The Nervous System

Function of the Nervous System

sensory input
sensory receptor
integration
motor input

Anatomical Divisions of the Nervous System

Central Nervous System (CNS)
- brain
- spinal cord

Peripheral Nervous System (PNS)
- cranial nerves
- spinal nerves

The Brain

Coverings of the Brain

- skin
- skull
- dura mater
- arachnoid layer
- pia mater
- cerebral cortex
Cerebrum
• Involved with higher brain functions.
• Processes sensory information.
• Initiates motor functions.
• Integrates information.
**Thalamus**
- Relay center for sensory tracts from the spinal cord to the cerebrum.
- Contains centers for sensation of pain, temperature, and touch.
- Involved with emotions and alerting or arousal mechanisms.

**Hypothalamus**
- Regulates body temperature, water balance, sleep, appetite, and sexual arousal.
- Acts on the pituitary gland through the release of neurosecretions.

**Midbrain**
- Contains ascending and descending tracts to the cerebrum and thalamus.
- Reflex center for eye muscles.
- Also involved with processing visual and auditory information (connects head movements with visual and auditory stimuli).

**Medulla Oblongata**
- Composed of nerve tracts to and from the brain (these tracts cross over left to right and right to left).
- May be regarded as an extension of the spinal cord.
- Almost all of the cranial nerves arise from this region.

**Medulla Oblongata**
- Contains control centers for many subconscious activities
  - Respiratory rate
  - Heart rate
  - Arteriole constriction
  - Swallowing

**Cerebellum**
- Controls and coordinates muscular activity.
- Important in equilibrium, posture and movement.
Pons

- Connects the cerebellum to the CNS.
- Participates in some of the activities that the medulla is involved with.

The Spinal Cord

- Cervical
- Thoracic
- Cauda equina

Peripheral Nervous System

- Cranial nerves
- Spinal nerves

Cranial Nerves

- Olfactory
- Optic
- Optic chiasma