

SES-2010: EXERCISE AND MOVEMENT ANATOMY

Cuyahoga Community College

Viewing: SES-2010 : Exercise and Movement Anatomy

Board of Trustees:

December 2021

Academic Term:

Fall 2022

Subject Code

SES - Sport and Exercise Studies

Course Number:

2010

Title:

Exercise and Movement Anatomy

Catalog Description:

Designed for movement and fitness professionals. Examines the anatomical structures, skeletal, muscular, nervous, and fascial systems, joint actions, and kinetic chains of human movement related to exercise, sport, recreation and dance.

Credit Hour(s):

3

Lecture Hour(s):

2

Lab Hour(s):

2

Requisites

Prerequisite and Corequisite

SES-1040 Teaching Exercise Training Techniques, or concurrent enrollment, or departmental approval.

Outcomes

Course Outcome(s):

Apply the fundamental knowledge of the anatomical terminology, and skeletal, muscular, nervous, fascial, and kinetic chain systems to succeed in coursework in the movement and fitness profession.

Objective(s):

1. Explain movement concepts in anatomy including anatomical locations, directions, planes, axes, levers and joint actions.
2. Explain the physiology of muscle contraction.
3. Describe the types of muscle contraction and the impact of forces on muscle contraction.
4. Explain general concepts of anatomical structures including: bones, ligaments, fascia, joints, muscles, nerves, blood vessels, other tissues and motor units.
5. Identify the bones, joints, and ligaments of the lower extremity including the hip, thigh, knee, lower leg, ankle and foot.
6. Identify the muscles and muscle attachments of the lower extremity.
7. Identify the major nerves and blood vessels in the lower extremity.
8. Identify the bones, joints, and ligaments of the upper extremity including the shoulder, shoulder girdle, elbow, forearm, wrist and hand.
9. Identify the major nerves and blood vessels in the upper extremity.
10. Identify the muscles and muscle attachments of the upper extremity.
11. Identify the bones, joints, and ligaments of the head, spinal column, thorax and pelvis.
12. Identify the major nerves and blood vessels in the head, spinal column, thorax, and pelvis.
13. Identify the muscles and muscle attachments of the head, spinal column, thorax, and pelvis.

14. Define the kinetic chain.
15. Identify the myofascial slings.

Course Outcome(s):

Apply the fundamental concepts of the anatomical terminology, skeletal, muscular, nervous, fascial and kinetic chain systems by analyzing and demonstrating movements in exercise, recreation, sport and dance.

Objective(s):

1. Demonstrate fundamental and combined human movement actions of the upper extremity that occur during exercise, sport, recreation and/or dance.
2. Demonstrate fundamental and combined human movement actions of the head, spinal column, thorax and pelvis that occur during exercise, sport recreation and/or dance.
3. Demonstrate fundamental and combined human movement actions of the lower extremity that occur during exercise, sport, recreation and/or dance.
4. Demonstrate combined human movement actions of the upper extremity, lower extremity and head, spinal column, thorax, and pelvis that occur during exercise, sport, recreation and/or dance.
5. Analyze the kinetic chain and myofascial slings that occur during exercise, sport, recreation and/or dance using a variety of assessments and technologies.

Methods of Evaluation:

1. Quizzes
2. Exams
3. Video assignments
4. Online activities
5. Written assignments
6. Online forums and discussions

Course Content Outline:

1. General concepts of anatomy
 - a. Structures
 - i. Bones
 - ii. Joints
 - iii. Muscles
 - iv. Levers
 - v. Fascia
 - vi. Nerves
 - vii. Blood vessels
 - viii. Motor units
 - b. Movement concepts
 - i. Anatomical terminology
 - ii. Planes of motion and axes of rotation
 - iii. Levers
 - iv. Muscle contraction
 - v. Fundamental movements
2. Upper extremity
 - a. Shoulder girdle and shoulder joint
 - i. Bones
 - ii. Joints
 - iii. Ligaments
 - iv. Muscles
 - v. Fundamental movements
 - vi. Combined actions
 - b. Elbow and forearm
 - i. Bones
 - ii. Joints
 - iii. Ligaments
 - iv. Muscles

- v. Fundamental movements
 - vi. Combined actions
 - c. Wrist and hand
 - i. Bones
 - ii. Joints
 - iii. Ligaments
 - iv. Muscles
 - v. Fundamental movements
 - vi. Combined actions
 - d. Major nerves and blood vessels of upper extremity
 - i. Nerves of brachial plexus
 - ii. Major arteries
 - iii. Major veins
- 3. Head, spinal column, thorax, and pelvis
 - a. Head
 - i. Bones
 - ii. Joints
 - iii. Ligaments
 - iv. Muscles
 - v. Fundamental movements
 - b. Spinal column and pelvis
 - i. Bones
 - ii. Joints
 - iii. Ligaments
 - iv. Muscles
 - v. Fundamental movements
 - vi. Combined actions
 - c. Thorax
 - i. Bones
 - ii. Joints
 - iii. Ligaments
 - iv. Muscles
 - v. Fundamental movements
 - vi. Combined actions
 - d. Major nerves and blood vessels of head, spinal column, thorax, heart, and lungs
 - i. Brain
 - ii. Peripheral nervous system
 - iii. Arteries
 - iv. Veins
- 4. Lower extremity
 - a. Hip and thigh
 - i. Bones
 - ii. Ligaments
 - iii. Joints
 - iv. Muscles
 - v. Fundamental movements
 - vi. Combined actions
 - b. Knee
 - i. Bones
 - ii. Ligaments and menisci
 - iii. Joints
 - iv. Muscles
 - v. Fundamental movements
 - vi. Combined actions
 - c. Lower leg, ankle and foot
 - i. Bones
 - ii. Ligaments
 - iii. Joints

- iv. Muscles
- v. Fundamental movements
- vi. Combined actions
- d. Major nerves and blood vessels of the lower extremity
 - i. Nerves
 - ii. Arteries
 - iii. Veins
- 5. Introduction to the kinetic chain and myofascial slings
 - a. Kinetic chain
 - b. Myofascial slings
 - i. Anterior oblique sling
 - ii. Posterior oblique sling
 - iii. Lateral sling
 - iv. Deep longitudinal sling

Resources

Biel, A. (2019) *Trail Guide to the Body, 6th ed.*, Boulder, CO: Books of Discovery.

Biel, A. . (2019) *Trail Guide to the Body Student Workbook, 6th ed.*, Boulder CO: Books of Discovery.

Biel, A. (2019) *Trail Guide to Movement: Building the Body in Motion, 2nd ed.*, Boulder, CO: Books of Discovery.

Carr, K. & Felt, M.K. (2022) *Functional Training Anatomy*, Champaign, IL: Human Kinetics.

Whiting, W. (2019) *Dynamic Human Anatomy*, Champaign, IL: Human Kinetics.

American Council on Exercise. (2020) *The Exercise Professional's Guide to Personal Training*, San Diego, CA: American Council on Exercise.

National Council on Strength and Fitness. (2019) *NCSF Advanced Concepts of Personal Training, 2nd ed.*, Coral Gables, FL: National Council on Strength and Fitness.

Resources Other

1. Muscle & Motion Strength Training App

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Key: 4022