SAN DIEGO STATE UNIVERSITY
ENS 463/463L: PRINCIPLES AND TECHNIQUES IN THERAPEUTIC EXERCISE
Fall 2012

Time: 
Lecture: Tuesday 8:00-9:40 
Lab: Section 1: Thursday 7:00-9:40 
Section 2: Thursday 10:00-12:40 
Location: ENS 107

Instructor: Lea Thomann, PT, DPT, ATC, FAFS, CSCS 
E-mail: lthomann@mail.sdsu.edu 
Phone: (619) 594-4094 
Office: ENS Building- Room 302 
Office hours: Tuesday: 10:00am-12:00pm; Friday 9:00am-10:00am; or by appointment

Course Description
- Design and application of therapeutic exercise programs for athletic injuries.
- Units: 3

Course Prerequisites
- Concurrent registration in Exercise and Nutritional Sciences 463L
- AT: ENS 365, ENS 389A
- Non-AT Majors: per instructor approval

Course Materials
Required
- Selected journal readings and client case studies
- Access to computer, internet, and printer

Recommended
- Gray, G. Total Body Functional Profile

Course Overview
- This course examines the principles, strategies, and techniques of therapeutic exercise as they apply to an athletic population. The purpose of the course is to provide a foundation of appropriate therapeutic exercise based on current evidence and rationale.
- In the initial portions of the course the theory and principles by which a variety of therapeutic exercises produce beneficial physiological outcomes will be discussed. Subsequently, these ideas will be utilized to outline the process by which clinicians design appropriate therapeutic exercise programs. In doing so, students will be
expected to interpret findings of an examination and utilize these to identify the presence of impairments, functional limitations and/or disabilities.

- Methods used to efficiently prescribe therapeutic exercise will be introduced and practiced. Furthermore, the various approaches to therapeutic exercise will be surveyed and discussed within the context in which they are most appropriately utilized. This course will also attempt to apply relevant knowledge of several systems including the musculoskeletal (anatomy and biomechanics), respiratory, cardiovascular, and central nervous (motor control) and comment on their relationship to therapeutic exercise interventions.
- Upon completion of the course the athletic training student should be able to synthesize subjective and objective examination findings to create, prescribe, instruct, demonstrate, illustrate and revise therapeutic exercise as part of a comprehensive treatment program in order to obtain optimal measureable outcomes.

Teaching Methods and Learning Experiences
This is an activity based course with an emphasis on psychomotor skill development specific to design and implementation of therapeutic exercise programs. Learning experiences during this course will consist of lectures, class discussion, small group activities, analysis of patient case studies, laboratory experiences and development of skills (e.g. psychomotor) relevant to the use of therapeutic exercise in managing clients. To facilitate an interactive environment, students are encouraged to participate often by asking questions, seeking and giving feedback. The course website can be accessed through Blackboard at https://blackboard.sdsu.edu/. This will be the primary area to review your assignments and receive announcements pertaining to this class.

The faculty is committed to treating you in a professional manner as well as making this course a meaningful experience for you. If you need any help or further explanation of presented material, please see the faculty as soon as possible!

Expectations and Class Policies
Dress Requirements:
- Lab clothing is required during the laboratory portions of the course where palpation and/or observation of body parts are necessary. Students should come prepared in the appropriate attire so as to expose the area of the body that is being studied. Inability to participate due to inappropriate attire will result in the forfeiture of participation points for that day.
- Appropriate lab clothing for men includes shorts and t-shirts, for women shorts, halter-tops, swimsuits, and/or sports bras.
- Fingernails must be clipped short and synthetic nails are prohibited.

Attendance/Participation:
- Regular attendance is expected and considered essential to master the skills taught in this course. It is expected that all reading assignments will be completed prior to the start of class to facilitate discussion and comprehension of the material being presented.
• All lecture and laboratory sessions will start promptly at the designated time. As a courtesy to fellow students and the instructors, if delayed in getting to class on time please enter quietly and find seat in the back of the classroom. Once in class, plan on staying until a formal break is announced – leaving the classroom during a lecture is disruptive to both the professor and fellow students.

