



ARIZONA STATE UNIVERSITY

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GENERAL STUDIES PROGRAM COURSE PROPOSAL COVER FORM

Courses submitted to the GSC between 2/1 and 4/30 if approved, will be effective the following Spring.

Courses submitted between 5/1 and 1/31 if approved, will be effective the following Fall.

(SUBMISSION VIA ADOBE.PDF FILES IS PREFERRED)

DATE 3/2/09

1. ACADEMIC UNIT: KINESIOLOGY

2. COURSE PROPOSED: KIN 460 THEORY OF STRENGTH TRAINING 3
(prefix) (number) (title) (semester hours)

3. CONTACT PERSON: Name: TANNAH BROMAN Phone: 5-2901
Mail Code: 0701 E-Mail: tannah.broman@asu.edu

4. ELIGIBILITY: New courses must be approved by the Tempe Campus Curriculum Subcommittee and must have a regular course number. For the rules governing approval of omnibus courses, contact the General Studies Program Office at 965-0739.

5. AREA(S) PROPOSED COURSE WILL SERVE. A single course may be proposed for more than one core or awareness area. A course may satisfy a core area requirement and more than one awareness area requirements concurrently, but may not satisfy requirements in two core areas simultaneously, even if approved for those areas. With departmental consent, an approved General Studies course may be counted toward both the General Studies requirement and the major program of study. (Please submit one designation per proposal)

Core Areas

Literacy and Critical Inquiry-L ☒
Mathematical Studies-MA ☐ CS ☐
Humanities, Fine Arts and Design-HU ☐
Social and Behavioral Sciences-SB ☐
Natural Sciences-SQ ☐ SG ☐

Awareness Areas

Global Awareness-G ☐
Historical Awareness-H ☐
Cultural Diversity in the United States-C ☐

6. DOCUMENTATION REQUIRED.
(1) Course Description
(2) Course Syllabus
(3) Criteria Checklist for the area
(4) Table of Contents from the textbook used, if available

7. *In the space provided below (or on a separate sheet), please also provide a description of how the course meets the specific criteria in the area for which the course is being proposed.*

CROSS-LISTED COURSES: ☐ No ☒ Yes; Please identify courses: KIN 598 THEORY OF STRENGTH TRAINING

Is this amultisection course?: ☐ No ☐ Yes; Is it governed by a common syllabus? _____

L. MANDARINO

J. Mander



ARIZONA STATE UNIVERSITY

Chair/Director (Print or Type)

Chair/Director (Signature)

Date: 3/4/09

KIN 460

Course Description: This course is will investigate the research and theories related to the development of muscular strength as well as research regarding the effects of strength training on various physiological systems.

KIN 460 Theory of Strength Training

Fall 2008

Time: MWF 9:40-10:30

Location: Discovery 301

Instructor: Tannah Broman

Office: PEBW 214B

Office Hours: TTH 9:45-11:45 AM

Phone: (480) 965-2901

E-mail: tannah.broman@asu.edu

Prerequisite: KIN 340

Course Description: This course will investigate the research and theories related to the development of muscular strength as well as research regarding the effects of strength training on various physiological systems.

Course Objectives: By the end of the semester the student will

1. Through written examinations, demonstrate adequate knowledge of the theories and research related to the development of muscular strength.
2. Through regular questions and analyses of relevant journal articles, demonstrate an understanding of the quality and depth of various topics in strength training research.
3. Through a written paper and defense gain an awareness and in-depth understanding of at least one of the major areas of research in strength training and how that research is applied in real world training settings.

Optional Textbook

Stone, M.H., Stone, M. and Sands, W.A. (2007). *Principles and Practice of Resistance Training*, 1st ed., Human Kinetics: Champaign, IL.

Course Requirements

Assigned Readings and In-Class Discussions Because of the emphasis this class places on strength training research, students will be required to read numerous assigned research articles. It is expected that students come to class prepared to discuss these articles in detail and provide critique and commentary on the articles. To this end, students will be given a set of questions related to each article that are to be completed and turned in at the assigned time (see below). References for the assigned articles will be provided on Blackboard. It is the responsibility of the student to obtain the articles from the library.

