

13-56  
R-8/27/13  
APP-9/3/13  
Senate Info -10/8/13

### Undergraduate Distance Education Review Form

(Required for all courses taught by distance education for more than one-third of teaching contact hours.)

#### Existing and Special Topics Course

Course: HPED256 Applied Human Structure and Conditioning

Received

Instructor(s) of Record: Dr. Joshua Castle

JUN 25 2013

Phone: 724-357-6248

Email: j.l.castle@iup.edu

Liberal Studies

Received

#### Step One: Proposer

AUG 29 2013

A. Provide a brief narrative rationale for each of the items, A1- A5.

Liberal Studies

1. How is/are the instructor(s) qualified in the distance education delivery method as well as the discipline?

Dr. Joshua Castle has taught the HPED256 Applied Human Structure and Conditioning content at IUP. He taught not only this course in the traditional face-to-face format, but he also taught numerous other courses in the area of sport management. He developed this course and has updated it each semester that it has been offered. Dr. Castle readily uses Moodle in teaching this course and all of the other courses he has taught at IUP. These include HPED 143, HPED 209, HPED 292, HPED 320, and HPED 460. He utilizes Moodle to post communications, his lectures (Power Point presentations), educational videos, and grades.

2. How will each objective in the course be met using distance education technologies?

Objective #A - Identify and explain anatomical orientation as it applies to specific human structure, i.e. anatomical planes, positions, regions, and body systems.

How Objective #A will be met - The readings cover these concepts and the online presentation will further review the material. Students will need a strong understanding of this material since it is the foundation for locating structures and organs within the body. In addition, students will have to demonstrate this knowledge through an online quiz.

Objective #B - Label, list and define components of skeletal anatomy including boney, landmarks, regions and divisions as well as bone development, growth and biomechanical influence of joint movement.

How Objective #B will be met - Course-related readings will include these concepts throughout the course. Online presentations will further enforce the related readings. Exercises are assigned that require students label, list and define components of skeletal anatomy throughout the course. In addition, students will have to demonstrate this knowledge through an online quiz.

Objective #C - Recognize and classify specific anatomical articulations, i.e. fibrous, cartilaginous and synovial joint classifications.

How Objective #C will be met - Course-related readings will include these concepts throughout the course. Online presentations will further enforce the related readings. Exercises are

4. How will student achievement be evaluated?

The course is divided into 4 units, with each unit containing 5 modules for a total of 20 modules. After each unit, tests will be administered using D2L technology for a total of 4 exams for the course. In addition, 10 quizzes/ assignments will be assigned to facilitate students' critical thinking and two sections of discussion board communications will be conducted to enhance the understanding of the course contents and enhance students' interests, motivation and satisfaction. Further, there is one paper where the student will design a three month preseason workout plan for an age group of your choice in a sport of your choice. The student will need to identify the components (i.e. muscular strength, muscular power endurance, aerobic power, lactate threshold and flexibility) of fitness that are most important to the sport. The assignment includes two specific workout strength training routines, one specific energy training routine, and one flexibility training routine. Concepts from the class need to be integrated within the paper

5. How will academic honesty for tests and assignments be addressed?

A wide variety of evaluation methods will be used including examinations and discussion boards, and a paper so that students are evaluated on a wide scope to identify academic dishonesty. All evaluation techniques will use all the safe guards available. The D2L software provides several functions for the instructor to prevent academic honesty. The instructor has full control of the exam time. The instructor also has the option of only allowing students to take the exams on certain computers on campus. D2L also has a function that allows the computer to randomly select test questions from a question bank in order to make sure students get different questions. All of the above examples are methods for the instructor to prevent academic dishonesty.

B. Submit to the department or its curriculum committee the responses to items A1-A5, the current official syllabus of record, along with the instructor developed online version of the syllabus, and the sample lesson. This lesson should clearly demonstrate how the distance education instructional format adequately assists students to meet a course objective(s) using online or distance technology. It should relate to one concrete topic area indicated on the syllabus.

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**Step Two: Departmental/Dean Approval**

Recommendation:  Positive (The objectives of this course can be met via distance education)

Negative

  
Signature of Department Designee

06/24/2013  
Date

Endorsed:

  
Signature of College Dean

6.24.13  
Date

Endorsed:

Signature of College Dean

Date

Forward form and supporting materials to Liberal Studies Office for consideration by the University-wide Undergraduate Curriculum Committee. Dual-level courses also require review by the University-wide Graduate Committee for graduate-level section.

**Step Three: University-wide Undergraduate Curriculum Committee Approval**

Recommendation:  Positive (The objectives of this course can be met via distance education)

Negative

*Gail S. Schriest*  
Signature of Committee Co-Chair

9/3/13  
Date

Forward form and supporting materials to the Provost within 30 calendar days after received by committee.

**Step Four: Provost Approval**

Approved as distance education course

Rejected as distance education course

*Timothy S. Anderson*  
Signature of Provost

9/6/13  
Date

Forward form and supporting materials to Associate Provost.

assigned that require students label, list and define various joints throughout the course. In addition, students will have to demonstrate this knowledge through an online quiz.

**Objective #D** - Identify and explain specific muscle organs as well as their primary structure and physiological function as it applies to the development of strength, muscle endurance and joint flexibility.

**How Objective #D will be met** - A paper designed to develop students' understanding and critical thinking of physiological function as it applies to the development of strength, muscle endurance and joint flexibility will be assigned. In addition, assigned readings, online presentations and online videos in the area will help students gain an in-depth understanding of these concepts.

**Objective #E** - List and describe components of the nervous, cell properties, structure, regeneration and function, as they apply to the principles of training for speed, strength, power, agility and proprioception.

**How Objective #E will be met** - A paper designed to develop students' understanding and critical thinking of the principles of training for speed, strength, power, agility and proprioception. will be assigned. In addition, assigned readings, online presentations and online videos in the area will help students gain an in-depth understanding of these concepts.

**Objective #F** - Recognize and define specific structure of the cardio-respiratory system including the components of blood, vessel, cardiac muscle and respiratory organs as well as the physiological function of these structures as it applies to aerobic and anaerobic development and training.

**How Objective #F will be met** - Course-related readings will include these concepts throughout the course. Online presentations and videos will further enforce the related readings. Exercises are assigned that require students to recognize and define specific structure of the cardio-respiratory system. In addition, students will have to demonstrate this knowledge through an online quiz.

In summary, learning management systems technologies for distance education will be applied to meet the above objectives. The design of this course will focus on students' learning, motivation and satisfaction. The instructor will implement use of modules, and discussion boards in this particular online course to facilitate teaching and discussion. Each student is required to submit his/her questions at the end of each module and is required to participate in discussions. This approach is being used to foster learning efficiency for each individual student and encourage self-motivation.

3. How will instructor-student and student-student, if applicable, interaction take place? The online software affords opportunities for students to be involved in the class with the instructor and other students via an active online bulletin board, chat room, e-mail, assignments drop box, and discussion board. Assignments will prompt students to complete a self-test of their understanding of the text content and discuss results with the instructor.

4. How will student achievement be evaluated?

The course is divided into 4 units, with each unit containing 5 modules for a total of 20 modules. After each unit, tests will be administered using learning management systems technologies for a total of 4 exams for the course. In addition, 10 quizzes/ assignments will be assigned to facilitate students' critical thinking and two sections of discussion board communications will be conducted to enhance the understanding of the course contents and enhance students' interests, motivation and satisfaction. Further, there is one paper where the student will design a three month preseason workout plan for an age group of your choice in a sport of your choice. The student will need to identify the components (i.e. muscular strength, muscular power endurance, aerobic power, lactate threshold and flexibility) of fitness that are most important to the sport. The assignment includes two specific workout strength training routines, one specific energy training routine, and one flexibility training routine. Concepts from the class need to be integrated within the paper

5. How will academic honesty for tests and assignments be addressed?

A wide variety of evaluation methods will be used including examinations, discussion boards, and a paper so that students are evaluated on a wide scope to identify academic dishonesty. All evaluation techniques will use all the safe guards available. The learning management systems technologies software provides several functions for the instructor to prevent academic dishonesty. The instructor has full control of the exam time. Learning management systems technologies also have a function that allows the computer to randomly select test questions from a question bank in order to make sure students get different questions. All of the above examples are methods for the instructor to prevent academic dishonesty.

