

One hour lecture followed by one hour seminar discussion.
Mon. 2:30- 4:30 pm, Location Arts & Humanities Building Room 2B02

Learning Objectives: Upon completion of this course students will:

- 1) Gain knowledge and understanding of different theories of fetal origins of adult diseases.
- 2) Gain knowledge and understanding of current research in the area of exercise during pregnancy for a low risk pregnant population.
- 3) Gain knowledge and understanding of current research in the area of how exercise during pregnancy can prevent or be used to treat different disease states.
- 4) Engage in seminar discussions and present orally on a research paper to the class.
- 5) Create and implement an exercise and lifestyle intervention for active low risk pregnant women and pregnant women with disease risk.

Topics for Discussion:

- 1) The “Downside of Upright”
- 2) “Thrifty genotype” and “Thrifty phenotype” – developmental influences of adult diseases. DOHaD – Developmental Origins of Health and Disease.
- 3) DOHaD and adult diseases that may have origin from fetal life.
 - a. Cardiovascular disease
 - b. Obesity
 - c. Type 2 diabetes/Metabolic syndrome
- 4) Impact of exercise during pregnancy on chronic disease risk.
- 5) Importance of active living during pregnancy
 - a. The PARmed-X for pregnancy – medical prescreening, aerobic exercise guidelines, muscle conditioning guidelines and safety considerations for low risk pregnant women
 - b. Promoting active living during pregnancy in low risk women.
- 6) Designing an exercise program for pregnant women across the exercise continuum – from activity restricted to recreational to elite athlete.
- 7) Using an exercise and lifestyle intervention to prevent excessive weight gain and gestational diabetes in pregnant women with risk factors.

Course Evaluation Summary:

- 1) Class participation & on line discussion forum – 15%
- 2) Journal Article Review – 15%
- 3) Group presentation to Class – 20%
- 4) Final exam – 50%

Journal Article Review.

Each student will chose a paper from the literature (upon approval)

Cardio

Mandatory Readings (Preliminary List): All required readings will be posted on OWL

Jan. 15th, 2018 Topic

Reading(s):

- 1) Ackerman, J. 2006. The downside of upright. *National Geographic*. 210(1):126-145.
- 2) Mitteroecker, P, Huttegger, S, Fischer, B, Pavlicev, M 2016. Cliff-edge model of obstetric selection in humans. *Proc Natl Acad Sci USA* Dec 5. pii: 201612410.

Jan. 22nd, 2018 Topic

Readings:

- 3) Prentice, AM. 2005. Early influences on human energy regulation: Thrifty genotypes and thrifty phenotypes. *Physiol. Behav.* 640-645.
- 4) Hales, CN and Barker, DJP. 2001. The thrifty phenotype hypothesis. *Br. Med. Bull.* 60:5-20.
- 5) Prentice, AM, Rayco-Solon, P. and Moore, S.E. 2005. Insights from the developing world: thrifty genotypes and thrifty phenotypes.
- 6) Barker, DJP 2004. The developmental origins of adult disease. *J. Am. Coll. Nutr.* 23:588S-595S.

Jan. 29th, 2018 Topic

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Readings:

- 7) Hanson MA, Gluckman PD. Developmental origins of health and disease: moving from biological concepts to interventions and policy. *Int J Gynaecol Obstet.* 2011 Nov;115 Suppl 1:S3-5.
- 8) Martin-Gronert MS, Ozanne SE. Mechanisms underlying the developmental origins of disease. *Rev Endocr Metab Disord.* 2012 Jun;13(2):85-92.
- 9) Law, CM et al. 2002. Fetal, infant and childhood growth and adult blood pressure: a longitudinal study from birth to 22 years of age. *Circulation.* 105:1088-1092.
- 10) Henry, SL et al. Developmental origins of obesity related hypertension. *Clin. Exper. Pharm. Physiol.* 2012. 39 (9), 799(9), p 0 0 1 1ET 344.69 Tm -0.0182 oc92.

