FLG 331 – PHYSIOLOGICAL SYSTEMS AND EXERCISE
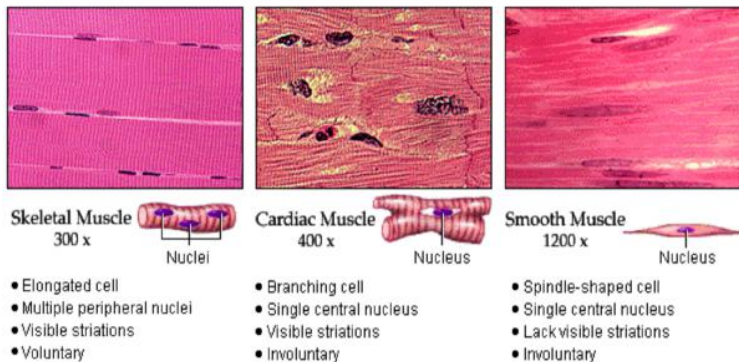
Everything included in this document is important , highlighted sections are possible questions

1) THE COMPARISON OF SKELETAL AND SMOOTH MUSCLE
MCQ questions

COMPARISON OF SKELETAL, CARDIAC, AND SMOOTH MUSCLE CELLS

The contractile cells of the body can be classified into three major groups based on their shape, number and position of nuclei, presence of **striations**, and whether they are under **voluntary** or **involuntary** control.

Skeletal Muscle 300 x — Nuclei
- Elongated cell
- Multiple peripheral nuclei
- Visible striations
- Voluntary

Cardiac Muscle 400 x — Nucleus
- Branching cell
- Single central nucleus
- Visible striations
- Involuntary

Smooth Muscle 1200 x — Nucleus
- Spindle-shaped cell
- Single central nucleus
- Lack visible striations
- Involuntary

2) DIRECTIONAL TERMS
Know terms and examples
- **Superior:** toward the head
- **Inferior:** away from the head
- **Anterior:** toward the front of the body
- **Posterior:** toward the back of the body
- **Medial:** toward the midline
- **Lateral:** Away from the midline
- **Intermediate:** between a more medial and lateral structure
- **Proximal:** closer to the origin of the body
- **Distal:** Farther from the origin of the body
- **Superficial:** toward the body surface
- **Deep:** away from the body surface

| Term	Definition	Example
Superior (cranial)	Toward the head end or upper part of a structure or the body; above	The head is superior to the abdomen
Inferior (caudal)	Away from the head end or toward the lower part of a structure or the body; below	The navel is inferior to the chin
Anterior (ventral)*	Toward or at the front of the body; in front of	The breastbone is anterior to the spine
Posterior (dorsal)*	Toward or at the back of the body; behind	The heart is posterior to the breastbone
Medial	Toward or at the midline of the body; on the inner side of	The heart is medial to the arm
Lateral	Away from the midline of the body; on the outer side of	The arms are lateral to the chest
Intermediate	Between a more medial and a more lateral structure	The collarbone is intermediate between the beastbone and shoulder
Proximal	Closer to the origin of the body part or the point of attachment of a limb to the body trunk	The elbow is proximal to the wrist
Distal	Farther from the origin of a body part or the point of attachment of a limb to the body trunk	The knee is distal to the thigh
Superficial (external)	Toward or at the body surface	The skin is superficial to the skeletal muscles
Deep (internal)	Away from the body surface; more internal	The lungs are deep to the skin

3) FUNDAMENTAL VS ANATOMICAL POSITION

- **Fundamental**- stands erect , feet apart and parallel , arms are hanging easily at the sides and palms facing the body
- **Anatomical-** stands erect; head , eyes and toes face forward; feet apart and parallel with heels and toes together , elbow fully extended , palms facing forward and thumbs facing outward
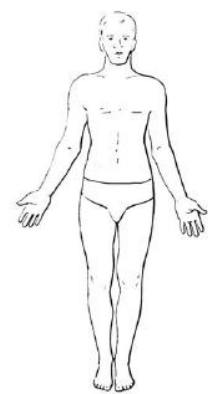
4) ANATOMICAL PLANES
- 4 Anatomical planes:
1. Median/ Midsagittal plane
2. Sagittal plane
3. Coronal/Frontal plane
4. Horizontal/Transverse plane

Median plane:
- Single imaginary vertical line along the long axis of the body
- Divides the body into 2 identical left and right halves

Sagittal plane:
- Any vertical line
- Lateral to median plane
- About a frontal axis (NB!)

Frontal plane:
- Any vertical line perpendicular to the median plane
- Divides the body into front (anterior) and back (posterior)

Horizontal plane:
- Any plane perpendicular to both the median and frontal planes
- Divides the body into upper (superior) and lower (inferior) halves