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Negative

\_\_\_\_\_  
Signature of Department Designee

\_\_\_\_\_  
Date

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*Gail S. Schriest*

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9/3/13

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**Step Four: Provost Approval**

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Rejected as distance education course

\_\_\_\_\_  
Signature of Provost

\_\_\_\_\_  
Date

Forward form and supporting materials to Associate Provost.

## **-1 Syllabus of Record**

### **I. Catalog Description**

<b>HPED 256 Applied Human Structure and Conditioning</b>	<b>3 class hours</b>
	<b>0 lab hours</b>
	<b>3 credits</b>
<b>Prerequisites: None</b>	<b>(3c-0l-3cr)</b>

Emphasis will be on developing an anatomical and physiological knowledge base as it applies to exercise, conditioning and training of the physically active. Specific body systems presented will include skeletal, muscular, cardio-respiratory and nervous. Components of each system will be addressed as they pertain to various exercise and training concepts such as speed, strength, muscular and cardiovascular endurance, flexibility, aerobic capacity, power, and other traits related to performance and physical activity.

### **II. Course Outcomes**

Upon completion of this course the student will be able to:

- A. Identify and explain anatomical orientation as it applies to specific human structure, i.e. anatomical planes, positions, regions, and body systems.**
- B. Label, list and define components of skeletal anatomy including boney, landmarks, regions and divisions as well as bone development, growth and biomechanical influence of joint movement.**
- C. Recognize and classify specific anatomical articulations, i.e. fibrous, cartilaginous and synovial joint classifications.**
- D. Identify and explain specific muscle organs as well as their primary structure and physiological function as it applies to the development of strength, muscle endurance and joint flexibility.**
- E. List and describe components of the nervous, cell properties, structure, regeneration and function, as they apply to the principles of training for speed, strength, power, agility and proprioception.**
- F. Apply and define specific structures of the cardio-respiratory system, including components of blood, vessels, cardiac muscle and respiratory organs, as well as physiological function of these structures related to aerobic and anaerobic development and training.**

### **III. Course Outline**

- |  |                  |
|--|------------------|
| <b>A. Orientation to human anatomy and anatomical structures</b> | <b>1.5 hours</b> |
| 1. Anatomical planes   |                  |
| 2. Anatomical regions  |                  |
| 3. Anatomical terminology  |                  |



4. Introduction to body systems	
<b>B. Skeletal System</b>	<b>5 hours</b>
1. Skeletal anatomy	
2. Identification of anatomical landmarks	
3. Identification of specific bone features	
4. Development, growth, remodeling and repair of bone tissue	
5. Biomechanical influence of skeletal structure	
<b>C. Articulations</b>	<b>1.5 hours</b>
1. Fibrous, cartilaginous and synovial joint classifications	
2. Biomechanics of joint motion	
<b>D. Nervous System</b>	<b>2 hours</b>
1. Cell properties, structure, regeneration and function	
2. Gross anatomy central and peripheral nervous systems	
<b>Exam One</b>	<b>1 hour</b>
<b>E. Muscular System</b>	<b>5 hours</b>
1. Tissue anatomy, metabolism, function and intervention	
2. Gross anatomy, terminology and organization	
3. Physiological basis of muscle contraction	
4. Kinesiological affect of muscle action on joint motion and strength	
<b>F. Lab-Muscle Locations and Actions</b>	<b>1 hour</b>
<b>G. Cardio-Respiratory Systems</b>	<b>1.5 hours</b>
1. Blood proteins, cells, types, form and function	
2. Vessel type and circulatory routes	
3. Heart and cardiac muscle structure	
4. Physiology of electrical and contractile activity	
5. Respiratory mechanics, neural control, gas exchange	
<b>Exam Two</b>	<b>1 hour</b>
<b>H. Principles of training</b>	<b>2.5 hours</b>
1. Fundamental Techniques	
2. Individual Response to Training	
<b>I. Principles related to the development of strength, endurance and flexibility of muscle tissue</b>	<b>5 hours</b>
1. Assessing Muscular Fitness	
2. Developing Muscular Fitness	

J.	Neurological influence on training for speed, strength, power, agility, proprioception, kinesthetic awareness and the development of joint flexibility.	2 hours
K.	Lab on Muscular Fitness	1 hour
L.	Exam Three	1 hour
M.	Aerobic and anaerobic development and training 1. Assessing Energy Fitness 2. Developing Energy Fitness	4 hours
N.	Developing Training Programs	1 hour
O.	Athletic Performance & Environmental Conditions	1.5 hours
P.	Lab on Anaerobic and Aerobic Fitness	1 hour
	Final Exam	2 hours

#### IV. Evaluation Methods

The final grade will be determined as follows:

1. **50% Exams:** Four objective examinations (12.5% for each exam) with three during the semester and a fourth during final exam week.
2. **15% Sport Specific Training Plan:** Students will research and develop a conditioning plan for a specific sport to improve the strength, flexibility, and aerobic conditioning for a specific athlete participating in that sport.
3. **15% Quizzes:** Ten quizzes will be completed throughout the semester.
4. **20% Laboratory Activities:** Students will participate in strategic lab activities and prepare reports of the lab activities.

#### V. Grade Breakdown

Grading Scale: A:  $\geq 90\%$ ; B: 80 – 89%; C: 70 – 79%; D: 60 – 69%, F:  $<60\%$

#### VI. Attendance Policy

Appropriate attendance is a necessity for success in this course. For that reason, an attendance policy will be used that may influence a student's success in the course. A large number of assignments and projects will take place during class meetings. Therefore, a student who misses these activities will jeopardize their success in the course

Exemption from this policy for atypical circumstances (severe illness, personal tragedy...) may be considered pending proper documentation.

#### VII. Required Textbook

Sharkey, B. J. & Gaskill, S.E. (2006). *Sport Physiology for Coaches*. Champaign, IL: Human Kinetics Publishing.

## VIII. Special resource requirements

Instructor prepared course packet

## IX. Bibliography

Abernethy, B., Hanrahan, S., Kippers, V., Mackinnon, L. & Pandy, M. (2005). *The Biophysical Foundations of Human Movement*. Champaign, IL: Human Kinetics.

Gambetta, V. (2007). *Athletic Development: The Art & Science of Functional Sports Conditioning*. Champaign, IL: Human Kinetics.

Marieb, E. (2009). *Essentials of Human Anatomy and Physiology*. San Francisco, CA: Pearson Publishing

McConnell, T. & Hull, K. (2011). *Human Form and Human Function*. Baltimore, MD: Lippincott Williams & Wilkins.

Shier, D., Butler, J. & Lewis, R. (2009). *Hole's Essentials of Human Anatomy and Physiology*. New York, NY: McGraw-Hill Publishing.

Watkins, J. (2010). *Structure and Function of the Musculoskeletal System*. Champaign, IL: Human Kinetics.

## **HPED 256 Applied Human Structure and Conditioning**

### **Credits: 3.00**

Emphasis will be on developing an anatomical and physiological knowledge base as it applies to exercise, conditioning and training of the physically active. Specific body systems presented will include skeletal, muscular, cardio-respiratory and nervous. Components of each system will be addressed as they pertain to exercise and training concepts, such as speed, strength, muscular and cardiovascular endurance, flexibility, aerobic capacity, power, and other physiological factors related to performance and physical activity.

