

Course Title: Evidence Based Practice II

Course Number: PHT 6608

Course Semester and Year: 2014 Summer Semester, Year 1

Course Prerequisites: Course participation is limited to the entry-level DPT student in his/her first year of the program.

Department: Department of Physical Therapy, University of Florida

Credit Hours: 3

Course Location: Building – HPNP, Room – G312 for Tu lectures; PT 1104 for Fri lectures

Course Dates and Times: Tuesdays, 8:30AM – 11:30AM (except 6-25-13 10AM-1PM);
Fridays, (see course outline for Fri lectures), 12:30 - 3:30PM

Course Instructor: Donovan Lott PT, PhD, CSCS

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Co-Course Instructor: Jason Beneciuk DPT, MTC, FAAOMPT

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Office Hours: By appointment

Course Description:

The purpose of the evidence based practice sequence at the University of Florida is to promote active learning and to provide the student with skills to become critical consumers of the rehabilitation literature, as well as their own clinical practice. Evidence Based Practice II continues this sequence by reviewing selected statistical topics related to error, power, interval estimation, and inferential tests. Evidence Based Practice II will also review criteria for determining quality of individual studies related to prevention, screening, and harm, as well as introduce students to the systematic review. **In order to reinforce active learning and mastery of at least one topic, students will be charged with teaching a part of the course.** The material presented in lecture will be accentuated with “real-world” examples from the literature and the course instructor’s ongoing research. An emphasis will be placed on using evidence to supplement clinical decision making in this part of the sequence. Student competence will be assessed by quizzes, presentations, class projects, and 1 written examination.

Course Objectives:

After completing this course, the student will be competent in

1. Differentiating between statistical concepts related to standard error, sampling error, standard deviation, and sampling distribution.
2. Describing how Type I and II error rates can affect the interpretation of a statistical finding.
3. Describing how Type I error rate, sample size, type of hypothesis, and effect size influence statistical power.
4. Differentiating between hypothesis testing for 2 means and more than 2 means.
5. Discussing different methods of post-hoc testing.

6. Describing basic hypotheses for correlation and regression analyses.
7. Describing advantages and disadvantages of different regression analyses.
8. Differentiating between interaction and main effects reported in 2 x 2 ANOVA models.
9. Interpreting information provided by ROC curves.
10. Describing the basic mathematical function of selected statistical tests.
11. Completing analysis or interpretation of selected statistical procedures.
12. Identifying ideal design for study addressing screening and prevention.
13. Identifying special issues for studies addressing harm.
14. Discussing the potential consequences of diagnostic or preventative “labeling.”
15. Describing selected methodological issues related to systematic reviews.
16. Discussing advantages and disadvantages of systematic reviews.
17. Formulating own clinical question using provided guidelines (population, tests or intervention, outcome).
18. Identifying and obtaining evidence to answer clinical questions.
19. Reporting responses to clinical questions using provided guidelines for oral presentation.
20. Utilizing feedback from course instructor and teaching assistants to improve oral presentation skills without defensiveness.
21. Answering questions from peers in a group setting without appearing uncomfortable.

Teaching Methods and Learning Experiences:

The course instructor will utilize all of the following techniques: Lecture, focused readings, class discussion, individual and group projects, accessing on-line resources, and small group sessions (Socratic Method).

Readings:

The course instructor will assign required journal articles for lecture material.

The following textbook is required for the Evidence Based Practice Sequence:

- Jewell DV. Guide to Evidence-Based Physical Therapy Practice. (Jones and Bartlett, 1st or 2nd edition)

The following contains readings that helped form the source lecture material (slides):

- SW Huck. Reading Statistics and Research, 4th edition. (Pearson, 2004)
- SE Straus, WS Richardson, P Glasziou, RB Haynes. Evidence-Based Medicine, 3rd edition. (Elsevier, 2005)

Students may also find it beneficial to have access to a statistical reference book for some parts of the Evidence Based Practice sequence.

General Statistical Website Resources:

These websites may (or may not) be helpful to students. They contain reference information on statistical concepts that will be covered in this class.

