PTAT-1300: FUNCTIONAL ANATOMY

Cuyahoga Community College

Viewing: PTAT-1300 : Functional Anatomy

Board of Trustees:
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Academic Term:
Fall 2020

Subject Code
PTAT - Physical Therapist Assist

Course Number:
1300

Title:
Functional Anatomy

Catalog Description:
Study of anatomy and function of human body to include head, neck, shoulder girdle, trunk, and upper and lower extremities. Study of motion of human body as basic to application of exercise with emphasis on study of functional problems for analysis of body movement.

Credit Hour(s):
4

Lecture Hour(s):
3

Lab Hour(s):
3

Other Hour(s):
0

Requisites

Prerequisite and Corequisite
BIO-2331 Anatomy and Physiology I, and MA-1020 Medical Terminology I; and departmental approval: admission to Physical Therapist Assisting program or Occupational Therapy program.

Outcomes

Course Outcome(s):
A. Apply osteokinematics to normal functional activities.

Essential Learning Outcome Mapping:
Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

Objective(s):
1. List and identify, visually and by palpation, the bones of the body and their landmarks.
2. Identify movements of the body at the joints and use these terms in describing body movement.
3. Identify on a skeleton and on a human subject the joints of the body, including functional articulations.
4. Analyze simple movement patterns of the upper extremities in functional activities.
5. List and discuss the types of joints, degrees of freedom, structural components and ranges of motion of joints of the body.
6. Identify common substitution patterns of the shoulder girdle and upper and lower extremities when pathology is present.
7. Analyze normal movement patterns of the upper and lower extremities.
8. By the process of problem solving, determine what joint functions are obligatory in a closed kinematic chain of the lower/upper extremities.

9. Identify normal and pathological end feels of joints.
10. Describe the major deviations or deformities which may occur at a joint as a result of trauma or disease.

Course Outcome(s):

B. Accurately measure range of motion of all joints.

Objective(s):

1. Identify movements of the body at the joints and use these terms in describing body movement.
2. Identify and palpate all the joints of the head, neck, shoulder girdle, and upper and lower extremities.
3. Measure with 100% accuracy the range of motion of all joints of the head, neck, shoulder girdle, and upper and lower extremities using a goniometer where applicable.
4. Make use of the foundation elements of patient interaction as necessary when obtaining objective data.
5. Demonstrate proper documentation of objective data collected using the SOAP note format.
6. Measure range of motion of major joints of the body precisely with the aid of the goniometer.

Course Outcome(s):

C. Describe cardinal planes of the body, axes of movement, and movements in the cardinal planes.

Objective(s):

1. Identify movements of the body at the joints and use these terms in describing body movement.
2. Identify and palpate muscles of the lower extremity.
3. Analyze simple movement patterns of the upper extremities in functional activities.
4. Identify normal and pathological end feels of joints.
5. Describe cardinal planes of the body, axes of movement, and movements in the cardinal planes.

Course Outcome(s):

D. Name all muscles including their origins, insertions and innervations.

Objective(s):

1. Describe and demonstrate how muscles function as prime mover, agonist, antagonist, synergist, and stabilizer.
2. Identify the motor and sensory components of the nervous system and describe how muscle movement is controlled by the nervous system.
3. Diagram and label the nerves formed by the lumbo-sacral and brachial plexuses.
4. Identify the innervation of muscles of the lower and upper extremities, neck and trunk.
5. List and identify muscles of the lower and upper extremities neck and trunk in terms of origin, insertion, usual action, reverse action and static and phasic function.
6. Identify origin, insertion, and action of every muscle of the head, neck, shoulder girdle, and upper and lower extremities.
7. Identify agonistic, antagonistic, synergistic and stabilizing functions of selected muscles of the neck, shoulder girdle, and upper extremity.
8. Identify on his/her body and a laboratory partner's body significant anatomical landmarks observed on the surface of the human body including but not limited to bony prominences, muscle bellies, and tendons.
9. Classify muscles according to shape and arrangement of fibers, as longitudinal, quadrilateral, triangular, fusiform, penniform, bipenniform, and multipenniform.

Course Outcome(s):

E. Accurately perform manual muscle test for each skeletal muscle.

Objective(s):

1. List and demonstrate types of muscle contraction, such as concentric, eccentric, isotonic, isometric, and static.
2. Identify and palpate muscles of the lower extremity.
3. Identify the terms, "normal", "good", "fair", "poor", "trace", and "zero" and the numerical rating system as related to muscle strength.
4. Safely and efficiently perform manual muscle testing.
5. Position a subject appropriately to identify function of specific muscles.
6. Palpate muscle bellies of specified muscles in a state of contraction.
7. Describe and identify eutonic, hypotonic and hypertonic muscles.
8. Make use of the foundation elements of patient interaction as necessary when obtaining objective data.

9. Demonstrate proper documentation of objective data collected during manual muscle testing using the SOAP note format.
10. Describe the major deviations or deformities which may occur at a joint as a result of trauma or disease.

Course Outcome(s):

F. Describe each component of the gait cycle and correct gait deviations.

Objective(s):

1. Identify and demonstrate characteristics of normal gait.
2. Identify the determinants of normal gait including necessary range of motion and muscle action.
3. Describe gait deviations due to muscle weakness and identify the weak muscles causing the gait deviation.
4. Determine specific gait deviations that may be manifested, using the problem-solving mode, resulting from a lesion in the central nervous system, peripheral nervous system, or muscle involvement.
5. Document and demonstrate gait patterns that may be exhibited by the subject using the problem solving mode, given the results of manual muscle tests.

Methods of Evaluation:

1. Announced and unannounced quizzes
2. Written tests including midterm and final examination
3. Quizzes on laboratory material
4. Laboratory skill checks
5. Practical examinations on laboratory skills

Course Content Outline:

1. Osteology of the human skeletal system
2. Arthrology and arthrokinematics of the human skeletal system
3. Principles of goniometry and manual muscle testing
4. Disorders of joint range of motion and their functional significance
5. Myology of the human body
   a. Classification of muscles
   b. Structure and function of muscle
   c. Muscle spindle and golgi tendon organ
   d. Types of muscle contraction, as concentric, eccentric, isotonic, isometric, static
   e. How muscles function as agonist, antagonist, synergist, fixator, stabilizer
6. Biomechanical principles of body movement
7. Basic organization of the nervous system and its function in control of the musculoskeletal system
8. Anatomy and kinesiology of the muscles of head, neck and trunk
9. Kinesiology and anatomy of the upper extremities
10. Kinesiology and anatomy of the lower extremities
11. Function of the trunk and lower extremity in normal gait
12. Determinants of normal gait and posture
13. Abnormal gait patterns
14. Simple analysis of functional body movement during activities of daily living

Resources

Lippert, L. S. *Clinical Kinesiology and Anatomy.* 6th ed. Philadelphia: F.A. Davis, 2017.

Lippert Minor. *Laboratory Manual for Clinical Kinesiology and Anatomy.* 3rd. Philadelphia: FA Davis, 2011.

Norkin White. *Measurement of Joint Motion: A Guide to Goniometry.* 4th. Philadelphia: FA Davis, 2009.

Biel, Andrew. *Trail Guide to the Body.* 5th ed. Boulder: Books of Discovery, 2014.

Biel, Andrew. *Trail Guide to Movement.* Boulder: Books of Discovery, 2014.

Kendall, McCreary and Provance. *Muscles Testing and Function.* 5th ed. Maryland: Williams and Wilkins, 2005.

The American Physical Therapy Association. "Physical Therapy Journal"

Resources Other

Kinesiology in Action (www.kinesiologyinaction.com)

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