

**GEORGE MASON UNIVERSITY**  
**School of Recreation, Health and Tourism**

**ATEP 350-001 — Therapeutic Interventions I (3) Fall 2013**

DAY/TIME:	M/W 10:30-11:45am	LOCATION:	Bull Run Hall 258
INSTRUCTOR:	Marcie Fyock, MS, ATC, LAT	EMAIL ADDRESS:	mfyock@gmu.edu
OFFICE LOCATION:	Bull Run Hall 210	PHONE NUMBER:	703-993-7118
OFFICE HOURS:	By Appointment	FAX NUMBER:	703-993-2025
SCHOOL WEBSITE:	www.rht.gmu.edu	COURSE WEBSITE:	mymason.gmu.edu

**PRE/CO-REQUISITES**

**Pre-requisites:** Formal acceptance to the professional phase of the ATEP; ATEP 150, 180, 250, 255, 256, 260, 265, 266, 270; BIOL 124, 125; HEAL 110, 230; PHED 300

**Co-requisites:** Concurrent enrollment in ATEP 355 and 356

**COURSE DESCRIPTION**

This course uses an integrated approach to the use of therapeutic modalities and rehabilitation in the treatment of athletic injuries and conditions. This will include a study of the indications, contraindications, physiological effects, special programs, and resistance methods that are used with therapeutic modalities and prevention/rehabilitation methods for athletic injuries. This course will have particular focus on physiologic response to injury and healing, physiologic cause of pain, physiologic response of tissue to treatment modalities and therapeutic exercise, and theory of associated modalities and rehabilitation paradigms.

**COURSE OBJECTIVES**

At the completion of this course students should be able to:

1. Describe physiological effects of therapeutic modalities;
2. Identify therapeutic modalities used in athletic training;
3. Describe effects of electricity on the muscular, skeletal, circulatory and nervous system;
4. Describe the therapeutic effects of electricity on soft tissue injuries;
5. Describe effects of ultrasound on the muscular, skeletal, circulatory and nervous system;
6. Describe the therapeutic effects of ultrasound on soft tissue injuries;
7. Describe the effects of mechanical and manual therapy techniques on the muscular, skeletal, circulatory and nervous system;
8. Describe the therapeutic effects of mechanical and manual therapy on soft tissue injuries;
9. Describe the effects of light therapy on the muscular, skeletal, circulatory and nervous system;
10. Describe the therapeutic effects of light therapy on soft tissue injuries;
11. Describe the therapeutic effects of emergent therapeutic modalities;
12. Identify the indications and contraindications of therapeutic modalities; and
13. Demonstrate an appreciation for and ability to apply evidence-based clinical practices.

14. Identify goals of rehabilitation.
15. Identify flexibility techniques used in the prevention and rehabilitation of athletic injuries.
16. Identify muscular strength testing techniques.
17. Identify goniometric measurements for each joint.
18. Effectively perform special tests for individual joints.
19. Identify appropriate joint mobilization techniques for increased range of motion.
20. Identify therapeutic exercise equipment, techniques and principles.
21. Identify the indications and contraindications of rehabilitative equipment.

## **COURSE OVERVIEW**

This didactic course will focus on the development of cognitive competencies necessary for the safe, effective, and evidenced-based application of therapeutic modalities in a physically active patient population.

### **Attendance**

Students are expected to be on time, attend all class meetings and be prepared for in class assignments and projects. Excused absences include the following: illness (must bring a receipt or note from a doctor), family death, athletic/academic event (contact instructor in advance), and others at the discretion of the instructor. For known upcoming absences, students must contact the instructor at least one week in advance to the missed class to make up work. In the case of illness or some other unforeseen absence, the student must contact the instructor via e-mail or telephone. At the next attended class meeting the student will discuss material that is to be completed. ***Students will have one week from the excused absence to complete any missed assignments.*** It is the student's obligation to pursue any make-up work.

### **Technology Use During Class**

As per GMU policy, all sound emitting technology is required to be turned off during the class meeting time. Additionally, *no laptop computers* will be permitted for use during class time; the exceptions are for use during presentations/projects, and technology deemed as necessary by the Office of Disability Services. Students utilizing various technology devices during class will be asked to leave class and will not be permitted to complete course work or receive any points for assignments that day.

### **E-mail Correspondence**

Only messages that originate from a George Mason University address will be accepted.

Please note that e-mail is a wonderful tool for brief communication of ancillary matters, but is a poor substitute for in-person discussion of detailed matters. Therefore, to make communication more effective, e-mail correspondence from students should be limited to brief clarification of matters related to the class schedule, to receive confirmation of receipt of an assignment, to schedule a meeting, to notify the instructor of problems accessing materials on the course website, or to notify the instructor of an anticipated or unanticipated absence (to be followed by in-person discussion prior to or following the class meeting time). All other communication including clarification of information presented in lecture, questions regarding assignments,

questions regarding grades, and all other matters should be addressed with the instructor in-person during office hours or during a scheduled meeting.

