

THE UNIVERSITY OF BRITISH COLUMBIA
Department / Program: School of Human Kinetics
Course title: Research Methods -- Year: 2006-07
HKIN 570 (3), Section 002
Course schedule: Wed. 8:30am – 11:30 am
Location: Rm, 100 (WMG)

Instructor: Nicola Hodges
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Course objectives:

- Understand the development of research questions and the methods which enable research questions to be answered.
- Understand the relationship between theory and research
- Be aware of the ‘scientific method’ underpinning research in human kinetics and be able to evaluate this method of acquiring ‘truth’.
- Have an understanding of the research methods available for collecting data
- Have an understanding of the research methods available for analyzing data
- Understand the importance of measurement in the answering of research questions
- Be able to critically and constructively analyze others’ research
- Know the procedures and criteria for the presentation of research findings
- Understand your ethical role as a researcher in the human sciences

Book Readings

- Thomas, J.R., Nelson, J.K. & Silverman (2005). Research methods in physical activity (5th edition). Champaign, IL: Human Kinetics. (or 2001, Thomas & Nelson, 4th ed)

Suggested:

- Chalmers, A.F. (1999). What is this thing called science? (3rd edition). Open University Press.
- Pelham, B.W., & Blanton, H. (2003). Conducting research in psychology: Measuring the weight of smoke. Belmont, CA: Thomson/Wadsworth.
- Drowatzky, J.N. (1996). Ethical decision making in physical activity research. Champaign, IL: Human Kinetics
- Field, A. (2000 or 2005). Discovering statistics using SPSS (2nd ed). London: Sage Publications Ltd.

Course assignments, due dates and grading:

assignment	Marks (%)	Date
A. Class participation/ answering questions	10	ongoing
B. Group stats projects	5	By February 28 th (output files, 1/gp). Gps of 2-3.
C. Ethics' tutorial	5	Certificate must be shown to instructor by March 14th
D. Lead readings	20	As allocated
E. Critique of research paper	25	By March 16th
F. Research project proposal	35	By April 6th

Course assignments

- A. Complete assigned readings & think about the “discussion points” (see below) before each class, and actively, constructively & respectfully comment and participate in discussions.

I strongly recommend keeping a weekly diary /exercise book concerning your thoughts on these readings and discussion points. They will be useful to revisit throughout the course and your graduate research. These will also serve as confirmation to me that you are thinking about the readings and the discussions. Make a point of highlighting issues /questions that you need to follow up and check back on these as the course progresses. Share with the class valuable web sites, free downloads etc. Try and reflect on the class discussions and issues at the end of each class. Use the internet to broaden your knowledge of concepts and issues (to be) discussed in class. Before a discussion of the readings we will discuss a few of the questions “discussion points” circulated by the lead presenter. Be prepared to address/comment/answer these questions each class. You will be assigned a no. from 1-8 and each week you will be chosen at random to address some questions.

- B. Group statistic's project

In groups of 2 or 3 you will be required to complete the 3 statistics projects assigned (see WebCT). The objective of this project is to encourage you to become familiar with a stats package (SPSS) think about research design and formulate a basic understanding of statistical issues. This class is not a statistics' class, although obviously a basic understanding of stats. is helpful as well as knowledge of a software package which can aid in this process. You are encouraged to take a statistics course during your graduate degree(s). The SPSS package is loaded onto the computers in the Computer lab. (basement of WMG). The assignments should be completed in order and one output sheet (with some discussion points to the questions) submitted to the instructor (electronic) before March 15th. Marks are primarily assigned for mostly accurate completion (if these are incomplete I will hand these back **once only** with feedback and you will have the opportunity to resubmit). The questions are designed to encourage you to complete some basic /important functions and for you to think about the designs. However, feel free to “play” with your data and

the SPSS functions. You might find a book by Andy Field (see above) to be particularly useful for running stats with SPSS (either edition) and of course the 'HELP' menu which comes with SPSS.

