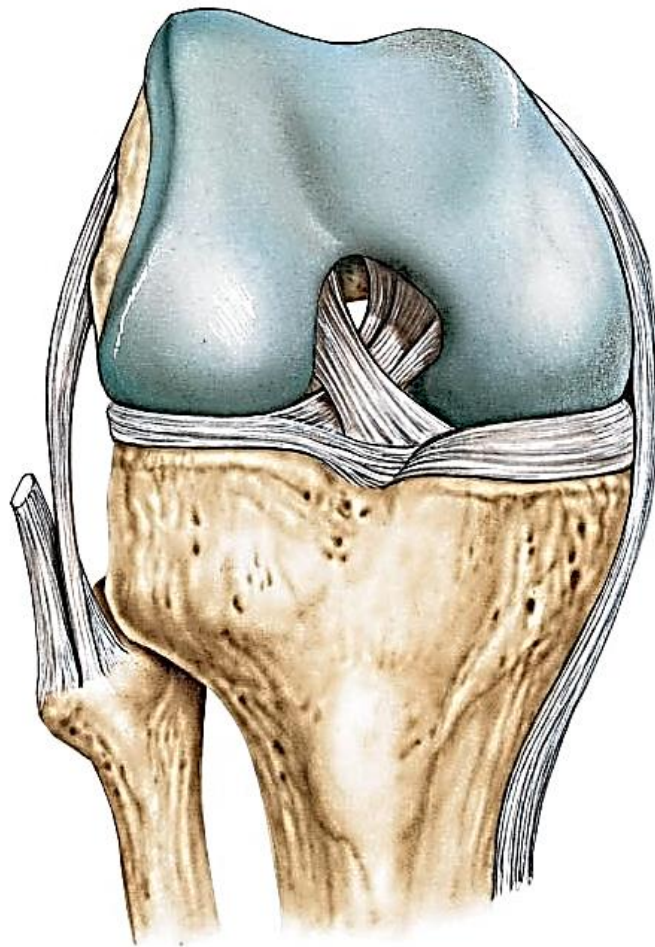


Applied Anatomy of the Musculoskeletal System
MDE 8522
Course Syllabus
Academic Year 2017-2018



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INTRODUCTION

Applied Anatomy of the Musculoskeletal System is one of the basic science courses which is developed to enable third and fourth year medical students to revisit anatomy during or after conducting clinical rotations in hospital settings. The main purpose of this teaching model is to provide prospective students with the opportunity to correlate fundamental clinical and surgical facts with the structure and function as they relate to the musculoskeletal system.

In this course, students will be exposed to the clinical and surgical anatomy of the bones, ligaments, muscles and joints through series of PowerPoint Presentations, Case-Based Discussions and laboratory procedures. Students will be able to perform procedures that translate anatomical knowledge into the daily practice of medicine, such as arthroscopy, induction of shoulder dislocation and repair, induction of rotator cuff injury and repair, selection of tendinous grafts, simulation of ligamentous rupture of the knee, such as the collateral and cruciate ligaments and their repair. The selection of the topics of presentations and discussions as well as the procedures will be based on the extent of their relevance to the clinical practice of future physicians in the fields of primary care, rehabilitation medicine, orthopedics, emergency procedures in- and outpatient clinics will also be factors in this determination.

Thus, prospective students will attain an integrated conceptual knowledge of anatomy and understanding of the mechanism of diseases that affect the musculoskeletal system. This is accomplished through a series of lecture and case presentations augmented by virtual sessions. Further, this curricular model (going back to anatomy) encourages learners to view the musculoskeletal system not simply as a basic science discipline, but an integral part of the practice of medicine. This is a cooperative academic endeavor that requires learners' active engagement and the fulfillment of their responsibilities as much as faculty's a unique experience that reinvigorates learners' interest in the basic science, fosters the fundamental skills and knowledge that ensures academic success in national exams, clinical rotations and beyond. To make this course a successful component of your medical education, I ask that you consider formal or informal input regarding any area of this teaching model.

Welcome aboard,

GENERAL COURSE INFORMATION

COURSE DESCRIPTION

This course entails the study of the structures, relationships and functions of specific joints and associated ligaments, tendons and muscles. It provides a foundation for understanding of the etiologies and anatomic basis of musculoskeletal diseases. It facilitates the radiologic interpretation of the structural and functional changes induced by trauma, infections and sport-related injuries. The knowledge gained from the study of this system will form the foundation for medical and surgical approaches, and establishes an understanding proper medical treatment. It explores the structural basis of the processes that alter human structure and function as it relates to the musculoskeletal system, and underlies the objective signs and subjective manifestations of disease processes.

