Nutrition Doctoral Seminar Spring 2012
Wednesdays 12:00 – 12:50 pm
241 Rosenau Hall
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This one credit course is designed as a forum for doctoral students to critically discuss papers from current, peer reviewed journals. It is hoped that through careful review of published research, students will improve their critical thinking skills and ability to integrate knowledge across the different areas of nutrition. More specifically we hope you will learn to:

1. "Think on your feet", that is, to answer questions about your knowledge or state your opinions clearly to your colleagues in a spontaneous manner.
2. Describe and interpret results presented in graphs and tables.
3. Identify how a paper contributes to our understanding of critical concepts.
4. Assess research designs: is the design appropriate for testing hypotheses set out by the authors?
5. Identify questions left unanswered by a research paper, and think critically about what needs to be done to answer those questions.
6. Understand the interrelationship of biochemistry/genetics, epidemiology and intervention/policy around selected nutrition topics (e.g. how findings in one field inform research in another; how scientific evidence is used in development of policy and interventions, etc.).

During the spring semester, we will read papers **focused on two main topics: 1. Exercise and Cognitive Function in the Aging Process and 2. Food Additives and Hyperactivity in Children**. We will address each of these topics from multiple perspectives and through the use of different study designs and methods. For each topic, an integrative session will guide your thinking about how information can be linked across all of the papers. **The papers are all available in pdfs form on Sakai.**

Because of the large number of students in the class, we will meet in two groups with two instructors per group. Instructors will exchange groups at mid-semester.

REQUIREMENTS:

Students are expected to attend all classes. Special allowances will be made for students with legitimate conflicts that are communicated to the faculty in advance. For missed classes, students should answer the discussion questions in writing and submit them to the instructors.

Students are expected to come to class prepared: this requires that you carefully read the assigned article, work on the interpretation of graphs and tables, think about the issues raised in advance by the discussant, and do any background reading that might be required to understand the paper.

Students are expected to actively participate in the discussions. Based on our prior experience, we know how uncomfortable the atmosphere is when no one speaks. Don't be timid

about voicing your opinions. Remember, there are no dumb questions, and don't be afraid to be wrong. You will not be judged on wrong answers! ***Students who do not regularly participate in discussions are at risk of receiving an "L" in the course***. Grades are based on class participation (50%) and leadership of two of the sessions (50%)

Students' Responsibilities as Discussants:

1. Serve as primary discussant for 2 papers (one paper per topic). Students will work in pairs to lead the discussions.

2. Identify the key issues relevant to judging the quality and scientific contribution of the paper. For example, for many epidemiology papers, the focus is on sample selection, adequacy of sample size, quality of exposure and outcome data, measurement error, etc., while the issues for papers in other areas might relate to whether the correct animal model was chosen to test a hypothesis, whether the experimental design has sufficient power andis able to elucidate mechanisms, etc. In addition, think about how you can integrate information from each paper with other papers we have discussed, or other papers you have read, to address the broader question.

3. Develop a set of questions, centering on #2 above, to guide the review and discussion of the paper. Distribute the questions to the rest of the class by email at least 2-3 days before the class so students have adequate time to prepare. Discussion questions should focus on issues most relevant to the paper, and cover design, sample, key theoretical issues, interpretation of graphs and tables, etc. Please consult with one of the class instructors and/or the "expert" about appropriate discussion questions.

4. Begin the class session with a 5 minute overview and summary of the paper. Identify the key issues relevant to the quality and significance of the paper. Identify the main point of the paper, and provide any additional background you think is needed to understand the paper. Guide the discussion and evaluation of the paper.

5. For the final week on each topic, the class will participate in an integrative session with papers led by student members with support from course instructors. Using the papers as background, we will consider an integrative question, evaluate what is known, and discuss what still needs to be learned in order to address the question.

Topic 1: Exercise and Cognitive Function in the Aging Process.

Dementia threatens to reduce the quality and perhaps the length of life in older individuals. Diseases such as Alzheimer's, which accounts for most dementia cases, bring devastating consequences to those affected and to the families who care of them. Even mild cognitive impairment has been documented in more than 10% of those over 70 years of age and more than 20% of those in their 80's (Ahlskog et., 2011). On a positive note, physical activity has often been referred to a "fountain of youth" and experts noted that increased levels of physical activity or physical fitness may be associated with increased longevity. During this course we will look at the role of physical activity in the prevention and possibly treatment of cognitive disorders in the aging process. We will consider genetic predisposition to exercise (the "aerobic hypothesis"), some of the proposed mechanisms to explain its effect, associations between types of exercise training and lifestyle factors related to cognitive function, and behavioral strategies for increasing physical activity in seniors. Finally, we will consider in our integrative session why medical experts have not yet enthusiastically recommended physical activity as a crucial therapy for treating and preventing cognitive disorders, and design needed research strategies to fully address this issue.