• If absence from a class session is unavoidable, it is recommended that the student notify the instructor at the earliest possible time. University policies deem that the only conditions under which absences may be considered excused are 1) illnesses for which documentation is provided by a medical professional, and 2) death in the family or family emergencies.

• Each student is encouraged to make any physical limitations known to instructors and student partners. Failure to disclose limitations indicates consent, acknowledgement of and acceptance of any inherent risks. Every student has the right to refuse to serve as a subject for demonstration due to a disclosed injury.

Examinations:
• Examinations must be taken on the day specified unless prior arrangements have been made with the instructor. No make-up examinations will be given. Plagiarism or any other form of cheating will result in a grade of Failure (F).

Professional Behavior Statement:
• Entrance into the program of study in athletic training at San Diego State University signifies a commitment to a health care profession, which entails a consistent demonstration of specific knowledge, skills and attitudes. Mutual respect and encouragement between peers and faculty is expected.

ENS Learning Goals

Learning Goal 1: Demonstrate core critical thinking skills and dispositions to ask and answer questions relevant to exercise and nutritional science

Objective 1.1: Critically evaluate published research in the discipline (Papers, Notebook)

Objective 1.3: Present opposing viewpoints and alternative hypotheses on issues in exercise and nutritional science. (Lab class interaction)

Objective 1.4: Critically evaluate current trends and practices using disciplinary knowledge. (Papers, Notebook)

Objective 1.5: Actively seek out discipline-based questions as opportunities to apply core critical thinking skills. (Papers)

Learning Goal 2: Demonstrate effective oral, written, and other interpersonal skills to help communicate knowledge and promote health and wellbeing in diverse communities.

Objective 2.1: Use effective technical writing skills to communicate information about exercise and nutritional science. (Written tests, Papers)

Learning Goal 3: Demonstrate understanding of scientific concepts, principles, and methods used in the study of exercise and nutritional science
Objective 3.3: Select and apply appropriate methods to maximize internal and external validity and reduce the plausibility of alternative explanations. (Papers, Labs)

Learning Goal 6: Use biological, behavioral, psychosocial, and ecological theory-based perspectives to design and evaluate behavior change interventions in exercise and nutritional science.

Objective 6.3: Integrate multilevel determinants into behavior change interventions for individuals, communities, and populations. (Papers)

Learning Goal 7: Use the principles of assessment to evaluate a variety of measurement tools in exercise and nutritional science.

Objective 7.1: Explain the various kinds of validity evidence necessary to determine the quality of objective and subjective measures used in exercise and nutritional science.

Objective 7.2: Evaluate the validity and reliability coefficients for a variety of tools to determine their quality.

Learning Goal 8: Demonstrate the ability to integrate and apply knowledge and skills through experiential learning opportunities.

Objective 8.1: Implement a physical activity, rehabilitative, or nutritional plan in an applied setting and assess its effectiveness. (Papers)

Course Learning Objectives
The student will be able to:

1. Understand and apply basic mechanical and physiological principles to therapeutic exercise techniques.
2. Understand and apply the processes involved in the rehabilitation, maintenance and return to activity phases of athletic injury care.
3. Be able to understand and plan and apply progressive aggressive therapeutic exercise philosophies and techniques to common athletic injuries.
4. Understand the processes of selection and progression in therapeutic exercise programs.
5. Define passive, active, and resistive exercise programs.
6. Understand the basic philosophy of PNF and PRE, and be able to apply basic procedures and techniques.
7. Understand the indications and contraindications of the various exercise programs for common sports medicine problems.
8. Understand basic principles and techniques of joint mobilization for peripheral joints.
9. Understand and be able to plan and conduct weight bearing and plyometric exercise programs for injured athletes.
10. Understand the principles and procedures involved in returning injured athletes to practice.
Course Outline

• Foundational Concepts In Rehabilitation
  o The Rehab Team
  o Strategies for effective exercise instruction
  o Components of a Rehab Program

• Concepts of Healing
  o Phases
  o Healing of specific tissues, tensile strength
  o Factors that affect healing
  o Role of therapeutic exercise and healing

• Concepts of Physics
  o Center of Gravity
  o Force, Mass, Momentum etc.