<http://math.about.com/gi/dynamic/offsite.htm?zi=1/XJ/Ya&sdn=math&zu=http%3A%2F%2Fwww.statsoftinc.com%2Ftextbook%2Fstathome.html>

(Click on “statistics textbook”)

<http://www.psychstat.missouristate.edu/introbook/sbk00.htm>

http://www.une.edu.au/WebStat/unit_materials/index.htm

<http://www.uwsp.edu/psych/stat/index.htm>

<http://statlink.tripod.com/>

www.statisticshell.com/

Projects:

Each project is to be completed individually, include the UF honor code, and student signature.

Project #1 – Involves the calculation and interpretation of selected statistical procedures using Excel software and provided statistical output. Project #1 will be used to provide practice interpreting data for application. Once all questions are reviewed in class, Project #1 will be due to Sakai before class on July 8th 2013. Grading is pass or fail for Project #1; however, not completing this assignment with a score of 80% or higher will result in a failing mark.

Project #2 – Involves the process of using accumulated skills (from EBP I and II) to ask and answer a relevant clinical question of the student’s particular interest. The student will be required to use peer-review literature and a specific format will be provided (see Evidence in Practice examples from *Physical Therapy*). Completion of an oral presentation and a 1 page evidence summary are requirements of Project #2. Project #2 will be assigned by June 10th and presentations will take place on July 1st, 8th, 22nd, and 27th. Slides to be used for Project #2 must be provided to the instructor **1 day prior to the presentation** (by 5 pm EST). Failure to provide slides to instructor within this time frame will result in a deduction from the Project #2 overall score. The 1 page evidence summary will be due to Sakai the same time for all students (BEFORE class on July 22nd). Each student will receive an electronic copy of the accumulated 1 page evidence summaries for future use.

Students will be graded on Project #2 by the instructor, guest lecturers, and/or 3-5 other students. Grading criteria are outlined on the last page of the syllabus. Grading will be on a 0-2 scale for each criterion.

Student Led Topic Presentations:

Consistent with the active learner theme for EBP II, certain topics will be covered in the classroom by students. My rationale for this approach is that education theory and research suggest one is more likely to master a topic if he/she teaches it him/herself.

An instructor led lecture/discussion of approximately one hour’s duration will occur the lecture session before the student led presentations that involve journal articles including

specific statistical tests. The student led presentations will be expected to last a **minimum of 15 minutes and a maximum of 22 minutes**. This time includes the presentation, discussion, and question/answer period. Failure to adhere to this amount of time will result in a grade reduction for the group. There is no standard format for the presentations, but students are encouraged to use methods that appeal to a wide range of learning styles and have fun (within reason while remaining professional). The students are expected to find and discuss 1-2 journal articles and how the authors used the statistical tests involved. A brief summary of the statistical test and the rationale for its use should be included. The focus is to enable the class to better understand the rationale and correct use of statistical tests in journal articles they will read as DPT students and future clinicians. An example of this type of presentation will be provided on the first day of class.

Students will be graded on their presentation by the instructor, guest lecturers, and/or 3-5 other students. Students will work in groups and each member of the group will receive the same grade. Grading criteria include 1) Technical aspects of the presentation adhered to guidelines provided in class; 2) Oral presentation demonstrated appropriate skills discussed in class; 3) Content of presentation included a review of 1-2 relevant journal articles and a brief summary of the statistical test of interest; 4) Creativity and originality; and 5) Class participation. Grading will be on a 0-5 scale for each criterion. Failure to adhere to the time to present of 15-22 minutes will result in a reduction in the score for the group.

The instructor will be available for consultation on presentation outside of class time. In keeping with an active learner theme, this contact should be kept to a minimum. The goal is to create a **student initiated presentation**, not an instructor-dictated presentation.

Each group must provide an **electronic copy of the following to the instructor 1 day prior to the presentation (5 pm EST)**: 1) Any power point slides that will be used and 2) 2-3 possible test or quiz questions that will be from the topic covered (questions must be in true/false or multiple choice format with correct answers indicated). Failure to meet any part of these expectations will result in a deduction of the presentation grade for each member of the group.

Quizzes:

Each quiz is to be completed **individually and without any notes/references/books**.