Article Study Questions For each assigned article, a set of questions related to the article will be assigned. These questions are to be answered outside of class and prior to the FIRST class period in which they will be discussed. ALL STUDY QUESTIONS ARE DUE AT THE BEGINNING OF CLASS ON THE DAY OF THE FIRST CLASS PERIOD IN WHICH THEY WILL BE DISCUSSED. Students may work together to answer the questions but each student must turn in individual written answers.

Exams There will be two essay exams for this course. The final exam will consist of an in-class essay component and a take-home article critique component.

Written Paper and Defense Each student will be required to write a 10-12 page paper on an instructor approved topic pertinent to strength training theory. The guidelines for this paper will be discussed in class and will also be provided on Blackboard. A list of approved topics will be provided to the student at the beginning of the semester. Once the topic has been selected and approved it may not be changed.

In addition to the paper, each student will be required to orally defend his or her paper in a format to be discussed in class.

There will be a number of opportunities to obtain feedback and evaluation of the paper and oral defense prior to turning in the final draft/presenting the oral defense. The feedback will utilize the same rubrics used to grade the final paper/oral defense as well as additional substantive feedback from the instructor. While the "grades" for rough drafts, outlines, etc. will not be counted in the final grade, it is *strongly* recommended students take advantage of these opportunities.

Extra Credit There is NO extra credit available for this course for any reason or under any circumstances.

Academic Dishonesty Cheating and plagiarism will not be tolerated under ANY circumstances and will be punished according to departmental and university guidelines.

Accommodations for Students with Disabilities Students with disabilities (as documented by the Disability Resource Center) should notify the instructor as soon as possible if any arrangements need to be made for testing, note taking, etc. Every effort will be made to accommodate students with disabilities as directed by the Disability Resource Center. Students who suspect they may have a disability should contact the Disability Resource Center for further information and possible testing.

Blackboard Students may obtain class information and grades by accessing Blackboard at myasucourses.asu.edu. Upon arriving at this page, students will be asked to provide their ASURITE ID and their password. If this course is not listed under your courses, contact the instructor immediately. Blackboard will also serve as a means of communication for the instructor so check it regularly for announcements and other course information. Students are expected to obtain a copy of this syllabus and to stay abreast of class lectures, reading and exam dates.

Communication E-mail is the preferred means of communication with the instructor. However, you must follow rules of professionalism when sending e-mails. This includes using correct punctuation, capitalization and grammar. You should also include your full name and the section of the course for which you are registered. E-mails sent in "text message" or "instant message" format will not be answered.

Late Assignments All assignments are to be neatly typed and are due IN CLASS on the day shown in the syllabus. **ABSOLUTELY NO LATE ASSIGNMENTS WILL BE ACCEPTED FOR ANY REASON.** Students MAY NOT e-mail assignments to the instructor. You will receive a ZERO for any assignment not completed and turned in IN CLASS. Sloppy assignments (as determined by the instructor) will also receive a ZERO.

Grading

Criteria	Points
Midterm Exam	100
Final Exam	
In-Class Portion	50
Take Home Portion	50
Written Paper	100
Oral Defense	50
Article Study Questions	110
10 pts. per question set x 11 question sets	
Total	460

Comment [K1]: C1—See previous sections and attached documentation for description of assignments/exams.

Grading Scale

Points	Grade
97-100	A+
93-96.9	A
90-92.9	A-
87-89.9	B+

83-86.9	B
80-82.9	B-
77-79.9	C+
70-76.9	C
60-69.9	D
<60	E

Daily Schedule

*Assigned readings are to be completed by the start of class on the first day of discussion of each topic.

Day	Date	Article Discussion and Lecture/Exam	Assigned Reading
M	Aug 25	Introduction	<i>Optional Review Reading: Chapter 2 and 3</i>
W	Aug 27	Lecture: Basic Principles	Chapter 1
F	Aug 29	Lecture: Reading and Understanding Resistance Training Research	Chapter 8
M	Sep 1	Labor Day—No Class	
W	Sep 3	Lecture: Reading and Understanding Resistance Training Research	
F	Sep 5	Discussion: Murphy et al., 1995 Article Question Set #1 Due	Murphy et al., 1995
M	Sep 8	Discussion: Murphy et al., 1995	
W	Sep 10	<i>Paper and Oral Defense Guidelines</i>	
F	Sep 12	Lecture and Discussion: Bioenergetics of Resistance Training Article Question Set #2 Due	Chapter 4 McCann et al., 1995 Burleson et al., 1998
M	Sep 15	Lecture and Discussion: Bioenergetics of Resistance Training	
W	Sep 17	Lecture and Discussion: Bioenergetics of Resistance Training Paper and Presentation Topics Due	
F	Sep 19	Lecture and Discussion: Neuroendocrine Factors of Resistance Training Article Question Set #3 Due	Chapter 5 Marx et al., 2001 Smilios et al., 2003
M	Sep 22	Lecture and Discussion: Neuroendocrine Factors of	