1= Films_07.sav: Graphing /descriptive stats and simple group comparisons (2)

2= ExamAnxiety_07.sav: correlation and simple linear regression (1)

3= LooksOrPersonality_07: Factorial designs (ANOVAs) and apriori contrasts (2)

C. Completing the on-line ethics quiz. Certificate needed for approval (and marks)

As of September 1st 2005, graduate student researchers are required to complete an ethics' tutorial before submitting a request for an ethical review. UBC Research ethics board (REB) applications will be subject to an additional requirement that all graduate students and medical residents should have completed the Tri-Council Policy statement (TCPS) tutorial prior to submission. The aim of this new requirement is to improve understanding of TCPS in the research community and, in particular, to ground junior researchers in appreciation of ethical principles and ethical conduct from the start of their careers. Another benefit may be that applications to the BREB and CREB will have fewer basic flaws than in the past. It is a good idea to get started on this straight away.

The TCPS tutorial can be completed in about two hours (you do not need to do it all at once). Here are the web links:

TCPS document <http://www.pre.ethics.gc.ca/english/policystatement/policystatement.cfm>

TCPS tutorial <http://www.pre.ethics.gc.ca/english/tutorial/>

D. Lead a group discussion for one week. You will be assigned readings and will be required to lead a discussion of these readings in class (see marking criteria below).

Before the class: (by Monday evening):

You will be required to identify some important /relevant questions that relate to the assigned readings and/or the topic in general. If you can, try and relate these issues to your research/areas of study, past experience. These questions should be designed to stimulate discussion. There is not a set number. You are not required to know the answer, just to have thought about the issue(s) (and hence encouraged your class mates to do the same). Do not get bogged down with the statistics & formulas, just try and understand the concepts and what they might mean for you.

In class:

Assume that you are talking to an audience who has completed the readings. First provide the audience with a general review of the paper(s). What was good, bad and was it useful, which parts are the most useful, are there better references? You do not need to go through each paper in turn, although this might help. How do the issues relate to your field, have you come across any of these problems before, can you give any practical examples (or counter-examples), anecdotes or elaborate on the issues with figures or pictures? Are there better readings you have found which help elaborate on the issues. **Always try and stimulate discussion. Again, your audience will be expected to have read the material so can field questions and enter into discussions.** Some of the issues may be somewhat philosophical (this is the nature of research methods). You may use powerpoint to do this, provide handouts or just direct people to the appropriate place in the readings. You might decide to try a group exercise. **A summary sheet (no more than a page) which should comprise some important points and perhaps a glossary of some important terms should be given to the instructor as a WORD file at the end of class and this information will then be posted on WebCT as a resource for the rest of the class.** You are also encouraged to use other resources, particularly if the paper is difficult

(i.e., other references, internet) to see if you can get any clarification. Try not to get bogged down with the statistics just the problem /issue and in general terms why it occurs and how it can be avoided. Again examples really help.

E. Find and critique a research paper.

Assessment is based on both a presentation (10-15 min, 10 min feedback) and written summary. You are required to get the paper you wish to critique checked with the instructor before you are due to present (schedule this meeting early – preferably within tutorial hours). An electronic copy of the paper must then be sent to the Instructor one week before the presentation date so that the reading can be made available to the rest of the class. 5 marks will be awarded for the presentation (clarity, organization, timing). 10 marks will be awarded for the content of the critique (see the 10 criteria below). An additional 5 marks will be awarded based on the content and incorporation of feedback and questions in class into the written document (where appropriate). If there is little room for improvement, then these marks will be awarded automatically. It is therefore important for you to listen carefully to the questions and take notes where apt. after your presentation. Do not rush your presentation. Bear in mind that questions may be asked for a number of reasons. Sometimes the audience requires clarification of points they missed (or you missed), points they didn't quite understand (due to differences in knowledge base), clarification as to your rationale or the authors rationale etc. Remember that you will be the expert on this paper. **When you are part of the audience bear in mind that the more questions you ask, the more helpful this could be for your peers. Do not think that keeping quiet helps your classmate!**