Short quizzes (~5-15 questions, either in true/false or multiple choice format) will be given at the beginning of selected class sessions. Missing a class lecture when a quiz is given will require an unexcused absence (as per the Student Handbook) in order to make up the missed quiz.

Course Outline:

The course instructor can (and will) make changes to this schedule at his discretion. All changes will be announced during class time or by email (to UF address).

Advanced preparation is positively associated with enjoyment of this class.

<i>Date</i>	<i>Topic</i>
May 13 th	<p><u>Donovan Lott</u> - Introduction to EBP II</p> <p><u>Donovan Lott</u> - Sampling error and estimates (revisited) – on the way to interval estimates</p> <p><u>Donovan Lott</u> - Presentation Guidelines and Tips</p> <p><u>Jason Beneciuk DPT, MTC, FAAOMPT</u> - Example of Student Led Presentation (Cluster Analysis)</p> <p><i>Optional Reading</i></p> <p>Huck SW, Chapter 6</p> <p>Error and power</p> <p><i>Required Reading</i></p> <p>Sterne JAC and Smith GD. Sifting the evidence – what’s wrong with significance tests? <i>BMJ</i>: 2001; 322:226-231</p> <p>Norton BJ and Strube MJ. Understanding statistical power. <i>J Othop Sports Phys Ther</i> 2001;31:307-315.</p> <p>Application and interpretation</p>
May 20th	NO CLASS ON THIS DATE
May 23rd (Fri) 12:30; PT 1104	<p><u>Jason Beneciuk DPT, MTC, FAAOMPT</u> - Making inferences #1 (central tendency)</p> <p><i>Required Reading</i></p> <p>Bandy WD, Use of Statistics in Physical Therapy Over a 2-Year Period – 2000-2002 <i>J Phys Ther Educ</i>:2003;67-70.</p> <p>Jewell DV, Chapter 9</p> <p><i>Optional Readings</i></p> <p>Huck SW, Chapters 10 (238-264), 11, 12, 13 and 14 (377-388)</p> <p>Application and interpretation (Project #1, Questions 1 – 5)</p>
May 27 th	<p>Group 1 presentation of article(s) on testing 2 means</p> <p>Group 2 presentation of article(s) on 1 way ANOVA</p> <p>Group 3 presentation of article(s) on 2 way ANOVA (main effects)</p> <p>Group 4 presentation of article(s) on 2 way ANOVA (interaction)</p> <p>Application and interpretation (Project #1, Questions 6 – 8, and 11)</p> <p><u>Joel Bialosky PT, PhD, OCS</u> - Making inferences #2 (correlation and regression)</p> <p><i>Required Reading</i></p> <p>Jewell DV, Chapter 9</p>
June 3 rd	<p><u>Steven George PT, PhD</u></p> <p>Review of individual studies from EBP I Practice Patterns</p> <p>Prevention and harm</p> <p><i>Optional Reading</i> – Straus et al. Chapter 3 (92 – 99) and Chapter 6.</p>
June 10 th	<p>Group 5 presentation of article(s) on correlation</p>