Topic 2: Food Additives and Hyperactive in Children.
Food additives are substances that are added to food intentionally for a technological purpose (e.g., preservation, coloring, texture, increasing flavor, etc.). In the United States, more than 3,000 substances can be added to foods. While each of these substances is legal to use, whether or not they are all safe is questionable. In U.S. under federal law some ingredients may be added to food under a "Generally Recognized As Safe" (GRAS) determination made independently from FDA. Recently, one of the most controversial areas is the use of color additives. Some consumer groups think color additive pose a health risk to children as they might cause attention deficit hyperactivity disorder (ADHD). However, scientific findings are inconclusive, inconsistent or hard to interpret. Even thought, some countries (United Kingdom, European Union) ban use of them and instead encouraging manufactures to use safer, natural colorings. In U.S. nine dyes are currently approved by FDA. In 2011, a FDA Food Advisor Committee voted against new warning labels for food dyes. Although the FDA agreed that some children may benefit from diets that eliminate artificial dyes that stated a "casual relationship between consumption of certified color additives in food and hyperactivity in children in the general population has not been established". During this session we will review and critique some of the key studies to determine whether there is enough evidence linking the food colors to ADHD. At the end of the session, we will discuss what type of studies are needed in order to inform policy.

EXERCISE AND COGNITIVE FUNCTION In AGING Papers	
Session 1: Setting the Stage	Koch LG, Kemi OJ, Qi N, Leng SX, Bijma P, Gilligan LJ et al. Intrinsic aerobic capacity sets a divide for aging and longevity. Circulation Res. 2011, 109:1162-1172. How much physical activity do older adults need? Physical Activity is Essential to Healthy Aging. http://www.cdc.gov/physicalactivity/everyone/guidelines/olderadults.html
Session 2: Biochemistry	Soerensen M, Thinggaard M, Mygaard M, Dato S, Tan Q, Hjelmborg J et al. Genetic variation in TERT and TERC and human leukocyte telomere length and longevity: a cross sectional and longitudinal analysis. Aging Cell, 2011; 1-5.
Session 3: Epidemiology	Weuve J, Kang JH, Manson JE et al.Physical activity, including walking, and cognitive function, in older women. JAMA. 2004;292(12):1454-1461 (doi:10.1001/jama.292.12.1454)
Session 4: Epidemiology	Bendix L, Gade MM, Staun PW, Kimura M, Jeune B, Hjelmborg et al. Leokocyte telomere length and physical activity among Danish Twins age 70+. Mech ageing Dev; 2011;132(11-12):568-72. Cherkas LF, Hunkin JL, Kato BS, Richards JB, Gardner, JP, Surdulescu GL et al. The association between physical activity in leisure time and leukocyte telomere length. Arch Intern Med; 2008; 168(20): 154-158.
Session 5: Intervention	Liu-Ambrose T, Nagamatsu, LS, Voss, MW, Khan KM, Handy TC. Resistance training and functional plasticity of the aging brain: a 12- month randomized controlled trial. Neurobiol Aging. 2011; XXX: 1-9. Liu-Ambrose T, Nagamatsu LS, Graf P, Beattie BL, Ashe MC, Handy TC. Resistance training and executive function. Arch Intern Med. 2010; 170(2): 170-178.
Session 6:	Ornish D, Lin J, Daubenmier J, Weidner G, Epel E, Kemp C et al. Increased

Intervention	telomerase activity and comprehensive lifestyle changes: a pilot study. Lancet Oncol; 2008; 9:1048-57. Castro CM, Pruitt, LA, Buman, MP, King AC. Physical activity program delivery by professionals versus volunteers: The TEAM Randomized Trial. Health Psychol. 2011;30 (3): 285-294.
Session 7: Integration	Flicker L, Liu-Ambrose T, Kramer AF. Why so negative about preventing cognitive decline and dementia? The jury has already come to the verdict for physical activity and smoking cessation. Br J Sports Med; 2011; 45:465-467. Stanaway FF, Gnjidic D, Blyth FM, Le Couteru DG, Naganathan V, Waite L et al. How fast does the Grim Reaper walk? Receiver operating characteristics curve analysis in healthy mean aged 70 and over. BMJ, December 2011:1-4.