The **objective** of this assignment is to encourage you to think about the various issues involved in running an experiment or conducting a study and to be critical (yet fair and realistic) when reading and judging the validity/importance of a piece of work. If you stay in academia it is likely you will be called upon to critique /review a paper and hence, in addition to your subject knowledge, you will need to think about the tools the author(s) has used to answer his/her question. Always think about the question the author(s) is trying to answer and whether this has been achieved (i.e., were the methods the best for answering the question?). Have alternative hypotheses been considered and /or ruled out? If you have difficulty answering this question it may be that it was not very clear in the first place and hence it is likely that the paper might be lacking in other areas (predictions, methods, conclusions). You should, however, find that most authors spell out their research question(s) near the start and /or end of their introduction. Bear in mind that the paper you will be reviewing has already been peer-reviewed (so it should be pretty good). However, also think about the quality of the journal where the paper appears (ask your supervisors. Indeed, it may actually be easier to do this assignment if you chose a paper from a journal that is not perceived to be of very high quality).

- Find an empirical research paper pertinent to your research area and relatively recent (after 2000). This paper should be one where the authors have adopted an experimental design (i.e., manipulated a variable) or a cross-sectional design (compared participants who already differ on one variable) or some combination of the two.
- Present the paper in the class (10 minutes) and hand in a 2-3 page report.
- Information to appear in paper /presentation:
 1. Provide a **brief summary** of the paper (in your own words – this should be approx 5-10 sentences)
 - what was done and why?

- what was found and what does this mean?
2. What was the purpose /objective of the study. What was the researcher(s)' main question?
 3. What were the experimental hypotheses? Even if these are not stated explicitly infer what these are. There is usually more than one and they are usually stated in terms of the dependent variables and the types of effects expected (i.e., differences between groups, interactions, relationships). Are the hypotheses directional? What would be the null hypothesis? Focus on the major hypotheses particularly if there are many dependent variables and side issues.
 4. What operational definitions did the researcher use? Detail the independent and dependent variables along with operational definitions.
 5. What was the experimental design? Did the authors manipulate variables and hence use an experimental design, or were the variables pre-existing and hence comparisons were made across groups (i.e., cross-sectional)? What statistical design was used for analysis purposes? Think about the independent variables /factors and the number of levels at each factor, were these variables between participant or repeated measures factors? Again, focus on the major analyses.
 6. How were participants selected and assigned to groups? Was there any problem with this procedure?
 7. What descriptive and inferential statistics were used and were they appropriate?
 8. What steps were taken to ensure reliability/validity? What extraneous variables were controlled (or not controlled and hence were possible confounds)? In addition to ideas of your own and those prompted by the readings, think about observation and reliability, the sensitivity (power) and reliability of the instruments or equipment, test-retest procedures or problems, the validity of the conclusions /claims based on these issues (i.e., generalizability of the findings in view of the methods).
 9. Do you think the authors were able to support their conclusions? Provide justification for your answer. Think about the results and what they actually show/mean.
 10. If you could do this study again, name one or two things you would do differently and why.
- F. Proposing a research project or experiment. Assessment is based on both a presentation and written summary (20 minute presentation, 15 minutes Q&A). You must schedule a meeting with me to discuss your proposal before your presentation.

The objectives of this piece of coursework are for you to start thinking about your thesis and your thesis proposal in view of the issues discussed in the research methods class. The research project proposal does not have to be your thesis proposal (although it is a good opportunity to start making some progress on this), and if it is, it does not need to be the complete proposal (e.g., experiments 1-3). It should be more than a pilot study, in that the proposal should be developed in such a way that if completed it could be suitable for publication. You will not be assessed on the quality of the proposal as this is something that you will discuss with your supervisor and committee (i.e., is it a good question). Some of your class mates (and maybe the instructor), might have some comments and feedback about the quality of your proposal, but questions, feedback and assessment will primarily be based upon the quality of your research methods. For example, will the design you've chosen be able to answer your research question (so we need to be clear what this is), will you be able to determine the scientific validity of your data, are your proposed statistics appropriate, is your choice of measurement sensitive to the potential variables you will manipulate etc.? Are you aware of potential limitations in the design/methods etc. When these are presented in class the discussion period following will be designed to help you address outstanding issues.