Comment [TB2]: C-4: This is the first step in the writing process.

		Resistance Training	
W	Sep 24	Lecture and Discussion: Neuroendocrine Factors of Resistance Training	
F	Sep 26	Lecture and Discussion: Nutritional Considerations of Resistance Training Article Question Set #4 Due	Chapter 6 Bohe et al., 2003 Sallinen et al., 2004
M	Sep 29	Lecture and Discussion: Nutritional Considerations of Resistance Training	
W	Oct 1	Lecture and Discussion: Nutritional Considerations of Resistance Training	
F	Oct 3	Lecture and Discussion: Ergogenic Aids Article Question Set #5 Due References for Paper/Oral Defense Due	Chapter 7 Kersick et al., 2006 Svensson et al., 2003
M	Oct 6	Lecture and Discussion: Ergogenic Aids	
W	Oct 8	Lecture and Discussion: Ergogenic Aids	
F	Oct 10	Review/ Catch-up	
M	Oct 13	Midterm Exam	
W	Oct 15	Lecture and Discussion: Genetics and Adaptation Article Question Set #6 Due	Chapter 10 Clarkson et al., 2005 Ivey et al., 2000
F	Oct 17	Lecture and Discussion: Genetics and Adaptation Paper Outline Due	
M	Oct 20	Midterm Exam Discussion	
W	Oct 22	Lecture and Discussion: Neural Adaptations Article Question Set #7 Due	Sale et al., 1988 Carroll et al., 2002
F	Oct 24	Lecture and Discussion: Neural Adaptations	
M	Oct 27	Lecture and Discussion: Overtraining and the Role of Fatigue in Adaptation Article Question Set #8 Due	Margonis et al., 2007 Folland et al., 2001

Comment [TB3]: C-4—This ensures students are gathering the proper literature for use in their paper or presentation. Again, this is vital to the scientific writing process. The writing/presentation cannot be good if the research upon which it is based is inadequate.

Comment [TB4]: C-4—This ensures students are starting the writing process with a good overall organization of their paper and presentation.

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W	Oct 29	Lecture and Discussion: Overtraining and the Role of Fatigue in Adaptation	
F	Oct 31	Lecture and Discussion: Age and Gender Effects on Adaptation Article Question Set #9 Due Rough Draft of Paper Due	Hubal et al., 2005 Faigenbaum et al., 1994 Lemmer et al., 2000
M	Nov 3	Lecture and Discussion: Age and Gender Effects on Adaptation	
W	Nov 5	Lecture and Discussion: Age and Gender Effects on Adaptation	
F	Nov 7	Lecture and Discussion: Effects of Program Variables Article Question Set # 10 Due Rough Draft of PowerPoint Presentation Due	Chapter 12 Hooper et al., 2002 Candow et al., 2007
M	Nov 10	Catch-up	
W	Nov 12	Lecture and Discussion: Effects of Program Variables	
F	Nov 14	Lecture and Discussion: Periodization Article Question Set # 11 Due Written Papers Due (hard copy due in class; electronic copy due to Safe Assignment)	Chapter 13 Kraemer et al., 2003 Baker et al., 1994
M	Nov 17	Lecture and Discussion: Periodization	
W	Nov 19	Lecture and Discussion: Periodization	
F	Nov 21	Oral Defense	
M	Nov 24	Oral Defense	
W	Nov 26	Oral Defense	
F	Nov 28	Thanksgiving—No Class	
M	Dec 1	Oral Defense	
W	Dec 3	Oral Defense	
F	Dec 5	Oral Defense	
M	Dec 8	Review/Catch-up	
F	Dec 12 7:30– 9:20 am	Final Exam	

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Comment [TB5]: C-4—Students
receive feedback from the instructor
on this first attempt at the paper.