- Group 6 presentation of article(s) on multiple regression (overall model)
 Group 7 presentation of article(s) on multiple regression (individual predictors)
 Application and interpretation (Project #1, Question 9)
Donovan Lott - Making inferences #3 (special topics)
Required Reading (ROC Curves)
 Receiver operating characteristic (ROC) curve: practical review for radiologists. *Korean J Radiol* 2004;5:11-18.
Optional Reading (Frequencies and Nonparametric testing)
 Huck SW, Chapter 17 (458-477) and Chapter 18 (486-501 and 507-512)
- June 17th Group 8 presentation of article(s) on non-parametric testing (testing median and ranks)
 Group 9 presentation of article(s) on non-parametric testing (chi-square)
 Group 10 presentation of article(s) on ROC curve
 Application and interpretation (Project #1, Question 10 and 12)
 Description of Project #2
Donovan Lott - Examples from the literature
Required Reading
 Craik RJ. A tolerance for ambiguity. *Phys Ther* 2001;July;Editor's Note (Be prepared to discuss in class).
 Hoppenrath and Ciccone. Is there evidence that phonophoresis is more effective... *Phys Ther* 2006;86:136-140.
- June 24th**
CLASS 10-1 Jason Beneciuk DPT, MTC, FAAOMPT – Narrative/systematic review/meta-analysis
Donovan Lott - Catch up and review (as needed)
Required Reading
 Scalzitti DA. Evidence-based guidelines: application to clinical practice. *Phys Ther* 2001;81:1622-1628.
 Montori VM et al. Methodological issues in systematic reviews and meta-analyses. *Clin Orthop Relat Res* 2003;413:43-54.
 Philadelphia panel evidence-based clinical practice guidelines on selected rehabilitation interventions: overview and methodology. *Phys Ther* 2001;81:1622-1628.
 Jewell DV, Chapter 14.
- June 27th (Fri)**
12:30; PT 1104 Group 11 presentation of articles using Narrative Review and Qualitative Systematic Review **will need to include 2 articles in presentation**
 Group 12 presentation of article(s) using Meta-analysis
 Group 13 presentation on Philadelphia panel – low back pain
 Group 14 presentation on JOSPT clinical practice guidelines – low back
Steven George PT, PhD - Review Session
- July 1st Platform presentations (14)

July 8 th	Platform presentations (14) Project #1 due
July 11th (Fri) 12:30; PT 1104	<u>Steven George PT, PhD</u> Review Session (Optional)
July 15 th	Final examination
July 22 nd	Platform presentations (14) 1 page evidence summary for Project #2 due BEFORE class
July 25th (Fri) 12:30; PT 1104	Platform Presentations (13)

EBP II Topic List for Student led presentations (Number corresponds to group # in syllabus)

1. Statistical inference – testing 2 means
Example(s) from literature discussing
 - a. Hypothesis testing with an independent t-test
 - b. Hypothesis testing with dependent t-test
2. Statistical inference – testing 2+ means (1 way ANOVA)
Example(s) from literature discussing
 - a. Hypothesis testing with ANOVA
 - b. Post-hoc testing
3. Statistical inference – 2 way ANOVA – main effects
Example(s) from literature discussing
 - a. Hypothesis related to main effects
4. Statistical inference – 2 way ANOVA – interaction
Example(s) from literature discussing
 - a. Hypothesis related to interaction
5. Statistical inference – correlation
Example(s) from literature discussing
 - a. Hypothesis testing with correlation
 - b. Examples of correlation coefficients
6. Statistical inference – multiple regression (overall model)
Example(s) from literature discussing
 - a. Differentiate regression and multiple regression
 - b. Hypothesis testing with regression (R-square)
7. Statistical inference – multiple regression (individual predictors)
Example(s) from literature discussing
 - a. Hypothesis testing with regression (unstandardized coefficients)
 - b. Hypothesis testing with regression (standardized coefficients)
8. Statistical inference – non parametric analysis (median and ranks)
Example(s) from literature discussing
 - a. Examples of median and rank testing
 - b. Interpretation of median and rank testing

9. Statistical inference – non parametric analysis (probability)
 - Example(s) from literature discussing
 - a. Hypothesis testing with chi-square
 - b. Interpretation of chi-square
10. Statistical inference – ROC curve
 - Example(s) from literature discussing
 - a. Definition of chance diagonal
 - b. Interpretation of area under curve (AUC)
11. Narrative and Qualitative Systematic review
 - a. Define systematic review and narrative review
 - b. Identify where narrative reviews and qualitative systematic reviews rank in EBP hierarchy
 - c. Identify where narrative reviews and qualitative systematic reviews rank in literature search strategies
12. Systematic review
 - a. Define meta analysis, and clinical practice guidelines
 - b. Identify where meta analysis ranks in EBP hierarchy
 - c. Identify where meta analysis ranks in literature search strategies
13. Philadelphia panel – low back pain
 - a. Interventions reviewed and why
 - b. Data summary for each intervention (use of AV aid is required)
 - c. Evidence based clinical recommendations from panel
 - d. Get student take on recommendations
14. JOSPT clinical practice guidelines
 - a. Interventions reviewed and why
 - b. Data summary for each intervention (use AV aid)
 - c. Evidence based clinical recommendations from panel
 - d. Get student take on recommendations