Presentation: 10 marks
 Written document: 25 marks.

5 marks will be awarded for the presentation (clarity, organization, timing). 5 marks will also be awarded at this time for content (whether you have addressed the 4 criteria below as well as presented tables and figures). A total of 25 marks will then be awarded based on the written document. As with the critiques, 5 marks will be awarded based on the incorporation of feedback and questions raised in class into the written document (where appropriate). If there is little room for improvement, then these marks will be awarded automatically. The final 20 marks will be awarded for content (approx 5 marks / section as detailed below):

- Present (20 min) and write up a research proposal (2-3 pages maximum), containing the following information:
 1. Research question(s)-- general purpose/aims and specific hypotheses. You will need to provide some justification for the choice of question via a *brief* introduction. Why are you proposing to do this experiment /study? **Think about main effects and interactions** and state your experimental hypotheses (and direction) in terms of your **major dependent variables**.
 2. Methods
 - Participants (who, how are they chosen, allocated to groups, delimitations etc).
 - Task /design
 - Procedure
 - Design /analysis (statistics). Consider how (i.e., what stats you will use)
 - Table showing the procedure and research design.
 3. Results
 - Anticipated results
 - Figure (s) showing anticipated results for at least one dependent variable (bear in mind main effects and interactions).
 4. Anticipated outcomes /problems/issues
 - Discuss any methods based problems you foresee and how you propose to deal with these (these can be discussed in the apt. sections above). Will there be participant issues, equipment issues, statistical issues, potential confounds etc?

Marking criteria for Lead readings / discussion:

Criteria	Marks	Comments /feedback
1. Depth of reading and understanding	5	
2. Quality of the questions	5	
3. Effort and ability to stimulate discussion. Enthusiasm, presentation style	5	
4. Summary sheet / glossary	5	

COURSE OUTLINE AND READING LIST

Week 1-2: Introduction

- Introductions /course overview
- Introduction to research methods /designs (INSTRUCTOR)
- What is science? (INSTRUCTOR)

Helpful readings:

- Thomas & Nelson, (2001, 2005) chapter 1: overview of research process.
- Chalmers, chap 1 &2

Weeks 2-3: Theory issues, hypothesis testing (p values) & effect sizes

- Observation, induction and experimentation
- Means, sds, Confidence intervals,
- Readings: **Theory issues /significance testing/effect size**

Theory Issues /science and hypotheses (17th Jan)

- 1. Forscher, B.K. (1963). Chaos in the brickyard. Science Letters, 142, 3590.
- 1. Biddle S. (1997). Chaos in the brickyard revisited: on research integration, accumulated knowledge and evidence-based practice in the exercise and sport sciences. Journal of Sports Sciences, 15, 383-384.
- 1. Platt, J.R. (1964). Strong inference: Certain systematic methods of scientific thinking may produce more rapid progress than others. Science, 146 (3642), 347-353.
- 2. Kinraide, T.B., & Denison, R.F (2003). Strong inference: The way of science. The American Biology Teacher, 65, 419-424.
- Chamberlin, T.C. (1897; 2004). The method of multiple working hypotheses. *Houston Geological Society Bulletin*, 47, 68-69. <http://www.accessexcellence.org/RC/AB/BC/chamberlin.html>.
- Newell, A. (1973). You can't play 20 questions with nature and win...In W.G. Chase (Ed.), *Visual information processing*. NY: Academic Press.
- Chalmers, A.F. (1999). *Inductive reasoning*, ch 4. *What is this thing called science?* (3rd edition).
- Thomas and Nelson, 2001, 2005, chapter 1 & 2

Hypothesis and significance testing (17th– 24th Jan)