Comment [TB6]: C-4—Students
receive feedback on the organization
and content of their presentation.

Arizona State University Criteria Checklist for
LITERACY AND CRITICAL INQUIRY - [L]

Rationale and Objectives

Literacy is here defined broadly as communicative competence in written and oral discourse. **Critical inquiry** involves the gathering, interpretation, and evaluation of evidence. Any field of university study may require unique critical skills which have little to do with language in the usual sense (words), but the analysis of spoken and written evidence pervades university study and everyday life. Thus, the General Studies requirements assume that all undergraduates should develop the ability to reason critically and communicate using the medium of language.

The requirement in Literacy and Critical Inquiry presumes, first, that training in literacy and critical inquiry must be sustained beyond traditional First Year English in order to create a habitual skill in every student; and, second, that the skills become more expert, as well as more secure, as the student learns challenging subject matter. Thus, the Literacy and Critical Inquiry requirement stipulates two courses beyond First Year English.

Most lower-level [L] courses are devoted primarily to the further development of critical skills in reading, writing, listening, speaking, or analysis of discourse. Upper-division [L] courses generally are courses in a particular discipline into which writing and critical thinking have been fully integrated as means of learning the content and, in most cases, demonstrating that it has been learned.

Students must complete six credit hours from courses designated as [L], at least three credit hours of which must be chosen from approved upper-division courses, preferably in their major. Students must have completed ENG 101, 107, or 105 to take an [L] course.

Notes:

1. ENG 101, 107 or ENG 105 must be prerequisites
2. Honors theses, XXX 493 meet [L] requirements
3. The list of criteria that must be satisfied for designation as a Literacy and Critical Inquiry [L] course is presented on the following page. This list will help you determine whether the current version of your course meets all of these requirements. If you decide to apply, please attach a current syllabus, or handouts, or other documentation that will provide sufficient information for the General Studies Council to make an informed decision regarding the status of your proposal.

Proposer: Please complete the following section and attach appropriate documentation.

ASU - [L] CRITERIA			
TO QUALIFY FOR [L] DESIGNATION, THE COURSE DESIGN MUST PLACE A MAJOR EMPHASIS ON COMPLETING CRITICAL DISCOURSE--AS EVIDENCED BY THE FOLLOWING CRITERIA:			
YES	NO		Identify Documentation Submitted
<input checked="" type="checkbox"/>	<input type="checkbox"/>	CRITERION 1: At least 50 percent of the grade in the course should depend upon writing, including prepared essays, speeches, or in-class essay examinations. <i>Group projects are acceptable only if each student gathers, interprets, and evaluates evidence, and prepares a summary report</i>	COURSE SYLLABUS
1. Please describe the assignments that are considered in the computation of course grades--and indicate the proportion of the final grade that is determined by each assignment.			
2. Also: <div style="border: 1px solid black; border-radius: 50%; padding: 10px; margin: 10px 0;"> Please circle, underline, or otherwise mark the information presented in the most recent course syllabus (or other material you have submitted) that verifies this description of the grading process--and label this information "C-1". </div> C-1			
<input checked="" type="checkbox"/>	<input type="checkbox"/>	CRITERION 2: The composition tasks involve the gathering, interpretation, and evaluation of evidence	ARTICLE QUEST. AND EXAMS AND PAPER/PRES.
1. Please describe the way(s) in which this criterion is addressed in the course design			
2. Also: <div style="border: 1px solid black; border-radius: 50%; padding: 10px; margin: 10px 0;"> Please circle, underline, or otherwise mark the information presented in the most recent course syllabus (or other material you have submitted) that verifies this description of the grading process--and label this information "C-2". </div> C-2			
<input checked="" type="checkbox"/>	<input type="checkbox"/>	CRITERION 3: The syllabus should include a minimum of two substantial writing or speaking tasks, other than or in addition to in-class essay exams	PAPOR/PRESANTATION DESCRIPTION + RUBRICS
1. Please provide relatively detailed descriptions of two or more substantial writing or speaking tasks that are included in the course requirements			
2. Also: <div style="border: 1px solid black; border-radius: 50%; padding: 10px; margin: 10px 0;"> Please circle, underline, or otherwise mark the information presented in the most recent course syllabus (or other material you have submitted) that verifies this description of the grading process--and label this information "C-3". </div> C-3			