### **Lecture: 3.00**

**College:** College of Health and Hum Service

**Department:** Health and Physical Education

### **Restrictions:**

Must be enrolled in one of the following Programs:

Phys Ed & Sport/Sport Admn, BS

Must be enrolled in one of the following Levels:

Undergraduate

Graduate

Must be enrolled in one of the following Campuses:

Indiana

## **-2 Online Syllabus**

**Welcome:**

### **HPED 256 Applied Human Structure and Conditioning**

I would like to take this opportunity to welcome you all to the online version of the course. I look forward to communicating with you as you take on the role of an online student. I hope that this online experience will be helpful and enjoyable.

To be successful as an online student, you must be an independent learner who can work well on your own. You need to be self-directed and motivated with good time management skills. If you need the traditional classroom experience with face-to-face interaction between students and instructor to be a successful learner, then an online course probably is not suitable for you.

Because this is an online course and we will not be meeting in person, please feel free to contact me via email at anytime with any questions or comments.

Best wishes for a successful semester,

Dr. Joshua Castle

**General Information:**

**Course Title: Applied Human Structure and Conditioning**  
**Course Number: HPED 256**  
**Prerequisite: None**  
**Credit: 3**  
**Instructor: Dr. Joshua Castle**  
**Mailbox Location: 238 Zink Hall**  
**Online Office Hours: Via e-mail**  
**Semester: Summer 2014**  
**Day and Time: Online**  
**E-mail: j.l.castle@iup.edu**  
**Office Phone: 724-357-6248**

**Course Description:**

**Emphasis will be on developing an anatomical and physiological knowledge base as it applies to exercise, conditioning and training of the physically active. Specific body systems presented will include skeletal, muscular, cardio-respiratory and nervous. Components of each system will be addressed as they pertain to exercise and training concepts, such as speed, strength, muscular and cardiovascular endurance, flexibility, aerobic capacity, power, and other physiological factors related to performance and physical activity.**

**Course Objectives:**

**Upon completion of this course the student will be able to:**

- A. Identify and explain anatomical orientation as it applies to specific human structure, i.e. anatomical planes, positions, regions, and body systems.**
- B. Label, list and define components of skeletal anatomy including boney, landmarks, regions and divisions as well as bone development, growth and biomechanical influence of joint movement.**
- C. Recognize and classify specific anatomical articulations, i.e. fibrous, cartilaginous and synovial joint classifications.**
- D. Identify and explain specific muscle organs as well as their primary structure and physiological function as it applies to the development of strength, muscle endurance and joint flexibility.**
- E. List and describe components of the nervous, cell properties, structure, regeneration and function, as they apply to the principles of training for speed, strength, power, agility and proprioception.**
- F. Recognize and define specific structure of the cardio-respiratory system including the components of blood, vessel, cardiac muscle and**

respiratory organs as well as the physiological function of these structures as it applies to aerobic and anaerobic development and training.

**Required Texts:**

Behnke, R. (2012). *Kinetic Anatomy*. 3<sup>rd</sup> ed. Champaign, IL: Human Kinetics Publishing.

Sharkey, B. J. & Gaskill, S.E. (2006). *Sport Physiology for Coaches*. Champaign, IL: Human Kinetics Publishing.

**Grading Policies:**

<b>Specific Evaluation</b>			
Exam #1		50 points	_____
Exam #2		50 points	_____
Exam #3		50 points	_____
Exam #4 (Final)		50 points	_____
Quiz Total (10 Drop Lowest 2)		80 points	_____
Training Plan		45 points	_____
Discussion Board		25 points	_____
<b>Total</b>	<b>=</b>	<b>350 points</b>	<b>_____</b>

**TOTAL POINTS FOR EACH CATEGORY ARE SUBJECT TO CHANGE**

<b>GRADING SCALE:</b>	90% to 100%	=	A
	80% to 89%	=	B
	70% to 79%	=	C
	60% to 69%	=	D
	Below 60%	=	F

Students who miss a test or do not submit material by the due date and time will receive a “0” for that test/assignment. It is important for the student to remember that all delays in the completion of the module and unit assignments are potentially detrimental to effective and efficient functioning and should be avoided.

**Unit I Outline (Modules 1-5)**

**Unit I GENERAL CONCEPTS OF ANATOMY & UPPER EXTREMITY Details**

**MODULE 1**

Behnke Chapter 1: “Structures within the Body”

Completion date:

**MODULE 2**

Behnke Chapter 2: “Movement within the Body”

Completion date:

**MODULE 3****Behnke Chapter 3: "The Shoulder"****Completion date:****MODULE 4****Behnke Chapter 4: "The Elbow and Forearm"****Completion date:****MODULE 5****Behnke Chapter 5: "Wrist and Hand"****Completion date:****UNIT I EVALUATION****Completion date:****Unit II Outline (Modules 6-10)****UNIT II HEAD, THORAX, SPINAL COLUMN & LOWER EXTREMITY Details****MODULE 6****Behnke Chapter 7 "Head"****Completion date:****MODULE 7****Behnke Chapter 8 "Spinal Column and Thorax"****Completion date:****MODULE 8****Behnke Chapter 11 "Hip and Thigh"****Completion date:****MODULE 9****Behnke Chapter 12 "The Knee"****Completion date:****MODULE 10****Behnke Chapter 13 "The Lower Leg, Ankle and Foot"****Completion date:****UNIT II EVALUATION****Completion date:****Unit III Outline (Modules 11-15)****UNIT III THE ATHLETE, THE COACH & SPORT PHYSIOLOGY-MUSCULAR FITNESS TRAINING**

**MODULE 11****Sharkey Chapter 2 “Principles of Training”****Completion date:****MODULE 12****Sharkey Chapter 3 “Individual Response to Training”****Completion date:****MODULE 13****Sharkey Chapter 4 “Defining Muscular Fitness”****Completion date:****MODULE 14****Sharkey Chapter 5 “Assessing Muscular Fitness”****Completion date:****MODULE 15****Sharkey Chapter 6 “Assessing Muscular Fitness”****Completion date:****UNIT III EVALUATION****Completion date:****Unit IV Outline (Modules 16-20)****UNIT IV ENERGY FITNESS TRAINING & TRAINING PROGRAM DEVELOPMENT****MODULE 16****Sharkey Chapter 7 “Anaerobic and Aerobic Energy Systems”****Completion date:****MODULE 17****Sharkey Chapter 8 “Assessing Energy Fitness”****Completion date:****MODULE 18****Sharkey Chapter 9 “Developing Energy Fitness”****Completion date:****MODULE 19****Sharkey Chapter 10 “Developing Training Programs”****Completion date:****MODULE 20****Sharkey Chapter 12 “Performance and Health”****Completion date:****UNIT IV EVALUATION****Completion date:**



## **Training Plan Papers**

Utilizing the information from the book and outside sources, design a three month preseason workout plan for an age group of your choice in a sport of your choice. You will need to identify the components (i.e. muscular strength, muscular power endurance, aerobic power, lactate threshold and flexibility) of fitness that are most important to the sport and how you will address those components. Your assignment should include two specific workout strength training routines, one specific energy training routine, and one flexibility training routine, utilizing the template provided. You may need to provide diagrams of individual movements for my clarification. You should also include a schedule of types of training utilizing FIT via a calendar. In addition, you must explain how you addressed the issues of periodization, specificity, and progression. All aspects of this assignment must be typed and presented in a neat and orderly fashion. Your assignment must be handed in by \_\_\_\_\_. You need to type it using Microsoft Word software and save it as “.doc” file and upload the file to the “Assignment” section on D2L. If you wish to further discuss your topics with me, please e-mail me with your questions.