- 2. Dracup, C. (Aug, 1995). Hypothesis testing –what it really is. The Psychologist, 359-362. (hard in places, but basic take home messages simple and important).
- 2. Rosnow & Rosenthal (1989) Statistical procedures and the justification of knowledge in Psychological Science. American Psychologist, 44, 1276-1284
- 3. Carver, R. P. (1978). The case against statistical significance testing. Harvard Educational Review, 48(3), 378-399.
- 3. Harlow, L.L. (1997). Significance testing introduction and overview. In Harlow, L.L., Mulaik, S.A., & Steiger, J.H. (Eds.), What if there were no significance tests? Mahwah, NJ: LEA.
- 3. Matthews, R. (Nov, 1998). Flukes and flaws. Prospect, 20-24.
- Thomas, Nelson & Silverman, 2005, chapter 7
- Jones, L.V. (1952). Tests of hypotheses: one-sided and two-tailed tests. *Psychological Review*, 49, 43-46.
- Burke, C.J. (1953). A brief note on one-tailed tests. *Psychological Bulletin*, 50, 384-387.
- Jones, L.V. (1954). A rejoinder on one-tailed tests. *Psychological Bulletin*, 51, 585-586.
- Kimmel, H.D. (1957). Three criteria for the use of one-tailed tests. *Psychological Bulletin*, 54, 351-353.
- Goldfried, M.R. (1959). One tailed tests and “unexpected” results. *Psychological Review*, 66, 79-80.
- Lykken, D.T (1968). Statistical significance in psychological research. *Psychological Bulletin*, 70, 151-159.

Effect size, confidence intervals & power (24th – 31st Jan)

- 4. Franks and Huck (1986). Why does everyone use the .05? Research Quarterly for Exercise and Sport, 57, 245-249 (short).
- 4. Thomas, J.R., Salzaar, W. & Landers, D.M. (1991). What is missing in $p < .05$? Effect size. Research Quarterly for Exercise and Sport, 62, 344-348.
- 4. Olejnik, S.F. (1984), Planning educational research: determining the necessary sample size. Journal of Experimental Education, 53, 40-48.
- Thomas, Nelson & Silverman (2005) ch 7; ch14
- Thomas and Nelson (2001) chapter 13, (meta analysis, see page 247).
- Stevens, J.P. (ch 3, power) (1990). Intermediate statistics: a modern approach (pp83-95). Hillsdale: NJ. LEA.
- Thompson, B. (2002). What future quantitative social science research could look like: CI for effect sizes. Educational Researcher, 25-32.
- Thomas et al (1997). Planning significant and meaningful research in exercise science: estimating sample size. Research Quarterly for Exercise and Sport, 70, 11-23.
- Curran-Everett, D., Taylor, S., & Kafadar, K. (1998). Fundamental concepts in statistics: elucidation and illustration. Journal of Applied Physiology, 85, 775-786.

4. Online programs for calculating effect sizes (also see A. Field, 2001, 2005). G*Power - www.sagebrushpress.com/PEPI.html. See Thomas, Nelson & Silverman (2005), ch7, pp116-119.

• Week 3-4: Journal issues /publishing /critiquing papers/research methods:

- Experimentation /falsification/Bayes / RESEARCH METHODS
- **“Getting published”** /journals and book chapters
- Authorship
- Readings: **Journal issues and critiques / Reviewing articles**
- Thomas and Nelson, 2005, chapter 2

Journal issues and critiques / Reviewing articles/ research methods (24th Jan -14th Feb)

Authorship (Jan 24th or 31st)

- 5. Digiusto, E. (1993). Equity in authorship: A strategy for assigning credit when publishing. Society of Science and Medicine, 38, 55-58. (+ APA guidelines at back)
- 5. Syrett, K. L. & Rudner, L. M. (1996). Authorship ethics. Practical Assessment, Research & Evaluation, 5(1).
- 5. Fine & Kurdick (1993). Reflections on determining authorship. American psychologist, 48, 1141-1147.
- Crase and Rosato (1992) single versus multiple authorship, Jn of Physical Education, Recreation & Dance, 63(7) 28-31.
- See Zelaznik, (1993) – “ethics” & UBC policies on intellectual property: www.grad.ubc.ca/students/ipguide/

Reviewing scientific articles/critiques (31st Jan)