ASU - [L] CRITERIA

YES	NO		Identify Documentation Submitted
<input checked="" type="checkbox"/>	<input type="checkbox"/>	CRITERION 4: These substantial writing or speaking assignments should be arranged so that the students will get timely feedback from the instructor on each assignment in time to help them do better on subsequent assignments. <i>Intervention at earlier stages in the writing process is especially welcomed</i>	Syllabus
<p>1. Please describe the sequence of course assignments--and the nature of the feedback the current (or most recent) course instructor provides to help students do better on subsequent assignments</p>			
<p>2. Also:</p> <p>Please circle, underline, or otherwise mark the information presented in the most recent course syllabus (or other material you have submitted) that verifies this description of the grading process--and label this information "C-4".</p>			
C-4			

Course Prefix	Number	Title	Designation
KIN 460	460	THEORY OF STRENGTH TRAINING	L

Explain in detail which student activities correspond to the specific designation criteria.
Please use the following organizer to explain how the criteria are being met.

Criteria (from checksheet)	How course meets spirit (contextualize specific examples in next column)	Please provide detailed evidence of how course meets criteria (i.e., where in syllabus)
SEE ATTACHED		

KIN 460 Theory of Strength Training

Application for Literacy Designation

Description of Criteria Fulfillment

Criterion 1

There are 11 short answer/short essay format assignments for which the student is required to read 1 or 2 peer-reviewed journal articles and answer approximately 10 related questions. This constitutes approximately 24% of the final grade. There are two essay exams, each constituting approximately 22% of the final grade. There is one 10-12 page review of literature constituting approximately 22% of the final grade. There is one oral defense project constituting approximately 11% of the final grade.

Criterion 2

Students are required to read 22 peer-reviewed scientific journal articles and answer questions requiring the evaluation and interpretation of this research (see attached sample questions). In addition, students are required to write and defend a literature review (see attached "Paper and Oral Defense Guidelines"). The review and defense require interpreting the results of the relevant research, synthesizing and evaluating those results, and providing an analysis of the research.

Students are also required to take two essay exams, both of which consist of at least some questions which require an interpretation and evaluation of research discussed in class.

Criterion 3

See the attached description titled "Paper and Oral Defense Guidelines".

Criterion 4

For the literature review, students are led through a step by step process, culminating in the final paper. They receive feedback at each of these steps. The steps in this process are designed to ensure the students not only receive feedback on their writing but also receive feedback on the research they have collected and the organization of their paper. These steps include:

- 1) Submission of paper topic to ensure feasibility
- 2) Submission of references to ensure students have gathered appropriate research
- 3) Submission of an outline to ensure proper organization of the paper

- 4) Submission of a written rough draft of the paper to ensure proper writing
- 5) Submission of a PowerPoint rough draft for oral presentation to ensure proper content and organization of the oral defense
- 6) Submission of the final paper and oral defense

KIN 460 Theory of Strength Training

Article Citations—It is the student's responsibility to obtain these articles from the library. They will not be provided by the instructor.

Baker, D., Wilson, G. & Carlyon, R. (1994). Periodization: the effect on strength of manipulating volume and intensity. *Journal of Strength and Conditioning Research*, 8(4), 235-242. **(NOTE: This article will be on electronic reserve as it is not available online or at the Tempe Campus)**

Bohe, J., Low, A., Wolfe, R.R. & Rennie, M.J. (2003). Human muscle protein synthesis is modulated by extracellular, not intramuscular amino acid availability: a dose-response study. *Journal of Physiology*, 552(1), 315-324.

Burleson, M.A., O'Bryant, H.S., Stone, M.H., Collins, M.A. & Triplett-McBride, T. (1998). Effect of weight training exercise and treadmill exercise on post-exercise oxygen consumption. *Medicine & Science in Sports & Exercise*, 30(4), 518-522.

Candow, D.G. & Burke, D.G. (2007). Effect of short-term equal-volume resistance training with different workout frequency on muscle mass and strength untrained men and women. *Journal of Strength and Conditioning Research*, 21(1), 207-207.

