San José State University  
College of Health and Human Sciences/Kinesiology  
KIN 273, Evidence-Based Research in the Practice of Therapeutic Modalities,  
Section 1, Spring, 2019

Course and Contact Information
  Instructor: Masaaki Tsuruike, PhD, ATC  
  Office Location: SPX 116  
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  Email: masaaki.tsuruike@sjsu.edu  
  Office Hours: Tues and Wed: 2:30 – 3:30 PM  
  Class Days/Time: Tuesday 7 – 8:50 PM  
  Classroom: YUH 128 / SPX 245  
  Prerequisites: KIN 268 or equivalent

Course Format
  Technology Intensive, Hybrid, and Online Courses (Required if applicable)

  Course materials such as syllabus, handouts, notes, assignment instructions, etc. can be found on the Canvas learning management system used at SJSU. You are responsible for changing the settings so that e-mail that is sent to your Canvas account is forwarded to your regularly used email account. Announcements will be posted on Canvas and should be checked on a regular basis; students may choose to be alerted via text or email that announcements have been made.

Course Description
  An advanced course designed to critically evaluate the scientific and philosophical bases of therapeutic modality use. The course is intended to provide the student with the information necessary to perform prudent clinical applications of therapeutic modalities on orthopedic injuries.

Course Goals
  Identify the neurophysiological healing process in connective tissues, pain perception mechanisms, differences in scar and adhesion formation, and muscle spasm. Also discuss the efficacy of traditional and non-traditional therapeutic modalities, including the use of special instruments to mobilize the fascia beneath the skin.

Department of Kinesiology Graduate Program Learning Outcomes (GPLO)
  Upon completion of the Master’s degree program in the Department of Kinesiology, students should be able to:
  1. Demonstrate the ability to conduct and critique research using theoretical and applied knowledge.
  2. Interpret and apply research findings to a variety of disciplines within Kinesiology.
  3. Effectively communicate essential theories, scientific applications, and ethical considerations in each student's Kinesiology program concentration.
  4. Interpret and apply research findings through acquired skills in order to become agents of change to address issues in Kinesiology through the application of knowledge and research.
Graduate Athletic Training Education Program Learning Outcomes (GATEPLO)

The mission of the Graduate Athletic Training Program is to enhance the mastery of athletic training discipline through a sound theoretical and research base, as well as diversity of thought and experiences. The Graduate Athletic Training Education Program seeks to:
1. Develop critical and independent thinkers
2. Facilitate and promote community interaction/aid in sports medicine with other health care providers
3. Foster scholarly and research activities
4. Develop exemplary athletic training professionals
5. Enhance and augment athletic training skills through evidence based exploration

Course Learning Outcomes (CLO)

Upon successful completion of this course, students will be able to:

CLO 1. Apply knowledge to manage peripheral pain receptors, known as nociceptors, by using over-the-counter (OTC) medicine of nonsteroidal anti-inflammatory drugs (NSAIDs), such as Ibuprofen and Acetaminophen (Paracetamol)
CLO 2. Differentiate medications which inhibit cyclooxygenase (COX)-1 or COX-2, such as Aspirin and Celebrex, selective COX-2 inhibitor.
CLO 3. Apply knowledge of icing concept to control pro-inflammatory responses
CLO 4. Understand different types of injections to control pain (corticosteroid), to facilitate pro-inflammatory response (platelet-rich plasma: PRP), and to enhance biological effects in joints (hyaluronic acid).
CLO 5. Understand the neuro- and patho-physiological basis underlying tissue healing processes, including the mechanisms of clot coagulation, angiogenesis, granulation tissues, scar formation, and remodeling of collagen fiber.
CLO 6. Demonstrate the effects of therapeutic modalities on pain perception, adhesion formation, muscle spasm, and the relationship of therapeutic exercise to the remodeling phase of the healing process.
CLO 7. Identify integration of pain controls at the spinal level, such as TENS, and through descending pathways, such as SCENAR.
CLO 8. Utilize the concepts of conventional therapeutic ultrasound, low-level laser, and extracorporeal shockwave therapy based on current research findings.
CLO 9. Utilize a method of local transfer or delivery of iontophoresis and phonophoresis to temporally remedy local pain.
CLO 10. Utilize Instrument Assisted Soft Tissue Mobilization (IASTM) to stimulate the fascia, compared with utilizing a foam roller to stimulate muscle fibers.

Required Readings

Selected readings (articles) have been uploaded to Canvas.

Course Requirements and Assignments

Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 hours over the length of the course (normally three hours per unit per week) for instruction, preparation/studying, or course related activities, including but not limited to internships, labs, and clinical practica. Other course structures will have equivalent workload expectations as described in the syllabus.

Each student will be required to:
1. Review the articles selected in each of the topics to discuss proficiency in using numerous psychomotor skills to rehabilitate various anatomical and supportive structures.
2. Participate in class discussions and hands-on practices actively, including dissection laboratories.
3. Select an injury and understand its detailed mechanisms of overhead injuries, utilizing supportive literature of sound results and outcomes.
4. Present the aforementioned rehabilitation program for the upper extremity and demonstrate the techniques to the class.
5. Critically review selected literature.