- 6. Hoppin, F.G. (2002). How I review an original scientific article. American Jn of Respiratory Critical Care Medicine, 166, 1019-1023...see also short editorial (Tobin M.J.), 1013-1014.
- 6. Silversides, A. Respect of one’s peers. Reference?
- 6. Seals, D.R., & Tanaka, H. (2000). Manuscript peer review: A helpful checklist for students and novice referees. Advances in Physiology Education, 23, 52-58.
- 6. Sackett, D.L. (1981). How to read clinical journals: I. Why to read them and how to start reading them critically. Canadian Medical Association Journal, 124, 555-558. (short, a few good points).
- Thomas and Nelson, 2005, chapter 2

Impact factors /ranking people and journals (31st Jan)

- 7. Ball, P. (15th Aug 2005). Index aims for fair ranking of scientists. News@Nature.
- 7. Eston, R. (2005). The impact factor: a misleading and flawed measure of research quality. Journal of Sports Sciences, 23, 1-3
- Internet discussion: <<http://bmj.bmjournals.com/cgi/content/full/329/7471/0-h>>
- 7. Hopkins, W.G. (2003). Impact Factors of Journals in Sport and Exercise Science, 1999-2001. SportSci.org.
- 7. Monastersky, R. (2005). The number that's devouring science. Chronicle, 52, A12 <<http://chronicle.com/free/v52/i08/08a01201.htm>>

Graduate training

- Roberts, G.C. (1993). *Ethics in professional advising and counseling of graduate students*. Quest, 45, 78-87.
- Russo, E. (16th Sep 2004). *Special report: The changing length of PhDs* Nature, 431, 382-383.
- UBC/ Faculty of Grad studies/ School of Human Kinetics: *Thesis guidelines and expectations*

<ul style="list-style-type: none"> • Week 5: Statistics, methods & design
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Statistics: for use (Feb 7th)

- Brief introduction to SPSS and statistics
- Organizing worksheets for analysis
- Collect some data in class (Stroop – add to last years data)
- Computer lab practicum

T-tests and univariate ANOVA

Main effects and interactions

Post hoc tests and pre-planned comparisons

Correlation and regression

Readings:

- Field, A. (2000; 2005). Discovering Statistics Using SPSS for Windows : Advanced Techniques for Beginners (Introducing Statistical Methods series) 1st and 2nd edition. Sage publications.
- Thomas and Nelson, 2005, chapter 6, 8, 9

<ul style="list-style-type: none"> • Weeks 6 & 8: Experimental design issues Critiques x 4

- Critique x 3/ 4
- Readings: **Experimental design issues**

Experimental Design and Methods (Feb 14th-28th)

Methods (14th Feb)

- 8. Thomas & Nelson, 2005, ch 16 (descriptive, cross-sectional, longitudinal or 2001, ch 15).
- 8. Thomas & Nelson, 2005, ch 18 (experimental and quasi-experimental...or 2001, ch 17).
- Thomas, Silverman & Nelson, 2005, ch 15, ch17.
- 8. Hrycaiko, D., & Martin, G.L. (1996). Applied research studies with single-subject designs: why so few? Journal of Applied Sport Psychology, 8, 183-199.
- Tversky, A. & Kahneman, D. (1971). *Belief in the law of small numbers*. Psychological Bulletin, 2, 105-109.

Rosenthal effect

- 9. Chapter 6, “subject-experimenter artifacts and their control”, p110-134. Rosenthal, R., & Rosnow, R.L. (1991). Essentials of behavioral research: Methods and data analysis, 2nd ed. NY: McGraw Hill.
- 9. Martens, R (1973, june), People errors in people experiments, Quest, 20, 16-20.