• Exam, Assessment, Application
  o Principles, Strategies, Techniques
  o Indications, Precautions, Contraindications
    ▪ Appropriateness for Exercise
  o Disablement Model and using exam findings as a basis for exercise
  o Fitness and Aerobic Exercise
  o ROM, Flexibility
  o Manual Therapy
  o Resistance Exercise, Muscle Strength and Endurance
    ▪ Guiding Principles
    ▪ Exercise models
    ▪ Types of resistance
    ▪ Open vs. closed kinetic chain activity
    ▪ Exercise Progression
    ▪ Function/Activity Specific
  o Balance/Coordination
  o Agility/Speed/Power/Plyometric
  o Return to Sport
    ▪ Functional Testing System
    ▪ Sport Specific Examples: ACL, Overhead Athlete/Thrower, Running
  o Specialty Topics
    ▪ Aquatic Therapy
    ▪ Trends in Fitness: Pilates/Yoga, Crossfit, Barefoot Running
    ▪ Special Populations/Considerations
      ▪ Surgical considerations
Assessment and Grading Criteria
Performance will be graded on the student’s knowledge of the subject, thought process, technical proficiency of the practical techniques and professionalism. Evaluation will be based upon:

- Written Exams: Two exams will be given covering all lecture, laboratory, reading and handout material.
- Practical examination: One exam will be given. The student will be required to demonstrate competency in applying the following skills: Knowledge of material in lecture and psychomotor skill in all therapeutic exercise techniques. Prerequisite course work is assumed and required.
  - Grading Scheme:
    - selection of correct techniques
    - application of techniques
    - instructions given to patient
    - performance of techniques
- Case Study: Each student will present a case study report on a rehabilitation program of a common sport injury. Pick one injury and outline a progressive rehab program. (Topic: consent of instructor)

There are 31 class meetings, each class you attend is worth 1.5 points for attendance and participation. It is understood that you may need to miss one class and the grade is therefore calculated as: 1.5 points x 30 classes = 45 total points. Tardiness is calculated as: .75 points deducted per 15 minutes of lateness.

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<tr>
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<th>Possible points</th>
<th>Grading Scale</th>
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<tbody>
<tr>
<td>Midterm Written Exam</td>
<td>100</td>
<td>A &gt;92.0%</td>
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<tr>
<td>Final Written Exam</td>
<td>100</td>
<td>A- 90.0 – 91.9%</td>
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<tr>
<td>Final Practical Exam</td>
<td>100</td>
<td>B+ 88.0 – 89.9%</td>
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<tr>
<td>Attendance/Participation</td>
<td>50</td>
<td>B 82.0 – 87.9%</td>
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<td>Case Study</td>
<td>100</td>
<td>B- 80.0 – 81.9%</td>
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<td>Quizzes/Homework</td>
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<td>C+ 78.0 – 79.9%</td>
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<td>C 72.0 – 77.9%</td>
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<td>C- 70.0 – 71.9%</td>
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Grades are assigned as a percentage of the total class points.

SDSU Add/Drop Policy
Dropping and adding of classes must be done through your WebPortal account. Check your schedule in the WebPortal to make sure you are enrolled in the right classes before the schedule adjustment deadlines of the session in which you are enrolled. The fall 2012 schedule adjustment deadlines are:
- Drop classes by September 10 at 11:59 p.m.
- Add classes by September 12 at 11:59 p.m
Students with Disabilities
The University is committed to providing reasonable academic accommodation to students with disabilities. The Student Disability Services Office provides university academic support services and specialized assistance to students with disabilities. Individuals with physical, perceptual, or learning disabilities as addressed by the Americans with Disabilities Act should contact Student Disability Services office for information regarding accommodations at (619) 594-6473 (http://www.sa.sdsu.edu/dss/dss_home.html). Moreover, you should notify me so that reasonable efforts can be made to accommodate you.

