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<b>Instructors:</b> Dr. J. N. Vickers	<b>Room:</b> Room KNB 126
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<b>Phone:</b> 403-220-3420	<b>Days:</b> Wednesday
<b>Email:</b> vickers@ucalgary.ca	<b>Time:</b> 17:30 - 20:20
<b>Office:</b> KNES B2230	<b>Course Website:</b> Blackboard
<b>Office Hours:</b> By appointment	

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**Course Description:** An examination of cognitive science and its contribution to the understanding of human movement. The emphasis will be placed on enhancing learning and performance in physical activity and sport.

**Course Objectives:** Upon completion of this reading course the student will:

- 1) exhibit an understanding of the neural, perceptual and attention characteristics of skill acquisition: novice to elite athlete.
- 2) display an understanding of recent research evidence from the neuroscience of sport concussion.
- 3) present a 50-minute presentation on an assigned research paper from the cognitive neuroscience of the athlete or the neuroscience of sports concussion (with .ppt) and discussion (group of 3 maximum).
- 4) submit an individual 30 page APA paper on an approved topic from either the cognitive neuroscience of the athlete or neuroscience of sports concussion (with acceptable authenticity report from Turnitin).

The major paper must be on **one** of the following topics:

*Cognitive neuroscience of the elite athlete*

- What are the major perceptual, cognitive and/or neural changes that occur during the development of sports expertise?
- What is the role of the gaze control, visual attention and quiet eye in far targeting skills and/or interceptive timing skills?
- Why does quiet eye training create significant improvement in performance for both novice and expert learners?

*Cognitive neuroscience of sport concussion*

- What structures of the brain are damaged during sports concussion? Provide recent objective evidence.
- What is the best way to diagnose and treat a sport concussion? How do athletes compensate after a concussion?
- Is rest or exercise therapy best for recovering from a sports concussion: Provide recent evidence?

**Required Readings:**

Hodges, N. & Williams, AM. Skill Acquisition in Sport: Research, Theory and Practice, Routledge, Oxon.

Plus the research papers listed below. Note pdf's of the papers are NOT on Blackboard due to copyright restrictions. Students must go to the Library and download the papers.

**Supplementary Readings:**

1. Carter, R. (2009). The Human Brain Book: An Illustrated Guide To its Structure, Function And Disorders. London: Doring Kindersley Limited (from KNES 251)

3. Kolb, B. & Whishaw, I. (2009). Human Neuropsychology, 6<sup>th</sup> Edition. New York: Worth Publishers (in library).

**Contacting the Instructor:**

Students requiring assistance are encouraged to speak with their instructor during class or office hours. Should you wish to meet with the instructor outside of office hours, please phone or email the instructor to make an appointment.

Email, while commonly used, does limit the effectiveness of communications and may not be the best way for instructors to answer student questions. Therefore, the instructor may request a telephone call or personal meeting. Your instructor will inform you as to his/her expectations about emails.

**Grading Scale:**

Grade	Percent	Grade Point Value	Description
A+	90.0 above	4.00	Outstanding
A	85.0 - 89.9	4.00	Excellent - superior performance, showing comprehensive understanding of subject matter.
A-	81.0 - 84.9	3.70	
B+	77.0 - 80.9	3.30	
B	73.0 - 76.9	3.00	Good-clearly above average performance with knowledge of subject matter generally complete.
B-	69.0 - 72.9	2.70	
C+	65.0 - 68.9	2.30	
C	61.0 - 64.9	2.00	Satisfactory – basic understanding of the subject matter. Grade point average below 2.00 is not sufficient for promotion.
C-	57.0 - 60.9	1.70	"Minimum grade required if needed as a prerequisite course."
D+	53.0 - 56.9	1.30	
D	49.0 - 52.9	1.00	Minimal pass – marginal performance; generally insufficient preparation for subsequent courses in the same subject.
F	Below 49.0	0	Fail – unsatisfactory performance or failure to meet course requirements.

**Evaluation of Course  
Content:**

- 1) Presentation with Power Point - 30%
- 2) Research paper weekly tests - 30%
- 3) Major APA term paper - 35% - Due April 10, 2013
- 4) Participation in presentations (downloading research papers, taking part in discussions, completing feedback forms & attendance at feedback sessions, evidence of knowledge of topic of papers) - 5%

All dates are FIRM. A penalty will be imposed for unapproved late submission of Powerpoints or assignments.