FOOD ADDITIVES AND HYPERACTIVITY in Children Papers	
Session 1: Background	Kanarek RB. Artificial food dyes and attention deficit hyperactivity disorder. Nutr Rev. 2011 Jul;69(7):385-91. Background document for the Food Advisory Committee: Certified Color Additives in Food and Possible Association with Attention Deficit Hyperactivity Disorder in Children. FDA/CFSAN March 30-31, 2011 meeting. 1-13.
Session 2: Epidemiology	Schab DW, Trinh NH. Do artificial food colors promote hyperactivity in children with hyperactive syndromes? A meta-analysis of double-blind placebo-controlled trials. J DevBehavPediatr. 2004 Dec;25(6):423-34.
Session 3: Biochemistry	Stevenson J, Sonuga-Barke E, McCann D, Grimshaw K, Parker KM, Rose-Zerilli MJ, Holloway JW, Warner JO. The role of histaminedegradation gene polymorphisms in moderating the effects of food additives on children's ADHD symptoms. Am J Psychiatry. 2010 Sep;167(9):1108-15.
Session 4: Epidemiology & Intervention	McCann D, Barrett A, Cooper A, Crumpler D, Dalen L, Grimshaw K, Kitchin E, Lok K, Porteous L, Prince E, Sonuga-Barke E, Warner JO, Stevenson J. Food additives and hyperactive behaviour in 3-year-old and 8/9-year-old children in the community: a randomised, double-blinded, placebo-controlled trial. Lancet. 2007 Nov 3;370(9598):1560-7. Bateman B, Warner JO, Hutchinson E, Dean T, Rowlandson P, Gant C, Grundy J, Fitzgerald C, Stevenson J. The effects of a double blind, placebo controlled, artificial foodcolourings and benzoate preservative challenge on hyperactivity in a general population sample of preschool children. Arch Dis Child. 2004 Jun;89(6):506-11.
Session 5: Biochemistry	Lau K, McLean WG, Williams DP, Howard CV. Synergistic interactions between commonly used food additives in a developmental neurotoxicity test. Toxicol Sci. 2006 Mar;90(1):178-87.
Session 6: Intervention	Pelsser LM, Frankena K, Toorman J, Savelkoul HF, Dubois AE, Pereira RR, Haagen TA, Rommelse NN, Buitelaar JK. Effects of a restricted elimination diet on the behaviour of children with attention-deficit hyperactivity disorder (INCA study): a randomised controlled trial. Lancet. 2011 Feb 5;377(9764):494-503.
Session 7: Integration	Weiss B. Synthetic Food Colors and Neurobehavioral Hazards: The View from Environmental Health Research. Environ HealhPerspect 2012. 120:1-5. Kleinman RE, Brown RT, Cutter GR, Dupaul GJ, Clydesdale FM. A research model for investigating the effects of artificial food colorings on children with ADHD. Pediatrics. 2011 Jun;127(6):e1575-84.

Schedule

	Group 1 ***Jan 11-Feb. 29*** ***March 14-April 25***	***Group 2*** ***Jan 11-Feb. 29*** ***March 14-April 25***
Jan. 11	***Introduction, selection of papers***	
Jan. 18	*Exercise and Cognition: Background*	*Food additives: Background*
Jan. 25	*Exercise and Cognition: Mechanism*	*Food additives: Epidemiology*
Feb. 1	*Exercise and Cognition: Associations*	*Food additives:Biochemistry*
Feb. 8	*Exercise and Cognition: Associations*	*Food additives: Epid& Intervention*
Feb. 15	*Exercise and Cognition: Efficacy Studies*	*Food additives: Biochemistry*
Feb. 22	*Exercise and Cognition: Behavior*	*Food additives: Intervention*
Feb. 29	*Integration Experience*	*Integration Experience*
Mar. 14	*Food additives: Background*	*Exercise and Cognition: Background*
Mar. 21	*Food additives: Epidemiology*	*Exercise and Cognition: Mechanism*
Mar. 28	*Food additives:Biochemistry*	*Exercise and Cognition: Associations*
April 4	*Food additives: Epid& Intervention*	*Exercise and Cognition: Associations*
April 11	*Food additives: Biochemistry*	*Exercise and Cognition: Efficacy Studies*
April 18	*Food additives: Intervention*	*Exercise and Cognition: Behavior*
April 25	*Integration Experience*	*Integration Experience*
May 2	*Optional Day*	*Optional Day*

Groups

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He, Fuli	Cooper, Daniel
Lupu, Daniel	Lao, Sai
Millette, Drew	Tzioumis, Emma
Neidich, Scott	Qin, Yuanyuan
Ford, Chris	Stern, Dalia
Erber, Eva	Jaacks, Lindsay
Poti, Jennifer	Mathias, Kevin
Smith, Lindsey	Qin, Bo
Attard, Samantha	Richardson, Andrea
Johnson, Cassandra	Calancie, Larissa
Kleiman, Susan	Mazzucca, Stephanie
Braxton, Danielle	Blackman, Loneke
Estrada del campo, Yanire	Alick, Candice
Hite, Adele	Smith, Tosha
Mcguirt, Jared	Zhong, Wenze
Thayer, Linden	