Academic Integrity
Cheating is the actual or attempted practice of fraudulent or deceptive acts for the purpose of improving one’s grade or obtaining course credit; such acts also include assisting another student to do so. Typically, such acts occur in relation to examinations. However, it is the intent of this definition that the term ‘cheating’ not be limited to examination situations only, but that it include any and all actions by a student that are intended to gain an unearned academic advantage by fraudulent or deceptive means. Plagiarism is a specific form of cheating which consists of the misuse of the published and/or unpublished works of others by misrepresenting the material (i.e., their intellectual property) so used as one’s own work. Penalties for cheating and plagiarism range from a 0 or F on a particular assignment, through an F for the course, to expulsion from the University. For more information on the University’s policy regarding cheating and plagiarism, refer to the Schedule of Courses (‘Legal Notices on Cheating and Plagiarism’) or the University Catalog (‘Policies and Regulations’).
# ENS 463/463L: Principles & Techniques in Therapeutic Exercise Course Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Day</th>
<th>Date</th>
<th>Lecture Topics</th>
<th>Day</th>
<th>Date</th>
<th>Laboratory Topics</th>
<th>Assignments</th>
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<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Tu</td>
<td>8/28 Welcome and Introduction Foundational Concepts In Rehabilitation Disablement Model Strategies for effective exercise instruction Exam and Assessment: PST</td>
<td>2</td>
<td>Th</td>
<td>Triplanar Movement, Planes of Motion, Reference Vectors Gait Observation, Task Analysis</td>
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<td>2</td>
<td>3</td>
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<td>9/4 Concepts of Healing Concepts of Physics Appropriateness for Exercise/Risk Factor Screening: PAR-Q, Sudden Cardiac Death</td>
<td>4</td>
<td>Th</td>
<td>Measure BP, HR, weight, BMI Determine THR, THRR, Cardio Fitness Level Submax Field Test of Aerobic Fitness</td>
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<td>5</td>
<td>Tu</td>
<td>9/11 Exercise Models and Tools</td>
<td>6</td>
<td>Th</td>
<td>Testing Function</td>
<td>Case Study Topic Due</td>
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<td>4</td>
<td>7</td>
<td>Tu</td>
<td>9/18 Stretching, Flexibility, ROM</td>
<td>8</td>
<td>Th</td>
<td>PROM, AAROM, AROM: LE &amp; UE TriPlane Flexibility PNF Applications</td>
<td>Midterm Written Exam [ /100]</td>
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<td>5</td>
<td>9</td>
<td>Tu</td>
<td>9/25 Manual Therapy</td>
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<td>Manual Therapy Lab PNF Applications</td>
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<td>6</td>
<td>11</td>
<td>Tu</td>
<td>10/2 Manual Therapy Con’t Midterm Review</td>
<td>12</td>
<td>Th</td>
<td>Manual Therapy Lab Con’t Massage, MFR, Foam Roll MET, Joint Mobilization</td>
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<td>10/9 Midterm Written Exam</td>
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<td>Manual Therapy Lab Con’t Neural Mobilization</td>
<td>Midterm Written Exam [ /100]</td>
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<td>10/16 Muscle Strength and Endurance Resistance Exercise</td>
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<td>Muscle Strength and Endurance Lab Spinal Stabilization</td>
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<td>10/23 Muscle Strength and Endurance Resistance Exercise Con’t</td>
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<td>Proprioception, Balance and Coordination</td>
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<td>10</td>
<td>19</td>
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<td>10/30 Return to Sport Considerations/Progression Postoperative Considerations/Protocols</td>
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<td>Th</td>
<td>Agility, Speed, Power, Plyo Squat, Jump, Hop, Run, Skip, Shuffle</td>
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<td>Case Based Scenarios</td>
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<td><strong>Case Study Due [ /100]</strong></td>
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<td>Tu</td>
<td>11/27 Trends In Fitness: Pilates/Yoga, Crossfit, Barefoot Running</td>
<td>28</td>
<td>Th 11/29 Aquatic Therapy Lab: Meet at Aquaplex- TBD</td>
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<td>15</td>
<td>29</td>
<td>Tu</td>
<td>12/4 Special Populations/Considerations: Pediatric, Geriatric, Pain, Obesity, DM Final Review</td>
<td>30</td>
<td>Th 12/6 Playground Pals-TBD Lab Skills Review</td>
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