**Grading Information**

Exam: Midterm (x 2): 50% (25% each)
Reading Assignment: 20%
Group Discussion of therapeutic modality: 10%
Final report: 20%

Exams: 50%
Two exams will be given to develop analytic and critical understanding of the topics discussed in class and to organize the topics. The exam will be comprehensive, including true or false, multiple choice, and short essay questions that require integration and synthesis of knowledge. Excellent responses will demonstrate advanced and in depth understanding of healing process and pain management. Responses should include materials from assigned readings to class discussions. (GATEPLO 1, 3, 5) (CLO 1 to 10)

Reading Assignment: 20%
Reading assignment will be given to organize the topics of pain control. Each student will submit (upload) the assignment to Canvas. Student will answer each of the questions as accurately and completely based on research papers referred in class as possible within the assigned space.

Grading will be based on quality of content, evidence of understanding of the study, and quality of writing (syntax, grammar, and spelling).

Each paper should be typed, single-spaced, using a 12-point (or easily readable) font and 1" margins. Less than 80% or more than the assigned space is considered too short or beyond the limitation. (GATEPLO 1, 3, 5) (CLO 1 to 10)

Due: April 9, Wed by 7 PM

Group Discussion: 10%
This is part of active learning to enhance your critical thinking in the field of athletic training. You will be randomly assigned to a group to develop therapeutic modalities and interventions for clinical case studies. The assignment consist of either of acute or chronic injury. The application of therapeutic modalities and interventions must be developed from a variety of viewpoints. For example, you may need to consider the effect of different interventions on pain, muscle spasm, and joint range of motion by using medication, modalities or manual therapy. Discuss with your group to organize the concept of therapeutic modalities for the case each time. Also, each of the groups develop the report along with evidence based practice. You may use the articles reviewed in the beginning of course. (15 pts each) (GATEPLO 1, 3, 5) (CLO 1-10)

*This assignment requires active learning. All students are expected to participate in group discussions. The absence will affect your group discussion points. Students who need to miss class due to their clinical duties,
such as traveling with a team, may make up the class absence by submitting (uploading) the assignment individually only if the student asks at least 1 week prior to the class that will be missed.

Due: March 26, Wed by 7 PM

**Final Report: 20%**
The final exam requires each student to individually summarize therapeutic modalities to enhance healing process or to control pain, citing at least 5 references from relevant, peer-reviewed journal articles. You may cite the articles discussed in class. (GATEPLO 1, 3, 5) (CLO 1-10)

**Determination of Grades**

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<thead>
<tr>
<th>Grade</th>
<th>Points</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A plus</td>
<td>96 to 100</td>
<td>96 to 100%</td>
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<td>A</td>
<td>93 to 95</td>
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<td>A minus</td>
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<td>B plus</td>
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<td>B</td>
<td>83 to 82</td>
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**Classroom Protocol**

All students in the class must be required to set a silent mode for your cell phone. Students are allowed to use your PC in the class. However, you are not allowed to access any unnecessary internets or emails. No food is allowed in the class. The class will basically have no break.

**University Policies**

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs’ Syllabus Information web page at http://www.sjsu.edu/gup/syllabusinfo/”
### Course Schedule (Subject to change with advance notice)

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topics</th>
<th>Readings, Assignments</th>
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<tbody>
<tr>
<td>1</td>
<td>1/29</td>
<td>Course introduction, review of basic therapeutic modalities and pain control</td>
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<tr>
<td>2</td>
<td>2/5</td>
<td>Healing process: pro- and anti-inflammatory responses: role of platelets, neutrophils angiogenesis, macrophages, eicosanoids</td>
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<tr>
<td>3</td>
<td>2/12</td>
<td>Platelet-rich plasma (PRP), corticosteroids, hyaluronic injection</td>
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<td>4</td>
<td>2/19</td>
<td>Therapeutic modality application to promote collagen, ground substance, extracellular matrix remodeling I</td>
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<td>5</td>
<td>2/26</td>
<td>Therapeutic modality application to promote collagen, ground substance, extracellular matrix remodeling II</td>
<td>Midterm I</td>
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<td>6</td>
<td>3/5</td>
<td>Therapeutic modality application to promote collagen, ground substance, extracellular matrix remodeling III</td>
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<td>7</td>
<td>3/12</td>
<td>Field Trip: Team Clinic at 7 PM 1265 El Camino Real #100, Santa Clara, CA 95050</td>
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<tr>
<td>8</td>
<td>3/19</td>
<td>Group Discussion</td>
<td>Midterm II</td>
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<tr>
<td>9</td>
<td>3/26</td>
<td>Readings Assignment</td>
<td>Group discussion due</td>
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<td>10</td>
<td>4/2</td>
<td>Spring Break</td>
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<tr>
<td>11</td>
<td>4/9</td>
<td>Field Trip (tentatively) Los Gatos Orthopedic Sports Therapy at 7 PM 16615 Lark Ave Suite 101, Los Gatos, CA 95032</td>
<td>Reading assignment due</td>
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<tr>
<td>12</td>
<td>4/16</td>
<td>Manual therapy: Técnica Gavilán 1 (3 hour session)</td>
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<td>13</td>
<td>4/23</td>
<td>Manual therapy: Técnica Gavilán 2 (3 hour session)</td>
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<td>14</td>
<td>4/30</td>
<td>OPTM Sports &amp; Physical Therapy at 7 PM 291 East Main ST. Suite E, Los Gatos, CA 95030</td>
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<tr>
<td>15</td>
<td>5/7</td>
<td>Review of therapeutic modalities</td>
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<tr>
<td></td>
<td>Final Exam</td>
<td>Final Exam (Report)</td>
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