BAKER COLLEGE
STUDENT LEARNING OUTCOMES

OTA 2250 Neurological Foundations of Motor Control
2 Semester Credit Hours

Student Learning Outcomes and Enabling Objectives

1. Differentiate between the structures and functions of the nervous system.
   a. Outline the different nervous systems.
   b. Explain the structures and functions of the Central Nervous System.
      i. Discuss upper motor neuron (UMN) functions and locations within the brain and spinal cord.
      ii. Discuss the structures and functions of the brain.
      iii. Discuss the structures and functions of the spinal cord.
      iv. Explain common symptoms associated with UMN dysfunction.
   c. Explain the structures and functions of the Peripheral Nervous System.
      i. Discuss lower motor neuron (LMN) functions and locations.
      ii. Discuss sensory and motor functions of peripheral nerves.
      iii. Explain the physiology associated with neuronal conduction and transmission as it relates to motor control.
      iv. Explain common symptoms associated with LMN dysfunction.
   d. Explain the contributions of the Autonomic Nervous System to self-regulation.

2. Analyze aspects of motor control throughout the lifespan.
   a. Outline motor milestones from 0-12 months of age.
   b. Outline sequence of normal reflex/reactions and primitive reflex integration.
   c. Discuss sequence of gross motor skills to fine motor skills development.
   d. Define righting, equilibrium, and protective reactions.
   e. Describe posture and balance mechanisms.
   f. Differentiate motor learning and motor control.
   g. Explain the role of mental functions on motor control.
   h. Identify abnormal motor control.
   i. Discuss the interaction of occupation and activity as it relates to motor learning

3. Explain how sensory information contributes to movement.

a. Identify the role of vision on motor performance.
b. Identify the role of proprioception on motor performance.
c. Identify the role of vestibular input on motor performance.
d. Explain how sensory input becomes motor output.
e. Identify the role of the muscle spindle and Golgi tendon organ on motor performance.

4. Construct neurorehabilitation treatments.
   a. Provide education regarding neuroplasticity and its role in functional return.
   b. Differentiate between a motor skill and a motor performance related to occupational therapy (OT) interventions.
   c. Demonstrate OT methods to target LMN recovery.
       i. Customize a home exercise program (HEP) for a common LMN disorder.
       ii. Investigate physical agent modalities (PAMs) as a prepatory method.
   d. Demonstrate OT methods to target UMN recovery.
       i. Demonstrate PNF UE patterns.
       ii. Demonstrate Rood ontogenic patterns and heavy vs. light work muscles.
       iii. Demonstrate NDT facilitatory and inhibitory techniques.
       iv. Explain the Brunnstrom Stages of Motor Recovery as an OT assessment tool.
   e. Demonstrate OT methods to target sensory processing outcomes.

Big Ideas and Essential Questions

Big Ideas
- Nervous systems structures and functions
- Motor Control
- Sensory Processing
- Neurorehabilitation

Essential Questions
1. How do humans develop and learn movement throughout the lifespan?
2. How can targeting different structures improve functional performance?
3. How does sensory information impact motor learning and motor control?
4. What does the OTA do during neurorehabilitation?

These SLOs are not approved for experiential credit.

Effective: Fall 2022