EBP II Student Groups for student led presentations by last name:

- #1 – Ab. Arroyo, Buchanan-McGrath, Craun, Dugan
- #2 – Karns, Merkut, Pacho, Saint John
- #3 – Surdyke, Parrish, Marsh, Kramer
- #4 – Fish, Cunningham, Campbell, An. Arroyo
- #5 – Bailey, Casanova, DeBusk, Folsom
- #6 – Lane, McDermott, Perez de Corcho, Van Ostrand
- #7 – Vinson, Pittman, McKey, Lewis
- #8 – Fowler, Devlin, Castrillo, Bauer
- #9 – Belmore, Clesen, Difato, Gentile
- #10 – Lott, McNamara, Prince, Wait
- #11 – Wolfe, Rodriguez, Ngo, Mader
- #12 – Higgins, DiFiglio, Conto, Bradosky
- #13 – Brown, Cooper, Drum, Jones
- #14 – Mantooth, Norman, Ross

Grading:

Quizzes	20%
Active learning participation (student presentation, Project #1)	20%
Project #2 (actively participate in Q&A– oral presentation, and summary)	20%
Final exam (comprehensive – just as life is)	40%

Grading is scored according to the grading policy; University of Florida, College of Health Professions, Department of Physical Therapy, Student Handbook. For greater detail on the meaning of letter grades and university policies related to them, see the Registrar’s Grade Policy regulations at: <http://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

The following scale is used:

Class Percentage	93% - 100%	90% %- 92%	87% %- 89%	83% %- 86%	80% %- 82%	77% %- 79%	73% %- 76%	70% %- 72%	67% %- 69%	63% %- 66%	60% %- 62%	Below 60%
Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E

Assessment Methods

Multiple assessment methods are used to allow students different opportunities to display application of their knowledge in this class. Quizzes and the written exam incorporate multiple choice questions (including true/false), short answer responses, and interpretation of simple calculations. Active learning participation involves the development and presentation of a lesson related to one of the fundamental areas identified by the instructor. Assessment for this part of the class is done in combination of peer and instructor ratings using a standard rubric that is provided to the students. The project incorporates written and oral synthesis of identified literature that answers a clinical question in a structured manner. Successful completion of this project requires a concise written summary and clear oral presentation of the answer to the clinical question. The project emphasizes emphasis critical analysis of the literature and explicit consideration of how data reported in the article may influence future clinical application. A standard rubric is used for this project to ensure consistent assessment methods are used. In general, the assessments for this class are designed to closely match the previously listed course objectives.

Attendance and Professional Behavior

Attendance is strongly encouraged for all classes as the material is considered essential to the knowledge, skills, and attributes of an entry-level clinician. Professional behavior is critical for a successful transition from the classroom to the clinical setting. The faculty recognizes the importance of this by incorporating the development and evaluation of professional behavior into each academic course. All students must attain developmentally appropriate levels of professionalism while in the University of Florida’s Doctor of Physical Therapy Program. Professionalism will be determined by observation of behaviors in the classroom and lab. Additional feedback will be provided by peers, instructors, and teaching assistants.

Key professionalism areas emphasized in this class: responsibility, communication, and critical thinking.

Lecture dress is required for all class sessions, except tests.

Academic Integrity

Students are expected to act in accordance with the University of Florida policy on academic integrity (see Student Conduct Code, the Graduate Student Handbook or these web sites for more details:

<http://www.dso.ufl.edu/sccr/honorcodes/conductcode.php>

<http://www.dso.ufl.edu/studenthandbook/studentrights.php>

<http://gradschool.ufl.edu/students/introduction.html>

Cheating, lying, misrepresentation, or plagiarism in any form is unacceptable and inexcusable behavior.

We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.

In this professional program we are particularly sensitive to students submitting independent work. All students are required to abide by the academic integrity guidelines and the following pledge has been accepted by the University and is expected of all students,

I understand that the University of Florida expects its students to be honest in all of their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action, up to and including expulsion from the University.