COURSE DESCRIPTION

As a future physician and a vital constituent of the health care delivery team, you will be required to manage medically compromised patients and recognize and address their needs. This requires a clear understanding of the basic mechanisms that underlie disease processes, presentations, and the impact of disease on patients and treatment options. Understanding the anatomy of the musculoskeletal system will be essential in the treatment of variety of conditions that affect the young and the adult populations subsequent to trauma, diseases or sports injuries

Upon successful completion of the course the learners will be able to:

- Identify the function of basic musculoskeletal structures and determine the sequel of selected musculoskeletal malfunctions.
- Demonstrate knowledge of the anatomical basis of musculoskeletal dysfunctions, procedures and surgical approaches.
- Analyze the role of the musculoskeletal system manifestations of disease processes.
- Discuss the etiology, pathogenesis, signs, symptoms and treatment modalities of frequently occurring sports injuries.
- Outline the types and specific features of commonly occurring fractures and tendinous rupture.
- Define the fascial coverings of the muscles and associated spaces, and describe their functional significance.
- Explain the structural basis of joint dislocations.
- Demonstrates the anatomic basis of the commonly occurring neurodegenerative conditions that affect the musculoskeletal system.
- Describe the anatomic basis of hernia and content of the hernial sac in various regions of the body.

- Explain the muscular, ligamentous and cartilaginous structures that stabilize the vertebral column and facilitate its movements.
- Compartmentalize the muscles based on their locations, functions, and describe the complications associated with their dysfunctions.

In addition, it is expected that students to develop the skills necessary for self-directed learning, problem solving, critical reasoning, presentation of data, and intellectual team work. Students are encouraged to assess with critical observation the current medical literature to facilitate life-long learning.

METHODS OF INSTRUCTION

Meetings are scheduled for Tuesdays and Thursdays in MDC 2510 from 9:00 AM-12:00 PM.

A. LECTURES - *First two hours*

There will be regular lecture presentations in each session for one hour on specific subjects that cover anatomic structures in a system-based approach, complementing the laboratory dissection sessions. These presentations will be regularly posted on course website

B. CLINICAL CASE PRESENTATIONS PRESENTATIONS/EXPERENTIAL LEARNING - *Third hour*

This activity is designed to facilitate critical thinking. Students are expected to prepare clinical cases that bear anatomic significance in PowerPoint format supplemented with images and references. Students will have the opportunity to also examine and analyze presentations submitted by their colleagues.

Additionally, presentations on virtual model of human body will be introduced to enhance learning through experience. Selected procedures will be presented with the indications and complications and students are asked to reflect on this experience. A summary of their experience is collectively presented.

REQUIREMENTS

In addition to attendance and active participation in the scheduled sessions, students are required to submit 4 PowerPoint presentations by the end of a 2 week elective period and 8 presentations at the conclusion of a 4-week elective.

Specifics of Student's Presentation:

1. Presented cases should be carefully selected based on its significance, relevance and impact on knowledge base.

2. Each presentation must encompass a case history, manifestations, physical diagnosis, differential diagnosis, therapeutic methodologies and discussion.
3. Each presentation must consist of a minimum of 12 slides
4. Anatomic relevance need to be explored and documented
5. Diagnostic clues and teaching points should be listed.
6. At the end of each case presentation, a minimum of 4 questions pertinent to the case, be inserted with a brief answer for each.
7. Each slide of the PowerPoint Presentation should be balanced between text, data, and images.
8. A minimum of five recent references at the end of each presentation must be documented.

Additionally, students are expected to engage in teaching 1st year medical students within the laboratory settings on scheduled days. They are encouraged to review the laboratory guide and atlas prior to each scheduled session.

GRADING POLICY

The following grading scale will be utilized in determining the final course grade:

Grading Scale

Outstanding performance (90-100%) - H

(Irrespective of performance in the course, H' grade will not be awarded if a student has more than one absence or if she/he fails to submit the required presentation within the above specified time period.)

Solid performance (80-89%) - PC

Adequate (70-79%)

Below (70%) - F

ABSENCE FROM THE MANDATORY LEARNING SESSIONS

To receive an excused absence from a scheduled presentation or laboratory session, a student must contact the Office of Student Affairs as soon as possible before the scheduled session, and fill out and sign a "Request for an Excused Absence from Mandatory Session" form, attesting to its accuracy based on the USFCOM Honor Code. Following approval of the request, a makeup session will be arranged by the course director.