As a future health care practitioner, the ability to present yourself and communicate in a professional manner is essential, including the use of e-mail. The following is an appropriate professional format that should be followed for this class, as well as any other instructors/ACIs:

*(Beginning salutation)* Dear Dr./Mr./Mrs. Last Name

*(Text body)* I have a question regarding...

*(Ending Salutation)* Regards/Respectfully/Sincerely,

*(Your name)* First and Last Name

### **Accreditation Standards**

Upon completion of this course, students will meet the following Commission on Accreditation of Athletic Training Education (CAATE) competencies and proficiencies:

Code	Competency
TM-C1	Describe the physiological and pathological processes of trauma, wound healing and tissue repair and their implications on the selection and application of therapeutic modalities used in a treatment and/or rehabilitation program.
TM-C2	Explain the principles of physics, including basic concepts associated with the electromagnetic and acoustic spectra (e.g., frequency, wavelength) associated with therapeutic modalities.
TM-C3	Explain the terminology, principles, basic concepts, and properties of electric currents as they relate to therapeutic modalities.
TM-C4	Describe contemporary pain-control theories.
TM-C5	Describe the role and function of the common pharmacological agents that are used in conjunction with therapeutic modalities
TM-C6	Explain the body's physiological responses during and following the application of therapeutic modalities.
TM-C7	Describe the electrophysics, physical properties, biophysics, patient preparation and modality set-up (parameters), indications, contraindications, and specific physiological effects associated with commonly used therapeutic modalities.
TM-C8	Identify appropriate therapeutic modalities for the treatment and rehabilitation of injuries and illness.
TM-C9	Describe the process/methods of assessing and reassessing the status of the patient using standard techniques and documentation strategies to determine appropriate treatment and rehabilitation and to evaluate readiness to return to the appropriate level of activity. This includes the ability to:
TM-C9a	Describe and interpret appropriate measurement and assessment procedures as they relate to the selection and application of therapeutic modalities.
TM-C9b	Interpret objective measurement results as a basis for developing individualized therapeutic modality application and set-up (parameters).

TM-C9c	Interpret the results of injury assessment and determine an appropriate therapeutic modality program to return the patient to physical activity.
TM-C9d	Determine the appropriate therapeutic modality program and appropriate therapeutic goals and objectives based on the initial assessment and frequent reassessments.
TM-C9e	Determine the criteria for progression and return to activity based on the level of functional outcomes.
TM-C9f	Describe appropriate methods of assessing progress when using therapeutic modalities and interpret the results.
TM-C9g	Interpret physician notes, postoperative notes, and physician prescriptions as they pertain to a treatment plan.
TM-C9h	Describe appropriate medical documentation for recording progress in a therapeutic modality program.
TM-C10	Identify manufacturer's, institutional, state, and federal standards for the operation and safe application of therapeutic modalities.
TM-C11	Identify manufacturer's, institutional, state and federal guidelines for the inspection and maintenance of therapeutic modalities.
TM-P1	Assess patient to identify indications, contraindications, and precautions applicable to the application of therapeutic modalities.
TM-P2	Obtain and interpret baseline and post-treatment objective physical measurements to evaluate and interpret results.
TM-P3	Inspect the therapeutic modalities and treatment environment for potential safety hazards.
TM-P4	Position and prepare the patient for the application of therapeutic modalities.
TM-P5	Select and apply appropriate therapeutic modalities according to evidence-based guidelines.
TM-P6	Document treatment goals, expectations, and treatment outcomes.
EX-C1	Describe the physiological and pathological processes of trauma, wound healing and tissue repair and their implications on the development, progression and implementation of a therapeutic exercise program.
EX-C4	Describe the appropriate selection and application of therapeutic exercises taking the following into consideration:
EX-C4a	The physiological responses of the human body to trauma
EX-C4b	The physiological effects of inactivity and immobilization on the musculoskeletal, cardiovascular, nervous, and respiratory systems of the human body
EX-C4c	The anatomical and/or biomechanical alterations resulting from acute and chronic injury and improper mechanics
EX-C4d	The physiological adaptations induced by the various forms of therapeutic exercise, such as fast- versus slow-twitch muscle fibers

EX-C4e	The physiological responses of additional factors, such as age and disease
EX-C5	Describe the indications, contraindications, theory, and principles for the incorporation and application of various contemporary therapeutic exercise equipment and techniques, including aquatic therapy, manual therapy and mobilization.
EX-C6	Define the basic components of activity-specific rehabilitation goals, functional progressions, and functional outcomes in a therapeutic exercise program.
EX-C7	Describe the process/methods of assessing and reassessing the status of the patient using standard techniques and documentation strategies in order to determine appropriate treatment and rehabilitation plans and to evaluate the readiness to return to the appropriate level of activity. This includes the ability to:

## REQUIRED READINGS

1. Prentice WE. *Therapeutic Modalities for Sports Medicine and Athletic Training*. McGraw-Hill, 2009.
2. Houglum, P (2005) *Therapeutic Exercise For Musculoskeletal Injuries*. 3rd ed. Champaign, IL: Human Kinetics Co.

