
|--|------------------------------|-----------------------|----------------------------------|
| | someone outside of the field | a novice in the field | a professional, but not a novice |
|--|------------------------------|-----------------------|----------------------------------|

Applied Sports Nutrition Project

| | 11 - 20 points | 1 - 10 points | 0 points |
|--|---|---|---|
| Part 1: Current Nutrient Intake Analysis | Complete Nutrient Intake Analysis to include energy balance, macronrient, and micronutrient intakes as outlined in instructions | Partial Nutrient Intake Analysis to include energy balance, macronrient, and micronutrient intakes as outline in instructions | No Nutrient Intake Analysis present |
| Part 2: Weight Management Analysis | Complete Weight Management Analysis as outlined in instructions | Partial Weight Management Analysis as outline in instructions | No Weight Management Analysis as outlined in instructions |
| Part 2: Nutritional Needs Analysis | Complete Nutritional Needs Analysis as outlined in instructions | Partial Nutritional Needs Analysis as outline in instructions | No Nutritional Needs Analysis as outlined in instructions |
| Part 4: Nutritional Timing Analysis | Complete Nutrient Timing Analysis as outlined in instructions | Partial Nutrient Timing Analysis as outline in instructions | No Nutrient Timing Analysis as outlined in instructions |
| Part 5: Nutrition Periodization Analysis | Complete Nutrition Periodization Analysis as outlined in instructions | Partial Nutrition Periodization Analysis as outline in instructions | No Nutrition Periodization Analysis as outlined in instructions |

Grading

Notification of final grades will be made by the Registrar or you may check your grade by using ISIS. Final grades will not be posted.

Cell Phone Policy

Students in this course are expected to behave professionally, politely, and considerately. Cell phone use with regard to phone conversations, text messaging, and social media use during lectures, labs, and exams is banned in this class. Smartphones and tablets may be used to access Canvas during class.

Academic Honesty

Cheating will not be tolerated in this course. All students are required to abide by the Academic Honesty Guidelines and Honor Code, which have been accepted by the University. Cheating is defined as the improper taking or tendering of any information or material, which shall be used to determine academic credit. Violations of the Honor Code will be handled according to the guidelines set by Student Judicial Affairs. UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with me.

Accommodations for students with disabilities

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, www.dso.ufl.edu/drc/) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester

Online course evaluation process

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc/Default.aspx>, 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies

Class Schedule

Please note that the instructor reserves the right to alter the syllabus or schedule if it is determined that such a change with benefit the course and the students.

| Week | Dates | Topic (<i>italics indicate a research article</i>) |
|------|-----------------|--|
| 1 | (8/21 - 8/25) | Bioenergetics (TopHat) <i>ACSM Position Stand: Nutrition and Athletic Performance</i> <i>Current Controversies in Sports Nutrition</i> |
| 2 | (8/28 - 9/1) | Carbohydrates and Fats (Campbell: Ch.2,4) <i>Reduced CHO availability enhances exercise-induced p53 signaling in human skeletal muscle</i> <i>Rethinking Fat as a fuel for endurance exercise</i> |
| 3 | (9/4 - 9/8) | Protein (Cambell: Ch. 3) <i>ISSN position stand: Protein and Exercise</i> |
| 4 | (9/11 - 9/15) | Micronutrients (Campbell: Ch. 7) <i>Vitamin D and the athlete – Emerging Insights</i> <i>Iron and the female athlete</i> <i>Food Alone may not provide sufficient micronutrients for preventing deficiency</i> <i>Diterary Reference Intakes for the micronutrients – considerations for physical activity</i> |
| 5 | (9/18 - 9/22) | Nutritional Needs Analysis in Athletes (Campbell Ch.11) |
| 6 | (9/25 - 9/29) | Evidence-Based Weight Loss/Gain Recommendations in Athletes (Burke – Ch. 1) <i>ISSN Position Stand: Meal Frequency</i> <i>Considerations for protein intake in managing weight loss in athletes</i> <i>Effect of protein/essential amino acids and resistance training on skeletal muscle hypertrophy</i> |
| 7 | (10/2 - 10/6) | Fluid Intake (Campbell: Ch. 5) <i>ISSN Position Stand: Energy Drinks</i> <i>NATA Position Statement – Fluid Replacement for Athletes</i> |
| 8 | (10/8 - 10/13) | Unique Nutrition Considerations of Endurance and Strength/Power Athletes (TopHat) <i>Nutritional strategies to support concurrent training</i> <i>Prevalence of Dietary Supplement Use by Athletes</i> |
| 9 | (10/16 - 10/20) | Aerobic Endurance Supplements (Campbell Ch. 8) <i>ISSN Position Stand: Caffeine and Performance</i> <i>Carbohydrate availability and exercise training adaptation – too much of a good thing?</i> |
| 10 | (10/23 - 10/27) | Strength and Power Supplements (Campbell Ch.7) <i>ISSN Position Stand: Creatine Supplementation</i> |

ISSN Position Stand: HMB
Effects of Beta Alanine supplementation on exercise performance

| | | |
|----|-----------------|---|
| 11 | (10/30 - 11/3) | Nutrient Timing (Campbell Ch. 9) <i>ISSN Position Stand: Nutrient Timing</i> <i>Nutrient timing revisited – is there a post-exercise anabolic window?</i> |
| 12 | (11/6 - 11/10) | Nutritional Periodization (TopHat) <i>Nutrition and Training Periodization in Three Elite Marathon Runners</i> |
| 13 | (11/13 - 11/17) | Nutrition Considerations for the Ill or Injured Athlete (Burke Ch. 2) <i>Strategies to maintain skeletal muscle mass in the injured athlete</i> <i>Nutrition for Acute Exercise-Induced Injuries</i> <i>Nutritional support for Exercise-Induced injuries</i> <i>Probiotics supplementation for athletes- clinical and physiological effects</i> Supplement Presentations |
| 14 | (11/20 - 11/24) | Eating disorders and disordered eating in Athletes (Burke Ch. 3) <i>NATA Position Statement: Preventing, Detecting, and Managing Disordered Eating in Athletes</i> <i>Dietary Intakes and Eating Habits of College Athletes – Are female college athletes following current sports nutrition standards?</i> <i>Nutritional strategies of physically active subjects with muscle dysmorphia</i> |
| 15 | (11/27 - 12/1) | Special Nutritional Needs of Youth and Elderly Athletes (Burke Ch. 4, 5) <i>Sport nutrition for young athletes</i> <i>Nutrition Recommendations for Master's Athletes</i> <i>Nutritional Aspects of Women Strength Athletes</i> Supplement Presentations |
| 16 | (12/4 - 12/6) | Special Considerations for the Traveling Athlete (Burke Ch. 6) <i>Eating on the Road</i> <i>Nutrition for Travel</i> <i>ISSN Exercise & Sport Nutrition Review</i> Supplement Presentations |

Final Exam: Monday December 11 7:30 - 9:30AM