Excused absence from any scheduled learning activity during the elective is only allowed for one session in each period.

METHODS OF COMMUNICATION

Students are expected to check their **e-mail account** at least once a day for new announcements. Announcements and communications are principally delivered via email. Failure to read or follow electronic communication will not be an acceptable excuse to waive any course related requirements.

TEXTBOOKS AND ATLASES

Students may benefit from the following resources:

- Drake R. Gray's Anatomy for Students, 3rd edition, Churchill Livingstone, ISBN- 13: 978-0702051319 ISBN-10: 0702051314.
- Netter, F. Atlas of Human Anatomy, 5th edition, Saunders-Elsevier SBN-13: 978-1455704187 ISBN-10: 1455704180
- Trelease R., Netter's Surgical Anatomy Review P.R.N., 1e (Netter Clinical Science), 3rd edition Springer, ISBN: 978-0-387-09515-8.

LABORATORY GUIDELINES AND STANDARDS

1. Students must sign the 'Pledge of Respect' form prior to attending any laboratory session
2. The laboratory will be open 24 hours/day except during exam preparation.
3. Students must wear laboratory coats during scheduled and unofficial laboratory hours. These coats should be laundered frequently. Students must not walk into other parts of the school building with soiled laboratory coats.
4. Should you inadvertently suffer even a minor cut or wound during your dissection, seek the immediate aid and advice of the course director or the faculty or staff in close proximity. Although injuries of this nature, when properly cared for heal without any complication. We strongly advise to seek medical help from the nearby Walk-In Doctors Clinic. Additionally, the laboratory is equipped with First Aid Kits and eyewash solution. Be sure to familiarize yourself with their location before an emergency occurs.
5. If you have a medical condition or think you are or may be pregnant, please promptly let the course director be aware of your situation so proper precaution and accommodation can be instituted.
6. Smoking, eating, drinking, and playing music is NOT permitted in the laboratory at any time during scheduled or outside laboratory scheduled periods.
7. Wear protective clothing, such as laboratory coats and gloves. Fixative is capable of dissolving some fabrics and staining many others. Laboratory coats or gloves must be removed before leaving the laboratory.
8. Do not wear contact lenses during dissection - especially the soft type. Formalin and phenol fumes can impregnate the soft lenses or cause corneal irritation under the hard lenses.
9. Identifying tags of the cadaver must never be removed from the table. Please keep the tag attached to the bag zipper or to the leg of the table.
10. Cadaver parts are not to be removed from the laboratory under any circumstances. Penalties range from suspension to expulsion from school.
11. At all times all anatomical tissue must also remain with the specific cadaver.
12. Cadaver must be covered at all times outside the scheduled laboratory sessions.
13. The condition of the cadaver will deteriorate if it is kept uncovered. You will find it extremely difficult to dissect a dried out cadaver. Dry structures cannot always be easily discernible.

14. Each table will be supplied with a spray bottle containing preservative to be used to moisten cadaveric tissue. The spray bottle can be refilled from the large containers located in each laboratory section.
15. Each group must keep the table and adjacent floor space clean. Please wipe up any fluid that may spill on the floor with paper towels.
16. NO cameras or radios are allowed in the laboratory at any time.
17. All dissection materials must be deposited in dissection waste receptacles marked (**Tissue Only**). You must not mix paper waste with body tissues.
18. All waste paper and used gloves must be deposited in a separate waste paper receptacles. Dissection gloves must not be removed from the laboratory for health reasons.
19. Used scalpel blades and other sharp objects should be placed in the special containers provided for this purpose (not left on the dissecting table, in the sink or in the trash containers).
20. Students are not permitted to bring visitors (friends, relatives, acquaintances) into the laboratory. Only doctors or medical students may visit the laboratory for a specific research or teaching purposes after approval.
21. Two sets of deep and shallow sinks are available for your use in each section of the lab. *Shallow sinks* are to be strictly used for cleaning and rinsing dissection tools, organs or cadaveric specimens. *Deep sinks* are there for you to wash your hands. They are not intended and should not be used for rinsing dissection tools or cadaveric specimens. Additional sink are also available outside the lab for your personal use.
22. It is a privilege to have the opportunity to dissect human body. All cadavers were donated. For this reason, respect should be shown, and no undue levity should be allowed.
23. We must recognize with deep appreciation and respect those who selflessly donated their bodies to help you learn the anatomy of human body.
24. It is imperative to exercise *universal precaution* when handling human tissue and biologic materials as described alter.