Carroll, T.J., Riek, S. & Carson, R.G. (2002). The sites of neural adaptation induced by resistance training in humans. *Journal of Physiology*, 544(2), 641-652.

Clarkson, P.M., Devaney, J.M., Grodiss-Dressman, H., Thompson, P.D., Hubal, M.J., Urso, M., Price, T. B., Angelopoulos, T.J., Gordon, P.M., Moyna, N.M., Pescatello, L.S., Visich, P.S., Zoeller, R.F., Seip, R.L. & Hoffman, E.P.

(2005). ACTN3 genotype is associated with increases in muscle strength in response to resistance training in women. *Journal of Applied Physiology*, 99, 154-163.

Faigenbaum, A.D., Westcott, W.L., Loud, R.L. & Long, C. (1999). The effects of different resistance training protocols on muscular strength and endurance development in children. *Pediatrics*, 104(1), e5.

Folland, J.P., Chong, J., Copeman, E.M. & Jones, D.A. (2001). Acute muscle damage as a stimulus for training-induced gains in strength. *Medicine & Science in Sports & Exercise*, 33(7), 1200-1205.

Hooper, D.M., Hill, H., Drechsler, W.I. & Morrissey, M.C. (2002). Range of motion specificity resulting from closed and open kinetic chain resistance training after anterior cruciate ligament reconstruction. *Journal of Strength and Conditioning Research*, 16(3), 409-415.

Hubal, M.J., Gordish-Dressman, H., Thompson, P.D., Price, T.B., Hoffman, E.P., Angelopoulos, T.J., Gordon, P.M., Moyna, N.M., Pescatello, L.S., Visich, P.S., Zoeller, R.F., Seip, R.L. & Clarkson, P.M. (2005). Variability in muscle size and strength gain after unilateral resistance training. *Medicine & Science in Sports & Exercise*, 37(6), 964-972.

Ivey, F.M., Roth, S.M., Ferrell, R.E., Tracy, B.L., Lemmer, J.T., Hurlbut, D.E., Martel, G.F., Siegel, E.L., Fozard, J.L., Metter, E.J., Fleg, J.L. & Hurley, B.F. (2000). Effects of age, gender, and myostatin genotype on the hypertrophic

response to heavy resistance strength training. *Journal of Gerontology*, 55A(11), M641-648.

Kerksick, C.M., Rasmussen, C.J., Lancaster, S.L., Magu, B., Smith, P., Melton, C., Greenwood, M., Almada, A.L., Earnest, C.P. & Kreider, R.B. (2006). The effects of protein and amino acid supplementation of performance and training adaptations during ten weeks of resistance training. *Journal of Strength and Conditioning Research*, 20(3), 643-653.

Kraemer, W.J., Haakinen, K., Triplett-McBride, T., Fry, A.C., Koziris, L.P., Ratamess, N.A., Bauer, J.E., Volek, J.S., McConnell, T., Newton, R.U., Gordon, S.E., Cummings, D., Hauth, J., Pullo, F., Lynch, J. M., Mazzetti, S.A. & Knuttgen, H.G. (2003). Physiological changes with periodized resistance training in women tennis players. *Medicine & Science in Sports & Exercise*, 35(1), 157-168.

Lemmer, J.T., Hurlbut, D.E., Martel, G.F., Tracy, B.L., Ivey, F.M., Metter, E.J., Fozard, J.L., Fleg, J.L. & Hurley, B.F. (2000). Age and gender responses to strength training and detraining. *Medicine & Science in Sports & Exercise*, 32(8), 1505-1512.

Margonis, K., Fatouros, I.G., Jamurtas, A.Z., Nikolaidis, M.G., Douroudos, I., Chatzinikolaou, A., Mitrakou, A., Mastorakos, G., Papassotiriou, I, Taxildaris, K. & Kouretas, D. (2007). Oxidative stress biomarkers responses to physical overtraining: implications for diagnosis. *Free Radical Biology & Medicine*, 43, 901-910.

Marx, J.O., Ratamess, N.A., Nindl, B.C., Gotshalk, L.A., Volek, J.S., Dohi, K., Bush, J.A., Gomez, A.L., Mazzetti, S.A., Fleck, S.J., Hakkinen, K., Newton,

R.U. & Kraemer, W.J. (2001). Low-volume circuit versus high-volume periodized resistance training in women. *Medicine & Science in Sports & Exercise*, 33(4), 635-643.