*\*\*Students will be notified of additional readings for each section\*\**

### *ADDITIONAL READINGS THAT MAY BE OF HELP (\*\*Not Required\*\*)*

1. Denegar CR, Saliba E, & Saliba S. *Therapeutic modalities for musculoskeletal injuries*. Human Kinetics, 2010.
2. Prentice, WE. *Therapeutic Modalities in Rehabilitation*, 2011.

## EVALUATION

Students will be evaluated on content standards (knowledge gained). Content standards will be assessed via projects, written quizzes and exams.

### Article Reviews

Throughout the semester you will be assigned various articles for review. You will write a reflective summary that is typed (12pt, Times New Roman font), single spaced with the AMA citation listed at the top of the page along with your first/last name, course number and date. Reviews should not exceed one page in length. An outline describing the information to be included in each article review will be provided.

### Quizzes

Quizzes will be given during the first 10 minutes of class on the dates indicated on the Course Calendar. ***Please note that the Course Calendar may change at the discretion of the instructor, and students will be promptly notified of any changes.*** This will be a brief multiple choice and

true-false assessment of your knowledge from the reading. ***You are required to bring a scantron to each examination.***

If you are not present in class before the instructor is done handing out the quiz to begin taking, you will be considered late and will not be allowed to complete the quiz.

### **Examinations:**

Five examinations, not including a comprehensive final exam, will be administered in class. The format of these examinations may be multiple choice, true/false, short answer, matching, essay and fill in the blank type questions. Each of the examinations will test the material covered in the assigned reading and during the prior class meetings.

### **Evidence Based Clinical Review**

The purpose of this assignment is to provide an understanding of relevant research literature that justifies why and how therapeutic modalities are applied to patients. Using research based evidence; the clinician makes practice decisions based on the best available research evidence, clinical experience and a patient's values. You will be required to write a research paper discussing the relevant research pertaining to the management of an injury you observed in your clinical experience this semester.

The case report should present pertinent information as to the condition the patient experienced, any signs and symptoms that would qualify the use of a therapeutic modality, a discussion of the rehabilitation goals, and a description of the therapeutic modalities used to achieve the goals. The report should also include a discussion as to the appropriate use of the therapeutic modalities and evidence for/against the use of these modalities. This discussion of any other possible modalities that were not used, but would have been appropriate should be included. This section should include references from peer reviewed journal articles to support any argument you make, and present any alternative theories. If possible collecting patient outcomes that would help support the use of the chosen modality would be a benefit to the report.

There are a number of databases on the web available to support evidence-based clinical practice through peer reviewed journals. Students are encouraged to use databases such as PubMed, CINAHL and SPORT Discuss to identify pertinent resources. Students are also strongly encouraged to explore the Cochrane (<http://www.cochrane.org/reviews/clibintro.htm>) and The Physiotherapy Evidence Database (<http://www.pedro.fhs.usyd.edu.au/index.html>) to identify pertinent systematic reviews and graded clinical trials. These sites also provide excellent tutorials related to assessing the methodological quality of clinical trials. The paper must be in American Medical Association format (Journal of Athletic Training) and be supported by a sufficient number of peer reviewed scholarly sources.

The topic for the Case Report must be submitted to the instructor and approved by the date indicated on the topics outline. A detailed outline of the formatting of the Case Report will be provided for students.

### **Class Participation:**

Attending, being prompt, and active participation are important components of this course. Therefore, students will earn credit for attending and contributing to the class.

### **MAKE UP WORK**

Students who are absent or who arrive late without an official university or a medical doctor's excuse will not be permitted to participate in the class activities for credit the day of the absence or tardy event. There will be no make-up quizzes or exams unless an excused absence has been warranted. Students who miss an examination, quiz or other class activity because of an excused absence must complete the assignment ***within a week of the excused absence***. It is the student's obligation to pursue any make-up work.