## **Discussion Board Posting Instructions**

In the Communication section, you will find an icon for the Discussion Board. Please use this function when you need to post responses to assignments in each Module. You will be able to review responses submitted by other students in the course and they will be able to view your responses. Your participation in the Discussion Board is worth a possible total of 25 points.

## **Quizzes**

**Includes Module 1**

**Includes Behnke Chapter 1**

**Dates available:**

**Type of test: Online**

**Type of questions: Multiple Choice and True/False**

**10 points possible**

**Includes Module 2**

**Includes Behnke Chapter 2**

**Dates available:**

**Type of test: Online**

**Type of questions: Multiple Choice and True/False**

**10 points possible**

**Unit Evaluations**

**Includes Module 3**

**Includes Behnke Chapter 3**

**Dates available:**

**Type of test: Online**

**Type of questions: Multiple Choice and True/False**

**10 points possible**

**Includes Module 4**  
**Includes Behnke Chapter 4**  
**Dates available:**

**Type of test: Online**  
**Type of questions: Multiple Choice and True/False**  
**10 points possible**

**Includes Module 6**  
**Includes Behnke Chapter 7**  
**Dates available:**

**Type of test: Online**  
**Type of questions: Multiple Choice and True/False**  
**10 points possible**

**Includes Module 7**  
**Includes Behnke Chapter 8**  
**Dates available:**

**Type of test: Online**  
**Type of questions: Multiple Choice and True/False**  
**10 points possible**

**Includes Module 8**  
**Includes Behnke Chapter 11**  
**Dates available:**

**Type of test: Online**  
**Type of questions: Multiple Choice and True/False**  
**10 points possible**

**Includes Module 9**  
**Includes Behnke Chapter 12**  
**Dates available:**

**Type of test: Online**  
**Type of questions: Multiple Choice and True/False**  
**10 points possible**

#### **UNIT I EVALUATION**

**Includes Modules 1, 2, 3, 4 and 5**  
**Includes Behnke Chapter 1, 2, 3, 4 and 5**  
**Dates available:**

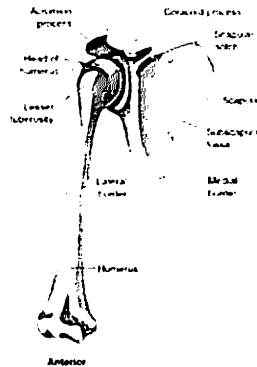
**Type of test: Online**  
**Type of questions: Multiple Choice and True/False**  
**50 points possible**

**UNIT II EVALUATION****Includes Modules 6, 7, 8, 9 and 10****Includes Behnke Chapter 7, 8, 11, 12 and 13****Dates available:****Type of test: Online****Type of questions: Multiple Choice and True/False****50 points possible****UNIT III EVALUATION****Includes Modules 11, 12, 13, 14 and 15****Includes Sharkey Chapter 2, 3, 4, 5 and 6****Dates available:****Type of test: Online****Type of questions: Multiple Choice and True/False****50 points possible****UNIT IV EVALUATION****Includes Modules 11, 12, 13, 14 and 15****Includes Sharkey Chapter 7, 8, 9, 10 and 12****Dates available:****Type of test: Online****Type of questions: Multiple Choice and True/False****50 points possible****Bibliography**

- Abernethy, B., Hanrahan, S., Kippers, V., Mackinnon, L. & Pandy, M. (2005).** *The Biophysical Foundations of Human Movement.* Champaign, IL: Human Kinetics.
- Gambetta, V. (2007).** *Athletic Development: The Art & Science of Functional Sports Conditioning.* Champaign, IL: Human Kinetics.
- Marieb, E. (2009).** *Essentials of Human Anatomy and Physiology.* San Francisco, CA: Pearson Publishing
- McConnell, T. & Hull, K. (2011).** *Human Form and Human Function.* Baltimore, MD: Lippincott Williams & Wilkins.
- Shier, D., Butler, J. & Lewis, R. (2009).** *Hole's Essentials of Human Anatomy and Physiology.* New York, NY: McGraw-Hill Publishing.
- Watkins, J. (2010).** *Structure and Function of the Musculoskeletal System.* Champaign, IL: Human Kinetics.

## MODULE 3

### THE SHOULDER



#### **OBJECTIVES:**

1. Identify on the skeleton important bone features of the shoulder girdle and joint.
2. Label on a skeletal bone important bone features of the shoulder girdle and joint
3. Explain the movements of the shoulder girdle and joint
4. Label all the muscles, their origin, insertion and action associated with the shoulder girdle and joint.
5. Locate and identify other structures of the shoulder girdle and joint, such as, ligaments tendons, and bursa.

#### **ASSIGNMENTS**

1. Read Behnke Chapter 3 of the textbook “The Shoulder”.
2. Look over the Powerpoint slides prepared by the Instructor and post any questions you have on Discussion Board.
3. Review the Key Words found in Chapter 3 on page 60-61.
4. Post a short statement on the Discussion Board in the Communication section to highlight one concept that you learned in this module that you think is the most important point in this chapter.
5. Post any questions about this module that you may have on the Discussion board in the Communication section so that others in the class can benefit from your questions.
6. The information from this module will be included in the Quiz 3 and the Unit I Test.
7. All assignments and readings related to module 3 need to be completed by

#### **ADDITIONAL RESOURCES:**

1. Anatomy of the Shoulder - Everything You Need To Know - Dr. Nabil Ebraheim.  
<http://www.youtube.com/watch?v=twWWa7F5qxU>
2. Shoulder Anatomy Animated Tutorial - Randal Sechrest.  
<http://www.youtube.com/watch?v=D3GVKjeYIFM&NR=1&feature=endscreen>

3. 3D MEDICAL ANIMATION Shoulder – Pixmed- Shoulder Joint Anatomy- Delta H Brogden III. <http://www.youtube.com/watch?v=UVNullyWQv8&list=PL972947DD18C1B37D>
4. Shoulder Joint - Glenohumeral Joint - 3D Anatomy Tutorial.  
<http://www.youtube.com/watch?v=vG1XQkj3Yx0&list=PL972947DD18C1B37D>

