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Creation Anatomy Kids Classes Skeletal System and Muscles

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Our Bones!

- Bones
 - Are alive!
 - Living Cells
 - Need food
 - Give off waste
 - Grow
 - Repair themselves
 - Rigid Bone
 - 1000's of holes
 - Tunnels for nerves
 - Blood Vessels
 - Hollow Cylinder
 - Fatty, gelatinous material
 - Bone Marrow

- Job 8-11 “ Your hands shaped me and made me... Remember that you molded me like clay...Did you not...clothe me with skin and flesh and knit me together with bones and sinews?”

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Strong but Light

- Bones are strong but light
- Thigh bone is stronger than concrete!
 - (Pound for pound!)
- Babies are born with 350 soft bones
 - Bones harden and some fuse as they grow
- 206 Bones Make Up the Skeletal Frame
 - 650 muscles support it
 - Organs weigh 5 x more than bones

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Skeleton

- Axial Skeleton
 - 80 Bones
- Skull
 - Protects the brain

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- Spine
 - Keeps us upright
- Rib Cage

- Protects our organs

6 Bone Factory ~ God as Engineer!

- Bones grow and repair themselves
- New growth and re-absorption
- Osteoblasts
 - Cells deposit newly formed tissue (osteocytes) that harden into bone
- Osteoclasts
 - Dissolve and reabsorb bone tissue

7 Protection Plate

- Skull
 - Protects the brain
 - Eyes
 - Recessed into the bone sockets
- Ribs
 - Protect the:
 - Heart
 - Lungs

8 Flexible Skelton

- Types of Joints
 - Moveable
 - Some are hinges
 - - knee and elbow
 - Ball and Socket joints
 - Hips
 - shoulders
 - Saddle Joints
 - Thumb
 - ankle
- Synovial Fluid
 - Lubricant inside joints
 - Just the right "grade" and amount for each joint

9 Joint & Bone Facts !

- Non Moving Joints - skull
- Moving Joints - shoulder
- Most often broken - clavicle

10 More Fun Facts

- Largest group of bones and joints- hands & feet
- Smallest joint – stapes and incus in middle ear
- Largest Bone – femur

11 More Fun Facts!

- Most complex joint - knee
- Largest bone without a joint – patella
- Strongest bone – jawbone
- Vertebrae –wider range of motion atlas and axis specialized

- Only bone not attached to any other – hyoid bone in floor of mouth
- Strongest joint – hip joint
- Strongest ligament – iliofemoral at the hip joint

12 Muscles connected to Bone

- Muscles are connected to the bone
- Held together at the joints by ligaments and tendons
- Bones are moved by pairs of muscles
- Muscles work in pairs – force contracting
- Muscles work in opposition

13 How Muscles Work

- Arm
 - Muscles contract
 - Muscles relax
- Flexors
 - Muscles that cause the joints to bend
- Extensors
 - Muscles that straighten out the joints
- Energy needed
 - Nutrients in food
 - Energy used to contract and the rest is given off as heat

14 Muscles

- Voluntary and Involuntary Muscles
 - Voluntary: use them by thinking
 - Involuntary: work without thinking
 - Heart
 - Digestive organs
 - Lungs
 - Diaphragm
- Muscles are always in use
- 650 Voluntary Muscles

15 Types of Muscles

- Striped or striated
 - Voluntary muscles we can control to move our bones
- Smooth muscles
 - Involuntary muscles that control organs, digestion, and blood vessels
- Cardiac muscles
 - Involuntary ~ farther apart than striped muscles (and have some stripes)

16 More muscles

- Ligaments
 - Strong bands of tissues

- Hold bones without stretching
- Tendons
 - Muscles end with this tough tissue
 - Connects the muscles to the bones

17 **Miracle of the Body!**

- God's handiwork
- Precisely designed
- Fine crafted

18 **Smooth ~ Involuntary Muscles**

- Smooth Muscles
 - Hollow tubes in the intestines
 - Found in the Esophagus
 - Gastrointestinal tract
 - Trachea
 - Bronchial tubes of the lungs
 - Most gland and organs
 - Arteries, viens
 - Lymph system
 - Iris

19 **Intestines ~ Smooth**

- Hollow tubes in the intestines

20 **Esophagus ~ Smooth**

- Found in the Esophagus

21 **Gastrointestinal~ Smooth**

- Gastrointestinal tract

22 **Trachea ~ Smooth**

- Trachea

23 **Lungs ~ Smooth**

- Bronchial tubes of the lungs

24 **Arteries and
Viens ~ Smooth**

25 **Lymph System ~ Smooth**

26 **Iris ~ Smooth**

27 **Cardiac Muscle**

- Cardiac – Myocardial
- Combination of smooth and striated muscles
- Striated muscles work quickly and more powerfully but become tired
- Smooth muscles work without tiring but move slowly