**Presentation Guidelines and Evaluation**

1. Groups may have a maximum of 3 members. Each presentation group should appoint a leader. This individual represents the group and should be the only one contacting Dr. Vickers on presentation related issues.
2. Individual presentations may be arranged under special circumstances. Send an email request to Dr. Vickers in the first week of the course stating your reason.
3. Papers will be selected by a draw. Group members may not change their paper once set without the permission of the instructor. Presentation dates may not be changed once established.
4. Presentations will be 50 minutes. Each member is responsible for an equal number of minutes, plus participation in the Q & A session that follows. Each speaker must prepare and deliver one question to the class and handle the answer.
5. Each speaker must use a microphone, as the acoustics in B126 are very poor on the sides of the room.
6. A PowerPoint of the presentation must be emailed to Dr. Vickers three (3) days before the presentation.
7. You must name your PP using this format: Group number first author. Example: G2 Emory. PowerPoint files submitted without the correct title will be returned
8. If using Keynote convert to PP before submitting. Be sure to check the layout and correct any deficits due to conversion.
9. The Presentation leader should advise Dr. Vickers if someone in the group is not doing an equal share at least 3 days before the presentation. If it is found the person is not contributing, the student will be assigned a Presentation of his or her own. The paper presented and Dr. Vickers will determine date.
10. The PowerPoint presentation is clear, concise and on topic.
11. Each presentation must cover the major topic of the assigned research paper. Web and video based materials should be used, as well as seat exercises to enhance the learning experience. Avoid too many slides with only text. Instead use figures, photos, short videos and other visual information.

12. Be sure to rehearse your presentation as a team before class so that it goes smoothly. Each group should use one of their own computers. Marks will be deducted if the video projector does not work due to lack of preparation. As soon as possible before class, hook up your computer to the video-projector and test it as well as the microphone.
13. Written feedback of your presentation will be done by class members and submitted to Dr. Vickers at the end of each Presentation (see the feedback form at the end of this outline). Presenters will be able to read their feedback reports after class. Participation in the 30-40 minute feedback session is mandatory, as is completion of the feedback reports. This session cannot be deferred to another time.

**Following are the Evaluation Criteria of the Presentation**

- 1) The team is well prepared in planning and organizing the Presentation.
- 2) The team is knowledgeable about the major topics in the research paper.
- 3) There is evidence that each individual contributed equally to all aspects of the Presentation preparation, PP, presentation and question session.
- 4) The ppt includes visuals (photos, short video clips, figures) that support and amplify the presentation.
- 5) There is an attempt to include a brief class exercise that simulates the tasks used in the research paper.
- 6) Strength and limitations of the paper are presented in a PowerPoint slide at the end of the presentation (eg. sample size, control group, type of tests used; statistical analysis).
- 7) The questions have been thought out and appropriate. Students given enough time to become engaged.

**Presentation Tests:** Before each Presentation, a test will be given on each paper consisting of 3 multiple choice and/or T or F questions. Questions will be fact based and taken from the assigned readings.

At the end of the semester the top 10 marks will be used to calculate the final mark on the tests. Marks on tests will be posted on Blackboard after the Spring Break (around February 26) and after the end of the course (after April 11).

In terms of the Participation mark there must be evidence the paper has been downloaded.

**Final Examination:** There is no final examination.

**Major Term Paper Evaluation Criteria**

1. Papers are to be completed by individual students and not as a group.
2. There is evidence the student has gone beyond the papers presented

- in class and extensively researched the topic, using recent scientific papers and other sources.
3. Marks will be affected by the number of relevant research papers listed in the references and used extensively in the content of the paper.
  4. There is evidence of the correct synthesis of existing research and an ability to provide new insights and directions for future research.
  5. Use of APA style (6<sup>th</sup> Edition).
  6. Unlimited uploads to the Turnitin site will be allowed beginning four weeks before the due date. An Authenticity Report showing no more than 10% (the default of Turnitin) will be required - meaning all sources have been referenced correctly.
  7. Maximum length is APA 30 pages. It is expected that 1 page will be for the title, 1 page for the 300 word Abstract, and a maximum of 2 pages for Tables or Figures cited from a paper and a maximum of 2 pages of references. This means there must be a minimum of 24 pages of text.
  8. Papers must be submitted as Word documents via email and also in hard copy on the last day of class.
  9. Students are advised to buy Endnote to make referencing very easy and accurate. A demo of Endnote will be given the second class.