**POWERPOINT SLIDES:**

## Kinetic Anatomy

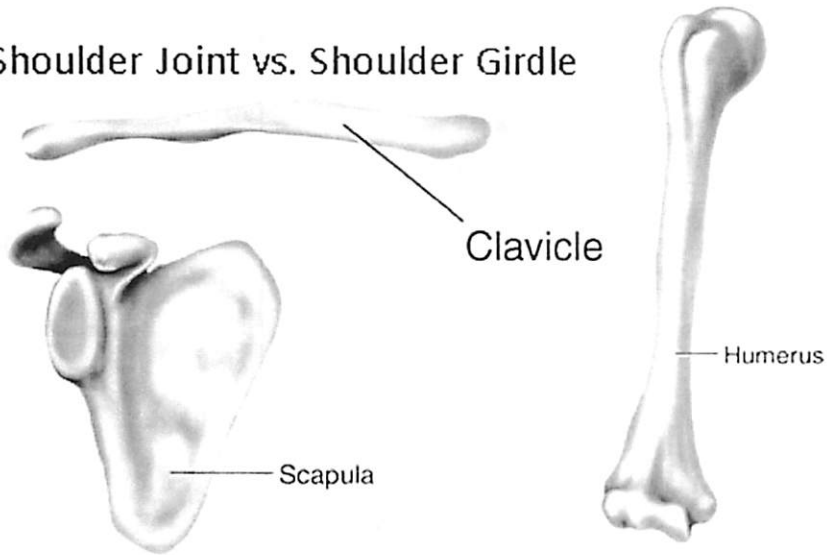
R. Behnke

Chapter #3

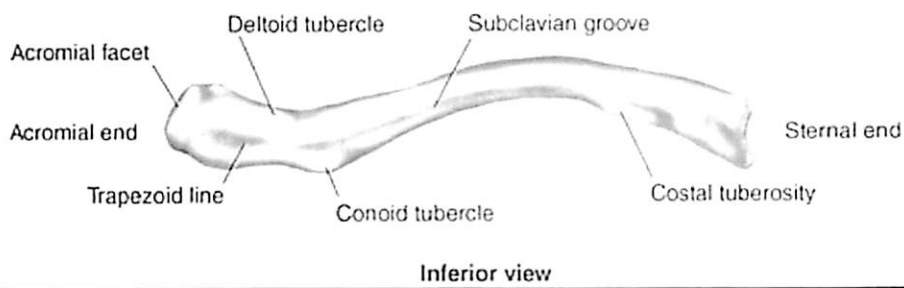
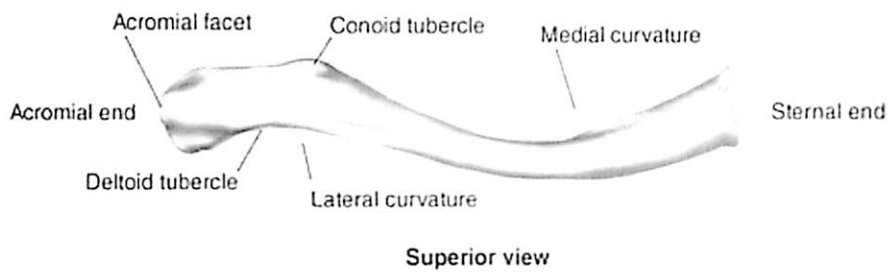
HPED 256-Castle

## Bones of the Shoulder

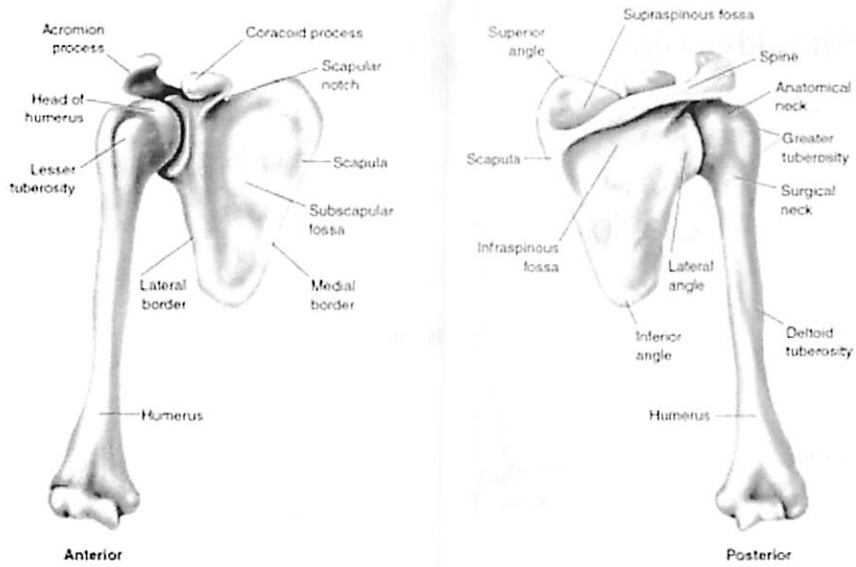
- Shoulder Joint vs. Shoulder Girdle



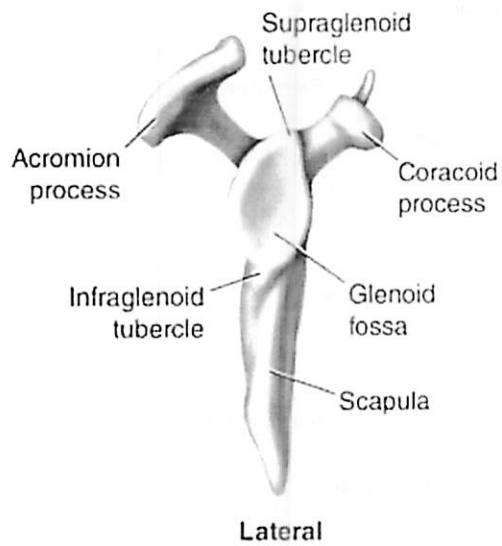
## Clavicle



## Scapula and Humerus



## Scapula

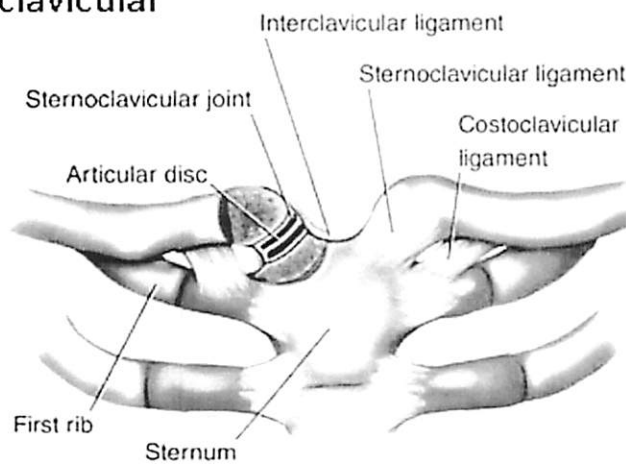


## Joints of the Shoulder

- Humerus and Scapula = Glenohumeral Joint (GH)
- Acromion Process of Scapula and Clavicle = Acromioclavicular Joint (AC)
- Sternum and Clavicle = Sternoclavicular Joint (SC)

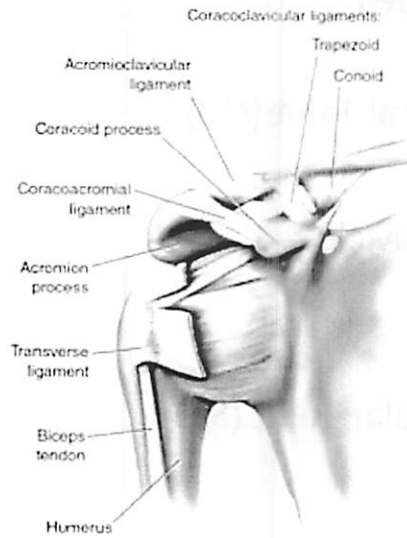
## Ligaments of the Sternoclavicular Joint (SC)

- Sternoclavicular, Costoclavicular, & Interclavicular

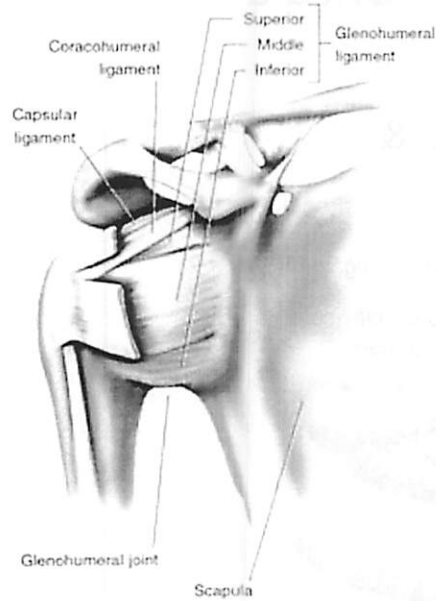




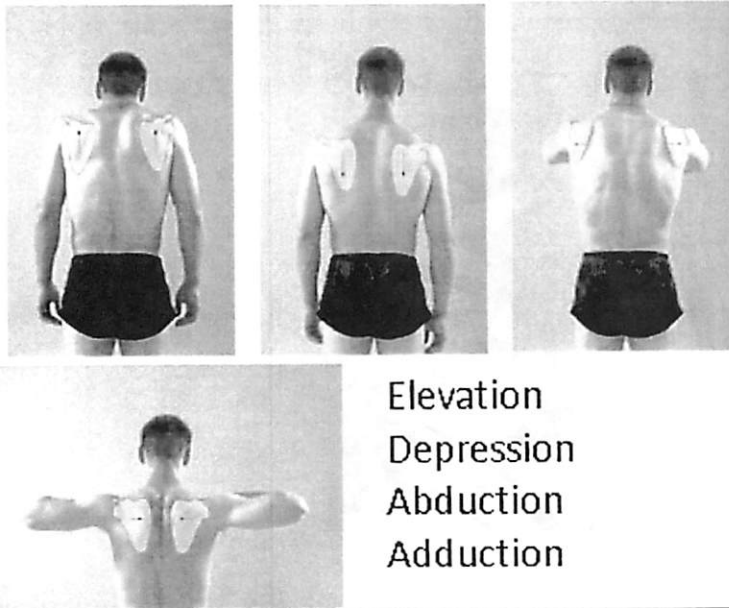
## Ligaments of the Acromioclavicular Joint (AC) and the Coracoclavicular Joint