On all work submitted for credit by UF students, the following pledge is required or implied:

On my honor, I have neither given nor received unauthorized aid in doing this assignment.

In this class all students submitting a project or test are indicating they have neither given nor received unauthorized aid even if this statement is not included and signed.

Make-up Work

I expect you to attend and be prepared to participate in all class sessions. Personal issues with respect to class attendance or fulfillment of course requirements will be handled on an individual basis.

Accommodations for Students with Disabilities

If you require classroom accommodation because of a disability, you must first register with the Dean of Students Office (<http://www.dso.ufl.edu/>). The Dean of Students Office will provide documentation to you, which you then give to the instructor when requesting accommodation. The College is committed to providing reasonable accommodations to assist students in their coursework.

Counseling and Student Health

Students may occasionally have personal issues that arise in the course of pursuing higher education or that may interfere with their academic performance. If you find yourself facing problems affecting your coursework, you are encouraged to talk with an instructor and to seek confidential assistance at the UF Counseling & Wellness Center, 352-392-1575. Visit their web site for more information: <http://www.counseling.ufl.edu/>.

The Student Health Care Center at Shands is a satellite clinic of the main Student Health Care Center located on Fletcher Drive on campus. Student Health at Shands offers a variety of clinical services, including primary care, women's health care, immunizations, mental health care, and pharmacy services. The clinic is located on the second floor of the Dental Tower in the Health Science Center. For more information, contact the clinic at 392-0627 or check out the web site at: www.health.ufl.edu/shcc

Crisis intervention is always available 24/7 from: Alachua County Crisis Center: (352) 264-6789

<http://www.alachuacounty.us/DEPTS/CSS/CRISISCENTER/Pages/CrisisCenter.aspx>

Do not wait until you reach a crisis to come in and talk with us. We have helped many students through stressful situations impacting their academic performance.

Assessment of Student-Led Topic Presentation

Date of Presentation: _____

Topic/Title of Presentation: _____

Please rate the Student Led Topic Presentation for the following criteria using a 0-5 point scale (0=unacceptable; 1=poor; 2=fair; 3=adequate; 4=good; 5=excellent).

- 1) Technical: Slides for presentation adhered to appropriate presentation guidelines (i.e. number of slides for time allowed, sufficient yet not excessive use of text and pictures, slides up for an adequate amount of time, etc.).

- 2) Oral Presentation: Presenters used appropriate speed and volume while speaking, spoke clearly, demonstrated enthusiasm for the subject matter, and followed appropriate presentation skills.

- 3) Content: Presenters used 1-2 relevant journal articles, adequately described the study(ies) (sufficient yet not excessive background information, methods employed, etc.), clearly explained and discussed the statistical test used (with a brief summary of the statistical test and the rationale for its use), and explained how the results were interpreted and their potential impact in that area of research.

- 4) Creativity: Presenters demonstrated originality and creativity.

- 5) Class Participation: Presenters facilitated class participation and/or discussion (engaged the audience, responded to questions effectively, etc.).

Please answer the following two questions in 1-3 sentences:

- 1) What did you find as the most interesting/potentially useful portion of the presentation?

- 2) What do you think could have been done to improve this presentation (content or presentation style related)?

Assessment of Project #2

Student Name: _____

Topic/Title of Presentation: _____

Project #2 will be rated for the following criteria using a 0-2 point scale (0=absent; 1=partial; 2=complete).

- 1) Practice area and clinical question were clearly stated _____
- 2) Population, intervention or tests, and outcomes were specifically mentioned _____
- 3) Rationale for clinical question was logical _____
- 4) Appropriate and complete search strategy was presented _____
- 5) Evidence summary clearly stated for selected question _____
- 6) Student restated question and directly addressed ambiguity _____
- 7) Influence on clinical practice was stated appropriately _____
- 8) Student followed appropriate presentation guidelines for subheadings _____
- 9) Student demonstrated appropriate presentation skills _____
- 10) Student answered questions well _____

Preliminary Total _____/20

ADDITIONAL CRITERIA

Presentation (without questions) was >8 min = 3 points deducted from overall score

OVERALL TOTAL _____/20