### **Course Dates and Research Papers**

#### **Jan 09      Vickers Introduction**

Introduction to the course and course outline. Overview of papers and test procedures. Formation of presentation groups and draw and registration of research paper groups.

#### **Jan 16      G1 Vickers**

Aglioti, S, Cesari, P, Romani M. & Urgesi, C. (2008). Action anticipation and motor resonance in elite basketball players. *Nature Neuroscience*, 11, 9, p. 1110-1116. Demonstration of Endnote (Andrew Stewart)

**Jan 23      G2** McCrory et al (2008). Consensus statement on concussion in sport – The 3rd International Conference on concussion in sport, *Journal of Clinical Neuroscience* 16, 755–763

**Jan 23      G3** Emory, C. et al. (2010). Risk of injury associated with body checking among youth ice hockey players, *JAMA*, June 9, v 303, No. 22, pp. 2265-2272.

**Jan 30      G4** Yarrow, K., Brown, J. & Krakauer J. (2009). Inside the brain of an elite athlete: the neural processes that support high achievement in sports, *Nature Reviews: Neuroscience* 10, 692-6 (20 July 2009).

**Jan 30      G5** Schuckler, L. Hagemann, N. Strauss B. & Volker K. The effect of attentional focus on running economy. *Journal of Sport Sciences*, 27: 2009, 1241-1248.

**Feb 06      G6** McKee, A. et al (2012). The spectrum of disease in chronic traumatic encephalopathy. *Brain*, first published online December 2, 2012 doi:10.1093/brain/aws307 (pp 1-9, to Stage 1 plus references)

**Feb 06      G7** McKee, A. et al (2012). The spectrum of disease in chronic traumatic encephalopathy. *Brain* first published online December 2, 2012 doi:10.1093/brain/aws307 (pp 9-20, plus references)

**Feb 13 G8** Tempe, M. & Proteau, L. (2012). Motor skill consolidation. pp. 192-210 in Eds. Hodges, N. & Williams, AM. *Skill Acquisition in Sport: Research, Theory and Practice*, Routledge, Oxon.

**Feb 13 G9** Lee J. Moore, LJ, Vine, S., Cooke, A., Ring, C., & Wilson, MR (2012). Quiet eye training expedites motor learning and aids performance under heightened anxiety: The roles of response programming and external attention. *Psychophysiology*, 49 (2012), 1005–1015.

**Feb 20 Reading Break (Feb. 17-24<sup>th</sup>, 2013)**

**Feb 27 G11** Gushiewicz, K. M.(2011). Balance assessment in the management of sport-related concussion. *Clinics in Sports Medicine* 30 (2011) 89–102. doi:10.1016/j.csm.2010.09.004

**Feb 27 G10** de Beaumont, Theoret et al (2009). Brain function decline in healthy retired athletes who sustained their last sports concussion in early adulthood, *Brain*, 132, 695-708

**March 6 G12** Wadden, KP, Borich, MR. & Boyd, L. (2012). Motor skill neurophysiology pp. 247-265, in Eds. Hodges, N. & Williams, AM. *Skill Acquisition in Sport: Research, Theory and Practice*, Routledge, Oxon.

**March 6 G13** May, Arne (2011). Experience-dependent structural plasticity in the adult human brain. *Trends in Cognitive Sciences*, October 2011, Vol. 15, No. 10. doi:10.1016/j.tics.2011.08.002

**March 13 G14** Gagnon, I., Galli, C., Friedman, D., Grilli, L & Iverson, G. L. (2009). Active rehabilitation for children who are slow to recover following sport-related concussion. *Brain Injury*, Jan 2009, Vol. 23, No. 12, Pages 956-964: 956-964.

**March 13 G15** Leddy, JJ, Kozlowski, K., Donnelly, JP, Pendergast, J., Epstein, LH and Willer, B. (2009). A preliminary study of subsymptom threshold exercise training for refractory post-concussion syndrome. *Clinical Journal Sport Medicine*, 2010;20:21–27

**March 20 G16** Causer, J., Janelle, CM, Vickers, JN, Williams, AM (2012). Perceptual expertise. What can be trained? Eds. Hodges, N. & Williams, AM. *Skill Acquisition in Sport. Research, Theory and Practice*. 2nd Ed. 306-324. London: Routledge

**March 20 G17** Cote, J., Murphy-Mills, J., & Abernethy, B. (2012). The development of skill in sport. in Eds. Hodges, N. & Williams, AM. *Skill Acquisition in Sport: Research, Theory and Practice*, Routledge, Oxon.