## Ligaments of the Glenohumeral Joint (GH)

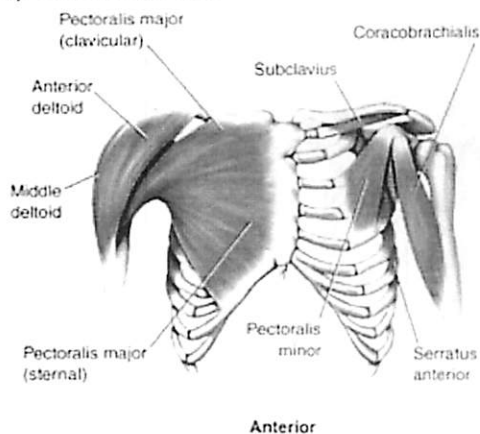


## Movement of the Shoulder Girdle



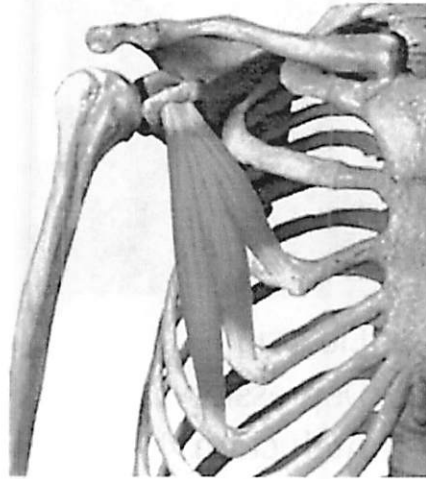
## Anterior Muscles of the Shoulder Girdle

- Three Anterior: Pectoralis Minor, Serratus Anterior, Subclavius



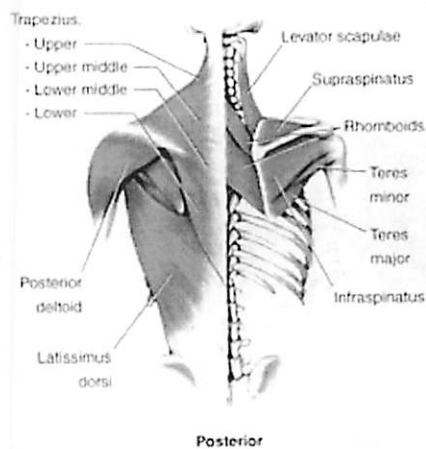
## Pectoralis Minor

- Origin: Third, fourth and fifth ribs.
- Insertion: Coracoid Process.
- Action: Adduction



## Posterior Muscles of the Shoulder Girdle

- Three Posterior: Levator Scapulae, Rhomboids, Trapezius



## Rhomboids

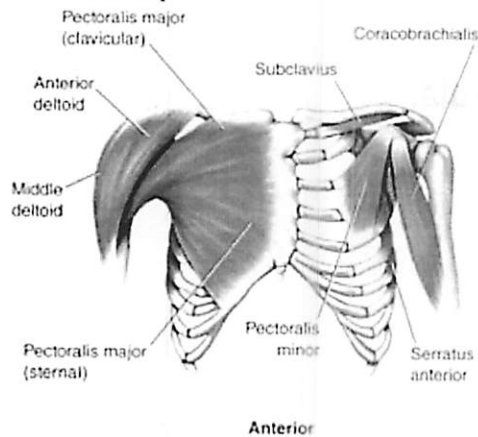
- **Origin:** Spinous process of the 7<sup>th</sup> Cervical-5<sup>th</sup> Thoracic Vertebrae.
- **Insertion:** Medial border of Scapula.
- **Action:** Elevation and Adduction

## Trapezius

- **Origin:** External Occipital Protuberance of the Skull, Spinous process of the all Cervical and Thoracic Vertebrae.
- **Insertion:** Spine of Scapula and posterior surface of clavicle.
- **Action:** Elevation, Adduction, Abduction

## Anterior Muscles of the Shoulder Joint

- Pectoralis Major, Coracobrachialis, Biceps brachii, Subscapularis.



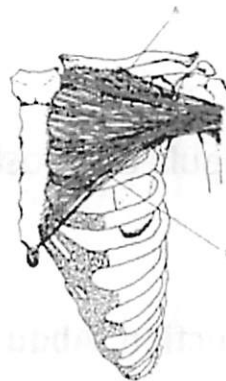
### *Pectoralis Major*

Clavicular Portion (A) and Sternal Portion (B)

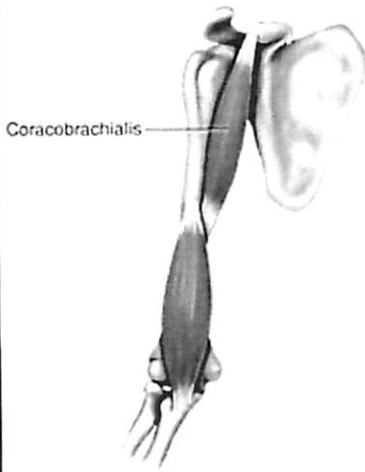
O: *Clavicle Portion*: Medial 1/3 clavicle  
*Sternal Portion*: Sternum, costal cartilage  
 ribs 1-6

I: Lateral lip bicipital groove

A: *Clavicle Portion*: Shoulder flexion  
*Sternal Portion*: horizontal adduction

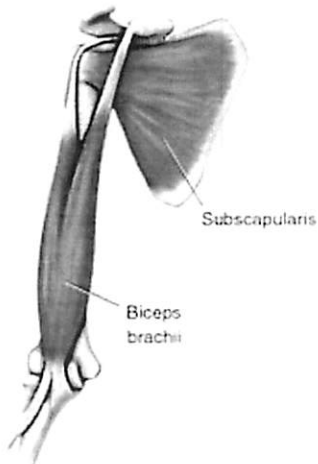


### *Coracobrachialis*



- O: Coracoid process of the scapula
- I: Medial surface humerus,
- A: Shoulder flexion and Adduction

### *Biceps Brachii*

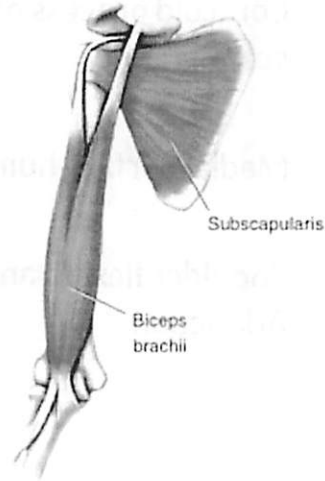


- O: Long head – supraglenoid tubercle (B)  
Short head - coracoid process (A)
- I: Radial tuberosity
- A: Shoulder flexion, elbow flexion