Regression to the mean

- 9. Shephard, R.J. (2003). Regression to the mean: A threat to exercise science? Sports Medicine, 33, 575-584. (check internet too)

Reliability and Validity (28th Feb)

- 10. Thomas & Nelson, 2005, chapter 11
- 10. Thomas & Nelson, 2001, chapter 4
- 10. Pelham and Blanton (2003). Ch 3: Moving from fact to truth: Validity, Reliability and Measurement. Conducting research in psychology: Measuring the weight of smoke. (pp 60-83). Belmont, CA: Wadsworth/Thomson.
- *Pelham and Blanton (2003). Ch 4: How do we misinterpret: Common threats to validity (pp.84-114). Conducting research in psychology: Measuring the weight of smoke. Belmont, CA: Wadsworth/Thomson*

File drawer problem

- *Rosenthal, (1979). The file-drawer problem... Psychological Bulletin, 86, 638-641.*

Week 7: mid term break: Feb 21st

Weeks 9-10: Creating and writing-up experiments / the thesis / Critiques x 2: March 7th-14th

- Critiques x 4 (2 / week)
- Readings: **Creating experiments /Writing a thesis /manuscript & presentation issues**
Creating and conducting experiments /the thesis (lit. search)
- 11. Eston, R.G., & Rowlands, A.V. (2000). Stages in the development of a research project: Putting the idea together. British Journal of Sports Medicine, 34, 59-64.
- *(Induction/deduction) Pelham, B.W., & Blanton, H. (2003). Being a successful researcher, ch 9 (only until p278 – quite basic). Conducting research in psychology: Measuring the weight of smoke. Belmont, CA: Thomson/Wadsworth.*
- 11. Frary, R. B. (1996). Hints for designing effective questionnaires. Practical Assessment, Research & Evaluation, 5(3).
- 11. Ch 2-4, Thomas, Nelson & Silverman (2005).
- *Giles, J. (15th April, 2004). Publishers go head to head over search tool. News@Nature, 428, 683.*

Scientific writing

- 12. Knight, K., & Ingersoll, C.D. (1996). Optimizing scholarly communication: 30 tips for writing clearly. Journal of Athletic Training, 31, 209-213.
- 12. Knight, K., & Ingersoll, C.D. (1996). Structure of a scholarly manuscript: 66 tips for what goes where. Journal of Athletic Training, 31, 201-206.
- 12. Rudner, L. M. & Schafer, W. D. (1999). How to write a scholarly research report. Practical Assessment, Research & Evaluation, 6(13).
- 12. Bartlett, R. (2001). Editorial. Journal of Sport Sciences, 19, 467-468.
- 12. Knight, J. (May, 2003). Clear as mud. Nature (news feature), 423, 376-378.
- *Thomas & Nelson, chapter 3 - writing the paper*
- 12. Skinner et al. (1985). The unsuccessful group treatment of ‘writer’s block’. Perceptual and Motor Skills, 61, 298.
- 12. Tobin, M.J. (2002). Compliance (COMmunicate PLease wIth less Abbreviations, Noun Clusters and Exclusiveness). Editorial. American J. of Respiratory and Critical Care Medicine, 166, 1534-1535.
- *Osborne, D. (1968). Jargon, Jabber & long, long words. American Antiquity, 33, 382-383.*

Graphs & tables

- 13. Wainer, (1992). Understanding graphs and tables, Educational Researcher, 21(1), 14-23.
- 13. Nagele, P. (2001). Misuse of standard error of the mean (SEM) when reporting variability of a sample. A critical evaluation of four anaesthesia journals. British Journal of Anaesthesia, 90, 514-516.

- 13. de Szendeffy, J. (2004). Powerpoint for the tweed crowd (from computer-assisted learning: a practical guide for teachers). University of Michigan Press.
- 13. Connecting people to useful information: Guidelines for effective data presentations. The Dissemination Working Group of the MEASURE Program (sections 1-3). PRB

Presenting statistics

- 14. Pelham, B.W., & Blanton, H. (2003). How to describe the results of statistical analysis, Conducting research in psychology: Measuring the weight of smoke, ch 12 (pp330-347). Belmont, CA: Thomson/Wadsworth.
- 14. Curran-Everett, D., & Benos, D.J. (2004). Guidelines for reporting statistics in journals published by the American Physiological Society, Journal of Applied Physiology, *97*, 457-459.
- *Publication manual of the American Psychological Association <guidelines for reporting statistics>*
- *Thomas & Nelson. chapter 6 - statistics*
- 14. Wilkinson, L. and the Task Force on Statistical Inference (1999). Statistical methods in Psychology Journals: Guidelines and explanations. American Psychologist, *54*, 594-604.
- 14. News@Nature (31st May 2004/ 3rd June 2004): Double check casts doubt on science statistics
- 14. News@Nature (30th Dec 2004/ Jan 1st 2005): Statistically significant. Editorial.