**March 27 G18** Khurani, G. & Kaye, AH (2012). An overview of sports concussion. *Journal of Clinical Neuroscience* 19 (2012) 1–11

**March 27 G19** - Zhang et al (2010). Are functional deficits in concussed individuals consistent with white matter structural alterations: combined FMRI & DTI study. *Exp Brain Res* (2010) 204:57–70  
DOI 10.1007/s00221-010-2294-3.

**April 3 TBA**

**April 10 Submit Major Term Paper In Class**

**Supplementary Course Information**  
*In accordance with the University of Calgary Calendar*

<b><u>Academic Accommodation Awareness Information:</u></b>	It is the student's responsibility to request academic accommodation. If you are a student with a documented disability who may require academic accommodation and have not registered with the Disability Resource Centre, please contact their office at 220-8237. You are also required to discuss your needs with your instructor no later than fourteen (14) days after the commencement of this course. Students who have not registered with the Disability Resource Centre <u>are not</u> eligible for formal academic accommodation.
<b><u>Plagiarism/Cheating/Other Academic Misconduct:</u></b> (see Calendar)	A <u>single</u> offence of cheating, plagiarism, or other academic misconduct is a serious act that will not be tolerated in the Faculty of Kinesiology. Penalties for such acts will be determined by the Dean and may result in a failing grade, probation, suspension, or expulsion. Any student who is uncertain if an action falls into this category should consult the instructor and/or the Calendar.
<b>Midterm Exam Policy:</b>	The Faculty of Kinesiology policy is that all students are expected to write midterm exams on the dates listed on the course outline. Special accommodation may be granted by the instructor in <b><u>exceptional circumstances only</u></b> which include illness, participation in athletic events (varsity, national or international), domestic affliction, and religious conviction. It is the student's responsibility to supply proper documentation and/or notification <b><u>prior</u></b> to the originally scheduled midterm to support their circumstance. Personal travel plans and arrangements are <b><u>not</u></b> valid reasons for requesting a special accommodation for a midterm exam. Failure to comply with this policy will result in a grade of zero for the midterm and possible failure in the course.
<b>FOIP Policy:</b>	Please note that the University is under the jurisdiction of the provincial Freedom of Information and Protection of Privacy (FOIP) Act. Please refer to the website for details: <a href="http://www.ucalgary.ca/secretariat/privacy">http://www.ucalgary.ca/secretariat/privacy</a>
<b>Internet and Electronic Communication Device Information:</b>	Any surfing of the Internet during lectures that is not directly related to the class discussion is distracting and strictly forbidden. Additionally, the use of any electronic devices (e.g., cellular phones, Blackberrys) for e-mailing, texting, etc. is strictly prohibited. Please turn OFF your phone before the beginning of each lecture.  Instructors have the authority, at the discretion of the dean of their faculty, to require that specific course assignments, term papers and academic exercises be submitted in an electronic format. Instructors cannot require that multiple copies of an assignment be submitted.
<b>Emergency Evacuation/Assembly Points: Safewalk Information:</b>	For classes in the Kinesiology buildings Primary assembly point is the MacEwan Student Centre - North Courtyard and the Alternate assembly point is University Theatres Lobby  Safewalk volunteers walk people safely to their destination on campus (including Health Sciences, Children's Hospital, McMahon Stadium, and University LRT station). This service is free and available to students, staff and campus visitors. Call 403-220-5333 (24 hours a day/7 days a week/365 days a year).
<b>Student's Union:</b>	The Kinesiology Representative is Calindy Ramsden - E-mail: <a href="mailto:kinesrep@su.ucalgary.ca">kinesrep@su.ucalgary.ca</a>

### KNES 351 Presentation Feedback Form

**Group Number and Name of Paper:**

**Date:**

**Observer's Name:**

**ID Number**

At the end of the presentation give this form to the instructor. For each presenter, write the name at the top of a column. Record the start and stop time and comment on the clarity, knowledge, thoroughness, and understanding of the paper, voice and overall presentation skills. Please be constructive in your comments.

Name & start-stop	Name & start-stop	Name & start-stop	Name & start-stop

Did the group work well as a team? Were they well prepared? Did all members know the content of the paper?

Was there a good selection of topics from the assigned readings?

Was the PowerPoint helpful?

Did the group use video and other learning exercises? Did this aid understanding?

List **one thing (1)** that was done well and **one (1) thing** that needs to be improved.