Vertebral Column

Psychology 372
Physiological Psychology
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Vertebral Column

- Consists of 26 bones
- 24 individual vertebrae
- Two groups that fuse together
- Has a hole running through the middle (Vertebral Foramen)
- Some have other holes as well (Transverse Foramen)
- Also have intervertebral disks located between the vertebrae
  - Forms strong joints
  - Provides some flexibility
  - Cushions shock

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Vertebrae are Grouped in Different Regions

- Cervical
- Thoracic
- Lumbar
- Sacrum
- Coccyx

Cervical

- Contains 7 bones
- Named C-1 through C-7
- C-1 is called the Atlas
- C-2 is called the Axis
- Only vertebrae to have three holes (Foramina)
  - Vertebral foramina in the center of the vertebral column
  - Transverse foramina (one on each side)
    - Are smaller
  - Vertebrae have smaller bodies and shorter processes that stick straight back.
- C-7 (vertebra prominens)
  - Is a prominent process that can be felt at the base of the neck.

Atlas and Axis

- The atlas connects the occipital condyles of the skull and with the axis.
- Allows the head to move in a up down direction
  - Yes movement
- Axis connects with the atlas
- Allows the head to move from side to side
  - No movement

Thoracic

- Have 12 Bones plus disks
- Are connected to the ribs
  - T-1, is the vertebra where the top rib attaches
- Has a single vertebral foramen in the middle of each bone
- Body of the vertebrae is heart shaped
- Processes are long and point down
- Can develop exaggerated thoracic curvature
  - Hunchback appearance (Kyphosis)
Lumbar
- Consists of five vertebrae and disks in the lower back.
- Vertebrae are much larger
- Have a bean shape
- Spinous process are short and point straight back
- Is the location for a lumbar puncture (spinal tap)
- Done between L-3 and L-4 or L-4 and L-5
- Some people can develop exaggerated lumbar curvature (swayback)
- Called Lordosis

Sacrum
- One group
- Consists of 5 vertebrae that fuse together
  - Occurs in late teens to early 20's
  - Is the location for epidural anesthesia
  - Is injected into the sacrum at the sacral hiatus.

Coccyx
- Is the tailbone
- Consists of one group
- Contains 4 coccygeal vertebrae that fuse together

Intervertebral Disks
- Are located between each pair of vertebrae
- Are made of fibrocartilage.
- Adds support
- Absorbs shock.

Intervertebral Foramen
- Is the opening formed between two vertebrae
- Is where nerves go out to the body
- Not the same as the vertebral foramen

Some Disorders
- Herniated (slipped) disc - protrusion or rupture of an intervertebral disc
- Scoliosis - exaggerated lateral bending of spinal column
- Spina bifida - have incomplete closure of the vertebral column

Some Disorders
- Types
  - Occulta
    - Usually symptomless
    - A small defect or gap in the vertebrae
    - Spinal cord and nerves usually are normal
    - Most people have no problems.
  - Meningocele (pronounced muh-NING-go-seal)
    - Rarest form
    - Cyst or lump surrounding the spinal cord pokes through the open part of the spine.
    - Can be removed by surgery
    - Normal development.
  - Myelomeningocele (my-uh-low-muh-NING-go-seal)
    - Most severe form
    - Cyst contains nerve roots of the spinal cord and often the cord itself.
    - May be no cyst just open section of the spinal cord
    - Spinal fluid may leak out.
    - High risk of infection until the back is closed surgically
    - Antibiotic treatment may offer temporary protection
    - Usually have leg paralysis and bladder and bowel control problems
Other Things

- Is most common in the lumbar-sacral region
- Often occurs with Hydrocephalus
- Is correlated with the lack of B vitamins – Folic Acid
- Treatment is usually surgical
  - Very early 1-2 weeks post delivery
  - Prenatal surgery has begun as well