The thesis /dissertation

- *Porter, et al (1982, sep) The role of the dissertation in scientific careers, American Scientist, 475-481*
- *Porter, et al (1975) Utility of the doctoral dissertation, American Psychologist, 30, 1054-1061*
- *Thomas and Nelson, 2001, chapter 19 (writing your thesis)*
- *UBC guidelines (internet /FOGS).*

<ul style="list-style-type: none"> • Week 11: Ethics: March 21st

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| <ul style="list-style-type: none"> ○ Ethics –GUEST VISIT – Jim Rupert/ Margaret Shotter ○ Problem examples ○ Readings: <u>Ethics</u> |
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Ethics

- **UBC guidelines (behavioural and clinical)**
- APA: Ethical issues in human research
- 15. Drowatzky (1993) ethics. Codes and behaviours, Quest, *45*, 22-31
- 15. Safrin, M.J. (1993). Oh what a tangled web we weave. Quest, *45*, 52-61.
- *Article from the Guardian, March 2004: Drug companies and research*
- *Thomas & Nelson, chapter 5*
- 15. Dalton R. (2005). Obesity expert owns up to million-dollar crime. Nature, *434*, 424-424.
- 15. Giles, J. (4th March 2004). Scientists behaving badly. News@Nature.
- 16. Kretchmer, R.S. (1993). Philosophy of ethics, Quest, *45*, 3-12.
- 16. Kroll, W. (1993). Ethical issues in human research. Quest, *45*, 32-44.
- 16. Zelaznik, (1993). Ethical issues in conducting and reporting research...Quest, *45*, 62-68.
- 16. Ethics: have we gone too far?

<http://www.aaup.org/AAUP/pubsres/academe/2006/SO/Rep/ResearchonHumanSubjects.htm>

<http://insidehighered.com/layout/set/print/news/2006/10/16/irb>

- *Thomas and Nelson, 2005, chapter 5*

<ul style="list-style-type: none"> • Weeks 12: Research proposals x 4/5 (20 min pres, 15 min Q&A) March 28th. TAPED
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<ul style="list-style-type: none"> • Weeks 13: Research proposals x 4/5 (20 min pres, 15 min Q&A) April 4th. TAPED

• Week 14: To-be-determined / Talking across methods **April 11th**

Graduate research methods – shared questions and inter-disciplinarity in human kinetics (Wilson).

Sport science specialization vs. fragmentation

- Thomas (1987). Are we already in pieces or just falling apart, *Quest*, 39 (2), 114-121

Qualitative versus quantitative

- ALL: Firestone, W.A. (1987). Meaning in method: The rhetoric of quantitative and qualitative research: *Educational researcher*, 16 (7), 16-21.
 - Schutz (1989). *Qualitative research: Comments and controversies*. *RQES*, 60, 30-35.
 - ALL: Belgrave, L., Zablotzky, D., & Guadagno, M. (2002). How do we talk to each other? Writing qualitative research for quantitative readers. *Qualitative Health Research*, 12(10), 1427-1439.
 - *Thomas & Nelson, 2005, chapter 19*
1. General discussion of the papers (questions to think about)
 - a. What are some of the potential qualitative methods used to address research questions in human kinetics /clinical research/sport science?
 - b. What are some of the advantages and disadvantages of these methods in comparison to more quantitative designs/analysis
 2. QN: How can we work together (across methods)?
 1. What are the advantages of multi-disciplinary research methods?
 2. What are the barriers to multi-disciplinary research methods?
 3. QN: In groups we will attempt to formulate some research questions (of potential interest to the majority of the group) that can be addressed through multi-disciplinary research methods. Think about some of your general research questions /populations of interest and what questions you could ask through more qualitative techniques.

NOTES FOR READING LIST:

Readings and dates are subject to change

Readings in italics are suggested or accompanying readings.