UNIVERSAL PRECAUTIONS

The Centers for Disease Control (CDC) has published recommendations for preventing HIV (and other blood-borne pathogens) transmission in health-care settings, commonly called "universal precautions". This approach emphasizes the consistent use of blood and body fluid* precautions for all patients because the infectious potential for blood and other body fluids is not always known. The following recommendations have been developed for use in health care settings. Many of these same recommendations are also applicable in research labs where work with blood or other body fluids is being conducted.

1. All should routinely use appropriate barrier precautions to prevent skin and mucosa exposure when contact with blood or other body fluids is anticipated. Gloves should be worn for touching blood and body fluids, mucous membranes, or non-intact skin of all

patients, for handling items or surfaces soiled with blood or body fluids, and for performing venipuncture and other vascular access procedures. Gloves should be changed after contact with each patient. Masks and protective eyewear or face shields should be worn during procedures that are likely to generate droplets of blood or other body fluids to prevent exposure of mucous membranes of the mouth, nose, and eyes. Gowns or aprons should be worn during procedures that are likely to generate splashes of blood or other body fluids.

2. Hands and other skin surfaces should be washed immediately and thoroughly if contaminated with blood or other body fluids. Hands should be washed immediately after gloves are removed.

3. All health-care workers should take precautions to prevent injuries caused by needles, scalpels, and other sharp instruments or devices during procedures; when cleaning used instruments; during disposal of used needles; and when handling sharp instruments after procedures. To prevent needle stick injuries, needles should not be recapped, purposely bent or broken by hand, removed from disposable syringes, or otherwise manipulated by hand. After sharps are used, they should be placed in puncture-resistant containers for disposal; the puncture-resistant containers should be located as close as practical to the use area.

4. Pregnant health-care workers are not known to be at greater risk of contracting HIV infection than health-care workers who are not pregnant; however, if a health-care worker develops HIV infection during pregnancy, the infant is at risk of infection resulting from perinatal transmission. Because of this risk, pregnant health-care workers should be especially familiar with and strictly adhere to precautions to *Human Anatomy (BMS 6100) Syllabus- Part-3 (Academic Year 2009-2010) 53* minimize the risk of HIV transmission.

ADDITIONAL PRECAUTIONS

As a supplement to the "universal precautions" listed above the following precautions are also recommended:

1. All specimens of blood and body fluids should be put in a well-constructed container with a secure lid to prevent leaking during transport.

2. All persons processing blood and body-fluid specimens, e.g., removing tops from vacuum tubes, should wear gloves. Masks and protective eyewear should be worn if mucous membrane contact with blood or body fluids is anticipated. Gloves should be changed and hands washed after completion of specimen processing.

3. For routine procedures, such as histologic and pathologic studies or microbiologic culturing, a biological safety cabinet is not necessary. However, biological safety cabinets should be used whenever procedures are conducted that have a high potential

for generating droplets. These include activities such as blending, sonicating, and vigorous mixing.

4. Mechanical pipetting devices should be used for manipulating all liquids in the laboratory. Mouth pipetting must not be done.

5. Use of needles and syringes should be limited to situations in which there is no alternative and the recommendations for preventing injuries with needles outlined under universal precautions should be followed.

6. Laboratory work surfaces should be decontaminated with an appropriate chemical germicide after a spill of blood or other body fluids and when work activities are completed.

7. Contaminated materials used in the laboratory should be decontaminated before reprocessing or be placed in bags or other containers and disposed of according to The University's procedures.

8. Equipment that has been contaminated with blood or other body fluids should be decontaminated and cleaned before being repaired in the laboratory or transported to the manufacturer.

9. All persons should wash their hands after completing laboratory activities and should remove protective clothing before leaving the laboratory.

** Universal precautions apply to blood and to other body fluids containing visible blood. Universal precautions also apply to semen and vaginal secretions; tissues; and to the following fluids: cerebrospinal, synovial, pleural, peritoneal, pericardial, and amniotic. Human Anatomy (BMS 6100) Syllabus- Part-3 (Academic Year 2009-2010) 54 Reference: National Research Council. Biosafety in the Laboratory, Prudent Practices for the Handling and Disposal of Infectious Materials, 1989.*

END OF SYLLABUS