## *Subscapularis*

Sub = under

- O: Subscapular fossa
- I: Lesser tubercle of humerus
- A: Shoulder IR and Flexion



## Superior Muscles of the Shoulder Joint

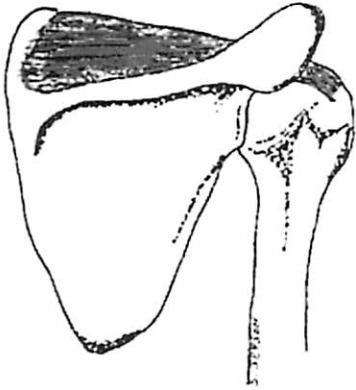
- Deltoid and Supraspinatus

### *Deltoid*

- O: Anterior - Lateral 1/3 of clavicle  
 Middle - Acromion Process  
 Posterior - Spine of scapula
- I: Deltoid tuberosity
- A: Anterior – Flexion, abduction  
 Middle - Abduction  
 Posterior – Extension, abduction



## *Supraspinatus*



- O: Supraspinous fossa of the scapula
- I: Greater tuberosity humerus
- A: Shoulder abduction, ER

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## Posterior Muscles of the Shoulder Joint

- Infraspinatus & Teres Minor



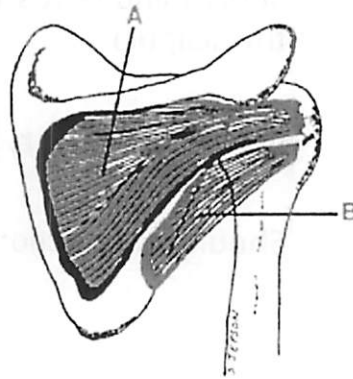


### *Infraspinatus (A)*

O: Infraspinous fossa of scapula

I: Greater tubercle of humerus

A: Shoulder ER and Extension



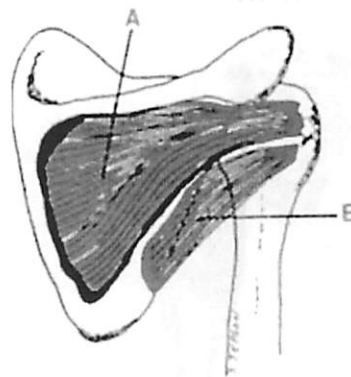
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### *Teres Minor (B)*

O: Axillary border of scapula

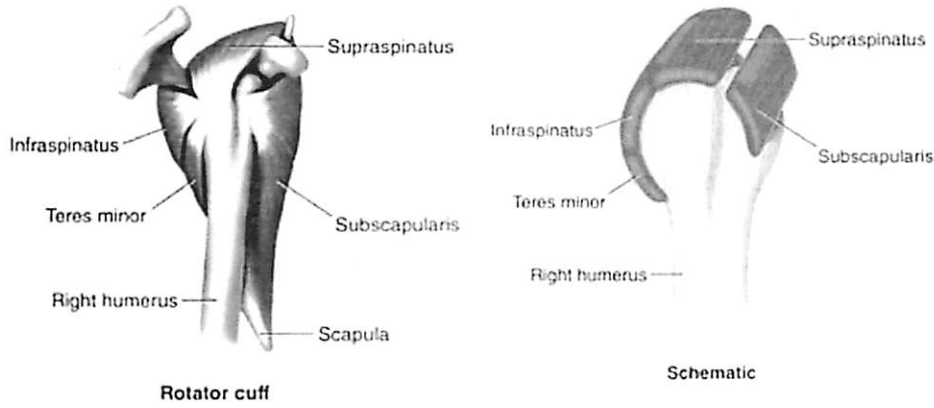
I: Greater tubercle of  
humerus

A: Shoulder ER and Extension



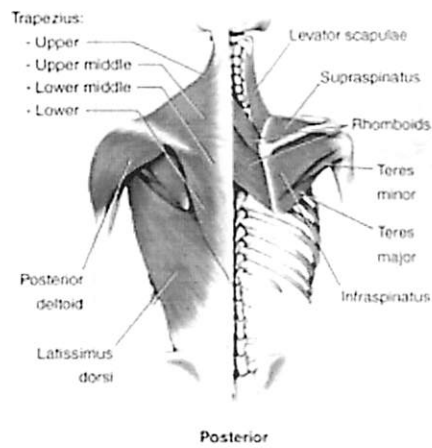
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## Rotator Cuff

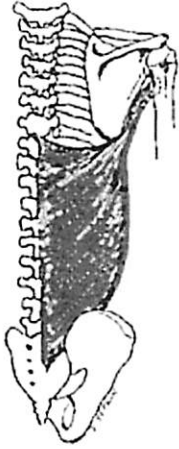


## Inferior Muscles of the Shoulder Joint

- Latissimus Dorsi, Teres Major, & Triceps Brachii



## *Latissimus Dorsi*



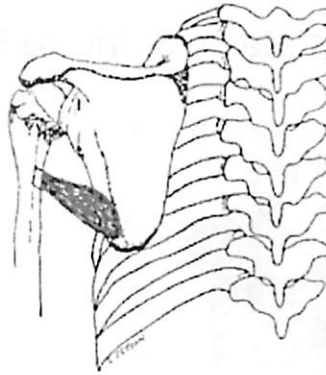
- O: Spinous processes T7-L5  
posterior surface of sacrum, iliac crest,  
and lower three ribs
- I: Medial lip of bicipital groove of  
humerus
- A: Shoulder extension, adduction, IR

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## *Teres Major*

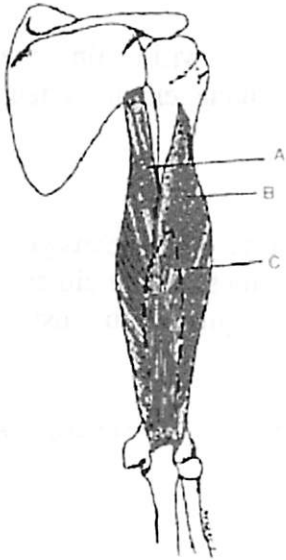
(Latin) long and round, little helper of lateral dorsi

- O: Axillary border of scapula near  
inferior angle
- I: Crest below lesser tubercle  
next to the latissimus dorsi  
attachment
- A: Shoulder extension, adduction



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## Triceps Brachii



O: *Long head* – Infraglenoid tubercle (A)  
*Lateral–Medial head* – posterior humerus (B,C)

I: Olecranon process of ulna

A: Elbow extension, Shoulder extension

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## Combined Actions of the Shoulder Girdle and Joint

- Movement within the Shoulder Girdle creates a greater range of motion with the Shoulder Joint by changing the position of the glenoid.
- Scapulohumeral Rhythm
- <http://www.youtube.com/watch?v=twWWa7F5qxU>
- <http://www.youtube.com/watch?v=D3GVKjeY1FM&NR=1&feature=endscreen>
- <http://www.youtube.com/watch?v=vG1XQk3Yx0&list=PL972947DD18C1B37D>

**QUIZ:**

After completing the module students will be required to take a quiz. The quiz will be timed and take 15 minutes. Ten Questions will be randomly selected by the learning management system from the list below.

**Module 3 Quiz**

Quiz Directions: Do not enter this quiz until you are absolutely sure you are ready. This means you have read the chapter and reviewed the Powerpoint slides. The Quiz is 10 questions of either multiple choice or true and false. You will have 15 minutes to complete the quiz. You must have this quiz completed by \_\_\_\_\_.