McCann, D.J., Mole, P.A. & Caton, J.R. (1995). Phosphocreatine kinetics in humans during exercise and recovery. *Medicine & Science in Sports & Exercise*, 27(3), 378-387.

Murphy, A.J., Wilson, G.J., Pryor, J.F. & Newton, R.U. (1995). Isometric assessment of muscular function: the effect of joint angle. *Journal of Applied Biomechanics*, 11, 205-215.

Sale, D.G. (1988). Neural adaptation to resistance training. *Medicine & Science in Sports & Exercise*, 20(5), S135-145.

Sallinen, J., Pakarinen, A., Ahtiainen, J., Kraemer, W.J., Volek, J.S. & Hakkinen, K. (2004). Relationship between diet and serum anabolic hormone responses to heavy-resistance exercise in men. *International Journal of Sports Medicine*, 25, 627-633.

Smilios, I., Piliandis, T., Karamouzis, M. & Tokmakidis, S.P. (2003). Hormonal responses alter various resistance exercise protocols. *Medicine & Science in Sports & Exercise*, 35(4), 644-654.

Svensson, J., Sunnerhagen, K.S. & Johannsson, G. (2003). Five years of growth hormone replacement therapy in adults: age- and gender-related changes in isometric and isokinetic muscle strength. *Journal of Clinical Endocrinology & Metabolism*, 88(5), 2061-2069.

KIN 460 Paper and Oral Defense Guidelines

Paper

This paper should be a literature review of your chosen research question. A literature review is a thorough, organized presentation of the available scientific literature on a selected research topic. All perspectives on the topic should be included along with a critique of the existing literature. This paper is NOT an essay! It is expected that this paper be both informative and critical. It should progress logically, presenting all available and relevant information and conclude with an answer to the chosen research question.

Comment [TB1]: C-3--The paper constitutes one of the two required writing/speaking assignments.

Comment [TB2]: C-2

In addition to the information provided here, other helpful links and suggestions will be provided for you in class and on Blackboard. If you are unfamiliar with a review of literature your use of these additional tools will be essential.

Please refer to the grading rubric available on Blackboard for the precise grading standards. Additional guidelines are as follows:

- 10-12 pages (not including title page and reference pages)
- 12-15 quality, peer-reviewed journal articles (only 1 of these articles may be a review or meta-analysis)
- APA format throughout (both in text and in the bibliography)
- Topic chosen from list provided by the instructor

Oral Defense

In addition to your written paper, you are required to provide an oral defense of your topic. This oral defense will consist of you providing the class with a brief 5 minute overview of your topic followed by a formal question and answer session during which you will clarify and defend the conclusions provided in your paper. While you will be defending your paper to the entire class, you will be specifically assigned to a committee consisting of the instructor and two of your peers. The guidelines for this defense are shown below.

Comment [TB3]: C-3--The oral defense constitutes the second of the two required writing/speaking assignments.

For the presenter:

- 1) By the date specified, e-mail the instructor an abstract of your paper (no more than ONE double-spaced typed page)
- 2) By the date specified, e-mail your entire paper to your two peer committee members.
- 3) On the day of your defense, provide a brief 3-5 minute presentation of your paper for the class. The presentation should simply be a verbal presentation of your abstract. This should be done on Power Point and consist of no more than 3 slides.

- 4) Be prepared to answer questions from your peer committee, the instructor and your classmates.

For the peer committee:

- 1) Prior to the day of the defense, thoroughly read the entire paper of the student to whom you are assigned.
- 2) Prior to the day of the defense to which you are assigned, meet with your co-committee member to develop a list of at least three questions to ask the student presenter.
- 3) Prior to the day of the defense (at least 48 hours in advance), e-mail your three questions to the instructor for approval.
- 4) Make sure you attend class on the day of the presentation.

NOTE: The presenter will receive a 0 on his/her defense if he/she neglects to complete any one of the steps shown under "presenter". In addition, the peer committee member will receive an automatic 50% deduction on his/her defense if he/she neglects to complete any one of the steps shown under "peer committee".