### **LATE ASSIGNMENTS**

All work is due at the beginning of class time on the indicated day. **NO LATE WORK WILL BE ACCEPTED!**

### **GRADING: Course Grading Scale**

<b>ASSESSMENT METHOD</b>	<b>NUMBER</b>	<b>POINTS EACH</b>	<b>POINTS TOTAL</b>
Class Participation	24	2	48
Article Review	5	20	100
Quizzes	14	5	70
Written Examinations	5	60	300
Evidence Based Clinical Review	1	125	125
Comprehensive Final Exam	1	40	40
<b>TOTAL</b>	—	—	<b>683</b>

The student's final letter grade will be earned based on the following scale:

<b>A:</b>	635.2 – 683 pts	(93%)
<b>A-:</b>	614.7– 634.1 pts	(90%)
<b>B+:</b>	594.2– 517.99 pts	(87%)
<b>B:</b>	566.9 – 584.1 pts	(83%)
<b>B-:</b>	546.4 – 566.8 pts	(80%)
<b>C+:</b>	525.9 – 546.3 pts	(77%)
<b>C:</b>	498.5 – 525.8 pts	(73%)
<b>C-:</b>	478.1 – 498.4 pts	(70%)
<b>D:</b>	430.3 – 478.0 pts	(63%)
<b>F:</b>	< 430.2 pts.	

**ATEP 350 Tentative Course Schedule:** Faculty reserves the right to alter the schedule as necessary.

Day	Date	Tentative Topic	Assignment
1	Aug 26	Course Intro/Basic Concepts of Therapeutic Interventions	Ch 1
2	Aug 28	Pathomechanics of Healing	Ch 2, Quiz
3	Sept 4	Pathomechanics of Healing	Ch 2
4	Sept 9	Understanding Pain	Ch 3, Quiz
5	Sept 11	Pain Neuromatrix	
6	Sept 16	Written Examination #1	
7	Sept 18	Cryotherapy and Compression	Ch 4 & 11, Quiz
8	Sept 23	Thermotherapy	Ch 4, Quiz
9	Sept 25	Role of Cryo/Thermotherapy in Healing	Article Review #1
10	Sept 30	Written Exam #2	
11	Oct 2	Electrotherapy General Principles/TENS	Ch 5, Quiz
12	Oct 7	Electrotherapy: IFC,HVC, NMES	Ch 5
13	Oct 9	Electrotherapy: Iontophoresis, Role in Healing	Ch 6, Quiz Article Review #2
14	Oct 14	No class	
15	Oct 15	Written Exam #3	
16	Oct 16	US Basic Concepts	Ch 8
17	Oct 21	US, Phonophoresis, US Combination Therapy	Ch 8, Quiz
18	Oct 23	US role in Healing	Article Review #3
19	Oct 28	Written Exam #4	
20	Oct 30	Alternative Interventions	Handouts
21	Nov 4	Basic Components of Rehab	Ch 1 & 2, Quiz
22	Nov 6	Range of Motion/Flexibility	Ch 5, Quiz
23	Nov 11	Manual Therapy Mobilization	Ch 6, Handout, Quiz
24	Nov 13	Manual Therapy/Massage	Ch 6, Handout, Quiz
25	Nov 18	Strength	Ch 7, Article Review #4
26	Nov 20	Proprioception	Ch 8, Quiz
27	Nov 25	Plyometrics	Ch 9, Quiz
28	Dec 2	Functional Exercise	Ch 10, Quiz, Article Review #5
29	Dec 4	Written Exam #5	
30	Dec 9	Reading Day	
	Dec 11	Comprehensive Final Exam 10:30-1:15	



### *Student Expectations*

- Students must adhere to the guidelines of the George Mason University Honor Code [See <http://oai.gmu.edu/honor-code/>].
- Students with disabilities who seek accommodations in a course must be registered with the George Mason University Office of Disability Services (ODS) and inform their instructor, in writing, at the beginning of the semester [See <http://ods.gmu.edu/>].
- Students must follow the university policy for Responsible Use of Computing [See <http://universitypolicy.gmu.edu/policies/responsible-use-of-computing/>].
- Students are responsible for the content of university communications sent to their George Mason University email account and are required to activate their account and check it regularly. All communication from the university, college, school, and program will be sent to students solely through their Mason email account.
- Students must follow the university policy stating that all sound emitting devices shall be turned off during class unless otherwise authorized by the instructor.

### *Campus Resources*

- The George Mason University Counseling and Psychological Services (CAPS) staff consists of professional counseling and clinical psychologists, social workers, and counselors who offer a wide range of services (e.g., individual and group counseling, workshops and outreach programs) to enhance students' personal experience and academic performance [See <http://caps.gmu.edu/>].
- The George Mason University Writing Center staff provides a variety of resources and services (e.g., tutoring, workshops, writing guides, handbooks) intended to support students as they work to construct and share knowledge through writing [See <http://writingcenter.gmu.edu/>].
- For additional information on the College of Education and Human Development, School of Recreation, Health, and Tourism, please visit our website [See <http://rht.gmu.edu>].

PROFESSIONAL BEHAVIOR: Students are expected to exhibit professional behaviors and dispositions at all times.

CORE VALUES COMMITMENT: The College of Education and Human Development is committed to collaboration, ethical leadership, innovation, research-based practice, and social justice. Students are expected to adhere to these principles.