1. The structure formed by the clavicle and the scapula (and also the sternum) is the
  - a. shoulder
  - b. shoulder joint
  - \*c. shoulder girdle
  - d. shoulder blade
  
2. The shoulder joint is formed by the articulation of the scapula and the
  - a. sternum
  - b. clavicle
  - \*c. humerus
  - d. thorax
  
3. The articulation between the clavicle and the sternum is known as the
  - \*a. sternoclavicular (SC) joint
  - b. shoulder joint
  - c. acromioclavicular (AC) joint
  - d. shoulder blade
  
4. Abduction of the humerus will cause the scapula to
  - a. rotate downward
  - b. flex
  - \*c. rotate upward
  - d. extend
  
5. External rotation of the humerus will cause the scapula to
  - a. abduct
  - b. flex
  - \*c. adduct
  - d. extend

6. The triangular-shaped muscle running from the top of the spinal column (C1) to the bottom of the thoracic spine (T12) is known as the

- a. deltoid
- b. triangularis
- c. latissimus dorsi
- \*d. trapezius

7. The muscle that elevates the scapula and rotates the shoulder girdle downward is the

- a. latissimus dorsi
- \*b. levator scapulae
- c. trapezius
- d. deltoid

8. A muscle that attaches to the humerus, sternum, and clavicle is known as the

- a. pectoralis minor
- b. trapezius
- \*c. pectoralis major
- d. trapezoid

9. The articulation formed by the clavicle and the scapula is often referred to as the

- \*a. AC joint
- b. GH joint
- c. SC joint
- d. SH joint

10. The pectoralis major muscle has attachments to the sternum, clavicle, and

- a. scapula
- b. first rib
- c. thoracic spine
- \*d. humerus

11. Which of the following muscles would not be considered an anterior muscle of the shoulder joint?

- a. pectoralis major
- b. subscapularis
- \*c. pectoralis minor
- d. coracobrachialis

12. Which of the following muscles does not have its insertion on the rotator cuff?

- a. supraspinatus
- b. subscapularis
- c. infraspinatus
- \*d. teres major

13. The muscle that runs between the coracoid process of the scapula and the medial surface of the humerus opposite the deltoid tuberosity is known as the

- a. pectoralis major
- b. deltoid
- c. pectoralis minor
- \*d. coracobrachialis

14. Flexion of the shoulder joint is the primary function of the

- a. infraspinatus
- b. supraspinatus
- c. subscapularis
- \*d. pectoralis major

15. In addition to assisting with flexion of the shoulder joint, the long-head tendon of the biceps brachii also assists with what other movement of the shoulder joint?

- \*a. abduction
- b. extension
- c. adduction
- d. external rotation

16. The deltoid tuberosity is located on the

- \*a. midshaft of the humerus
- b. acromion process
- c. coracoid process
- d. humeral anatomical neck

17. The short-head tendon of the biceps brachii muscle is conjoined with the tendon of origin of the

- a. long head of the biceps
- \*b. coracobrachialis
- c. subscapularis
- d. brachialis

18. Circumduction of the shoulder joint occurs about

- a. only one axis
- \*b. three axes
- c. two axes
- d. four axes

19. When the shoulder joint abducts to the point where the arm is raised above one's head, the shoulder girdle has to

- a. flex
- \*b. rotate upward
- c. extend
- d. rotate downward

20. The long head of the biceps brachii originates on the very superior aspect of the

- a. acromion process
- b. coracoid process
- \*c. glenoid fossa
- d. greater tuberosity

21. Which of the following muscles would not be considered an antagonist of the infraspinatus muscle?

- a. subscapularis
- b. anterior deltoid
- c. teres major
- \*d. posterior deltoid

22. Which of the following muscles is not involved in the internal rotation of the shoulder joint?

- a. pectoralis major
- b. subscapularis
- \*c. triceps brachii
- d. latissimus dorsi

23. The anatomical structure lying in the intertubercular groove between the lesser and greater tuberosity of the humerus is the

- a. short head of the biceps tendon
- b. insertion of the deltoid
- \*c. long head of the biceps tendon
- d. coracobrachialis tendon



24. The supraspinatus muscle has the same action as the

- a. middle deltoid
- b. triceps
- c. biceps
- \*d. posterior deltoid

25. Only the clavicular head of the pectoralis major muscle, and not the sternal head, is considered an antagonist to the infraspinatus muscle.

- a. True
- \*b. False

26. A broad superficial muscle of the low back located lateral and inferior to the trapezius and a powerful internal rotator of the shoulder joint is known as the latissimus dorsi.

- \*a. True
- b. False

27. Shoulder27

Two ligaments known as the conoid and the trapezoid ligaments that join the scapula and the clavicle together are commonly called the acromioclavicular ligament.

- a. True
- \*b. False

28. A muscle of the rotator cuff that crosses the anterior portion of the shoulder joint and is a major internal rotator of the shoulder joint is the subscapularis.

- \*a. True
- b. False

29. The muscle known as the initiator of shoulder joint abduction is the supraspinatus.

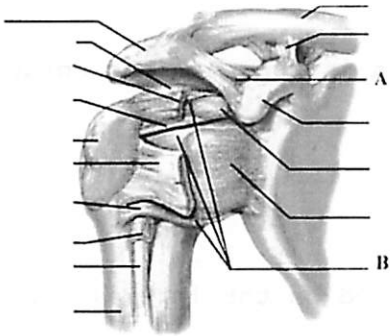
- \*a. True
- b. False

30. The generally accepted ratio of movement between the glenohumeral joint and the scapula (known as scapulohumeral rhythm) is this: For every 2° of glenohumeral joint abduction, the scapula rotates 1°.

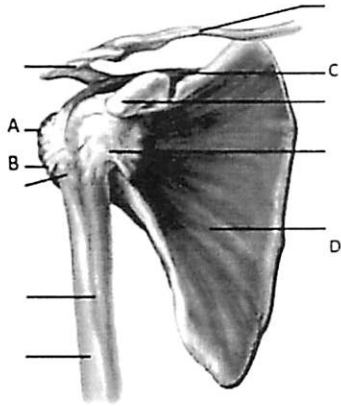
- \*a. True
- b. False

31. The distal-lateral end of the spine of the scapula is known as the coracoid process.
- a. True
  - \*b. False
32. The glenoid fossa (shoulder joint socket) is located on the lateral aspect of the scapula.
- \*a. True
  - b. False
33. When all three portions of the deltoid muscle contract together, at the same time, the shoulder joint moves into extension.
- a. True
  - \*b. False
34. The pectoralis major muscle has two distinct parts: an interior portion known as the sternal part and a superior portion known as the humeral part.
- a. True
  - \*b. False
35. The coracoid process is found on the scapula.
- \*a. True
  - b. False
36. The trapezius muscle can adduct, depress, rotate, and elevate the scapula.
- \*a. True
  - b. False
37. The glenoid labrum is also known as the glenoid lip.
- \*a. True
  - b. False
38. All three heads of the triceps muscle are considered antagonists of the brachialis muscle.
- \*a. True
  - b. False

### Shoulder Joint—Anterior View (overview)



39. On the diagram (Shoulder Joint) A refers to?
- Coracoclavicular Ligement
  - Subcoracoid bursa
  - \*c. Coracoacromial Ligement
  - Glenohumeral Ligements
40. On the diagram (Shoulder Joint) B refers to?
- Coracoclavicular Ligement
  - Subcoracoid bursa
  - Coracoacromial Ligement
  - \*d. Glenohumeral Ligements



41. In the above diagram A refers to
- Supraspinatus
  - \*b. Infraspinatus
  - Subscapularis
  - Teres Minor
42. In the above diagram B refers to
- Supraspinatus
  - b. Infraspinatus
  - Subscapularis
  - \*d. Teres Minor
43. In the above diagram C refers to
- \*a. Supraspinatus
  - Infraspinatus
  - c. Teres Major
  - d. Teres Minor
44. In the above diagram D refers to
- Supraspinatus
  - b. Teres Major
  - \*c. Subscapularis
  - d. Teres Minor