Article Question Set #5 (Svensson et al. and Kerksick et al.)

Comment [K1]: C-2—This is one of 11 sets of short essay format questions regarding the assigned scientific literature.

Directions: TYPE your answers the following questions in complete sentences. You will be graded on grammar and spelling. Remember, where relevant, always indicate significance.

1. In table 4, Svensson et al. report their results a percent of predicted strength. What does this information provide for us that absolute strength results (as reported in table 3) does not? In other words, why did the authors bother to calculate percent of predicted strength when they already had absolute strength results?
2. Although lean body mass was still significantly higher than baseline after 5 years (Svensson et al.) a number of strength measures were not. Provide one possible explanation for this.
3. Svensson et al. state that in women, only isometric knee flexor strength was fully normalized but in men, knee flexor and knee extensor strength were normalized. There are a number of possible explanations for this. Provide me with one possible explanation.
4. Provide one piece of data from Svensson et al. to indicate that men and women may have a different physiological response to growth hormone. Do not use the strength data.
5. How applicable are the findings of Svensson et al. to the argument for the use of growth hormone as a performance enhancing supplement? Justify your answer.
6. List all significant BETWEEN group differences in body composition and strength in the Kerksick et al. study.
7. Based only on the results of the Kerksick et al. study, do protein supplements make a person stronger (as compared to placebo)?
8. Based only on the results of the Kerksick et al study, do protein supplements help a person to hypertrophy (as compared to placebo)?
9. Assuming you answered question number 7 correctly, what about the nutrient composition could account for the observed difference?
10. Review the methodology of the Kerksick et al. study. With respect the supplementation protocol, what could have been more tightly controlled to better ensure the validity of the results?

KIN 460
Theory of Strength Training
Final Exam

Comment [TB1]: C-2—This is a sample of the type of exam questions posed on both the midterm and final exams.

Name: _____

Directions: Thoroughly and legibly answer each question using complete sentences, correct grammar, and correct spelling. You must correctly address every part of the question in order to receive full points.

1. (20%) Discuss the normal musculoskeletal growth and maturation process (from pre-pubertal adolescence through the teens/early adulthood) and the impact of these processes on the strength training response. You should include the following in your discussion:
 - a. Changes in muscle mass as a result of the normal growth process (discuss any differences between males and females)
 - b. **Major** endocrine change(s) as a result of the normal growth process (discuss any differences between males and females)
 - c. The presence or lack of muscle strength increases in response to a resistance training program (in both pre- and post pubertal children)
 - d. The physiological adaptation(s) thought to be responsible for any observed changes in strength (remember to address these adaptations for both pre- and post-pubertal children)

2. (15%) Based on the Faigenbaum et al. (1999) article, design a resistance training program for a 9 year old child that would optimize strength gains.

Include the following:

- a. Relative number of reps
- b. Relative load
- c. Why, theoretically, should this program be the most effective?

3. (15%) Discuss the following training induced adaptations in older adults who engage in a moderate to heavy resistance training program.

- a. Muscular hypertrophy
 - i. Is muscular hypertrophy possible?
 - ii. If not, why not—and if so, which fiber type will exhibit hypertrophy (I or II)?
- b. Neural adaptations

4. (15%) Summarize the research related to the superiority of multiple set versus single set programs in eliciting strength gains.

5. (20%) A woman comes to you asking for help with her strength training program. She wants to increase strength and hypertrophy. Her current program is as follows: 3 days a week, total body program on each day with an emphasis on various single-joint exercises, 12-15 repetitions, light to moderate load. For every exercise she does, she performs 3 sets with 1 set being traditional concentric and eccentric movement and 2 sets being eccentric only (a guy at the gym told her that "negatives" were really good for building strength). She rests for about 2 minutes between each set. Knowing all of this answer the following:
- What changes would you make to her program?
 - Justify each of the changes you make (i.e. *why* would you make that change).

NOTE: Address *ONLY* her strength training program.

6. (20%) Compare and contrast traditional periodized strength training programs with undulating periodized programs (as utilized with athletes).

Your answer should include the following:

- a. A thorough description of each type of program complete with a description of how they are similar and how they differ
- b. A theoretical explanation of why, for athletes, periodized programs should be superior to regular strength training programs.