- 15) Martin-Gronert, M, Ozanne S. 2013. Early life programming of obesity. *Dev Period Med* XVII(1):7-12.
- 16) Boney, CM et al. 2005. Metabolic syndrome in childhood: association with birth weight, maternal obesity and gestational diabetes mellitus. *Pediatrics* 115:e290-296.
- 17) Hattersley, AT and Tooke, JE. 1999. The fetal insulin hypothesis: an alternative explanation of the association of low birthweight with diabetes and vascular disease. *Lancet*. 353:1789-1792.

Feb. 26th, 2018 Topic – “Impact of exercise during pregnancy on chronic disease risk”

Readings:

- 18) Wojtyła A, Kapka-Skrzypczak L, Paprzycki P, Skrzypczak M, Biliński P. 2012. Epidemiological studies in Poland on effect of physical activity of pregnant women on the health of offspring and future generations – Adaptation of the hypothesis DOHaD. *Ann Agric Environ Med*. 19(2): 315-326.
- 19) Weissgerber, T, Wolfe, LA, Davies, G, Mottola, MF. 2006. Exercise in the prevention and treatment of maternal-fetal disease: A review of the literature. *Applied Physiol. Nutrition & Metabolism* 31:661-674.
- 20) Hopkins S, Cutfield W. 2011. Exercise in Pregnancy: Weighing up the long-term impact on the next generation. *Exerc Sports Science Reviews* 39(3):120-127.
- 21) Mottola MF, Artal R. 2016. Role of exercise in reducing gestational diabetes mellitus. *Clin Obstet Gynecol* Sep;59(3):620-628

March 5th, 2018 Topic

Readings:

- 22) Mottola, MF. 2016. Components of exercise prescription and pregnancy. *Clinical Obstet Gynecol* 59(3):552-558.
- 23) Wolfe, LA and Mottola MF 2015. PARmed-X for Pregnancy. Canadian Society Exercise Physiology. Pp. 1-4. website: <http://www.csep.ca/CMFiles/publications/parq/parmed-xpreg.pdf>
- 24) Mottola MF. 2013. ACSM's Guidelines for Exercise Testing and Prescription, 9th edition. Chpt 8. "Exercise Prescription for Healthy Populations with Special Considerations" (Deborah Riebe, Ed). Lippcott-

- 30) Women's Health Reviews. 11(1):31-40.
Bo K, Artal R, Barakat R, Brown W, Davies G, Dooley M, Evenson K, Haakstad L, Henriksson-Larsen K, Kayser B, Kinnunen T, Mottola MF, Nyaard I, van Poppel M,

4. **Scholastic offences:** They are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

http://www.uwo.ca/univsec/handbook/appeals/scholastic_discipline_undergrad.pdf

A) Students must write their essays and assignments in their own words. Whenever students take an idea, or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence (see Scholastic Offence Policy in the Western Academic Calendar). All required papers might be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between Western University and Turnitin.com (<http://www.turnitin.com>)

B) Computer marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

5. **Formatting** (as recommended by the course instructor): example- APA style is the approved style of writing for all assignments produced for this course. Please refer to Western University Library webpage for information on citation style and format or consult the APA publication manual: Publication manual of the American Psychological Association (6th ed.). (2009). Washington, DC: American Psychological Association.

6. According to the **Examination Conflict policy**, “A student who is scheduled to write more than two examinations in any 24-hour period may request alternative arrangements through the office of their Academic Counsellor.” *This policy does NOT apply to mid-term examinations. There will be no make-up examinations for any examination cancelled due to a conflict. /P AMCIDr0034(atio)3(ns.)4hn

STUDENT CODE OF CONDUCT

The purpose of the Code of Student Conduct is to define the general standard of conduct expected of students registered at Western University, provide examples of behaviour that constitutes a breach of this standard of conduct, provide examples of sanctions that may be imposed, and set out the disciplinary procedures that the University will follow. For more information, visit

<http://www.uwo.ca/univsec/board/code.pdf>

ENGLISH PROFICIENCY FOR THE ASSIGNMENT OF GRADES

Visit the website <http://www.uwo.ca/univsec/handbook/exam/english.pdf>

SUPPORT SERVICES

There are various support services around campus and these include, but are not limited to:

1. Student Development Centre -- <http://www.sdc.uwo.ca/ssd/>
2. Student Health --