Muscular Anatomy Exam

Answer Key

1. Name 3 muscles with action of **elbow flexion**

   Answer: : **Biceps Brachii(or Biceps), Brachialis, Brachioradialis (or flexors not on official list)**

2. Name 2 muscles with action of **internal (medial)rotation of the humerus**

   Answer: any 2 of the following: Anterior Deltoid, Pectoralis Major, Teres Major, Latissimus Dorsi (or other internal rotators not on official list)

3. Name 3 muscles with action of **knee extension**

   Answer: any 3 of the following: Vastus Lateralis, Vastus Medialis, Vastus Intermedius, Rectus Femoris, Tensor Fascia Latae (weak)

4. Write the 4 major characteristics of muscles and match them with their description

   Answer:

   1. **Excitability-Ability to receive and respond to stimuli**
   2. **Contractility-Ability to shorten and thicken**
   3. **Extensibility-Ability to stretch**
   4. **Elasticity-Ability to return to its original shape after contraction or extension**

5. Match these muscular conditions with the level at which the impairment occurs

   Answer:

   1. At the nerves controlling muscular contraction- C**. Poliomyelitis**
   2. Within the muscle fiber- A. **Muscular Dystrophy**
   3. At the neuromuscular junction- **B. Myasthenia Gravis**

6. Muscle cell slides station – Identify the 3 types of muscle cell

(5 minute time limit at microscopes)

Answer:

1. **Slide A- cardiac**
2. **Slide B-skeletal**
3. **Slide C-smooth**

7. Name 3 tissues other than muscle fiber found within a muscle

Answer: **Nerves (nervous tissue), Blood Vessels, connective tissue(or fascia)**

8. Identify the muscles on the model (5 minutes at this station)

Answer:

a) **Trapezius**
b) **Latisimus dorsi**
c) **Deltoid**
d) **Zygomaticus**
e) **Masseter**
f) **Orbicularis oculi**
g) **Sternocleidomastoid**
h) **Serratus anterior**
i) **Gluteus Maximus**

9. Describe at least 4 or the 6 major functions of muscle

Answer: Any 4 of the following or similarly worded proximity: stabilizing joints, maintaining posture, producing movement(motion), moving substances within the body, stabilizing body position, regulating organ volume, producing heat

9. An athlete comes to you with mild pain and swelling in his quadriceps after doing a vigorous workout. Your most likely diagnosis would be:

a. Sprain b. avulsion c. strain

Answer: c. Strain

10. You prescribe an anti-inflammatory medication and RICE for the above athlete. What does the acronym RICE stand for?

Answer: R: Rest, I: Ice, C: Compression, E: Elevation

11. The less movable end of a muscle, usually located proximally is called the

Answer: **Origin**

12. The more moveable end of a muscle, usually located distally is called the

Answer: **Insertion**

13. Match the term with the correct description

Answer:

D. Epimysium **The connective tissue that encases an entire muscle**

C. Perimysium **The connective tissue that encases a bundle of muscle fibers**

Endomysium **A thin extension of connective tissue that envelops the individual muscle fiber**

B. Sarcolemma **The cell membrane of an individual muscle cell/fiber**

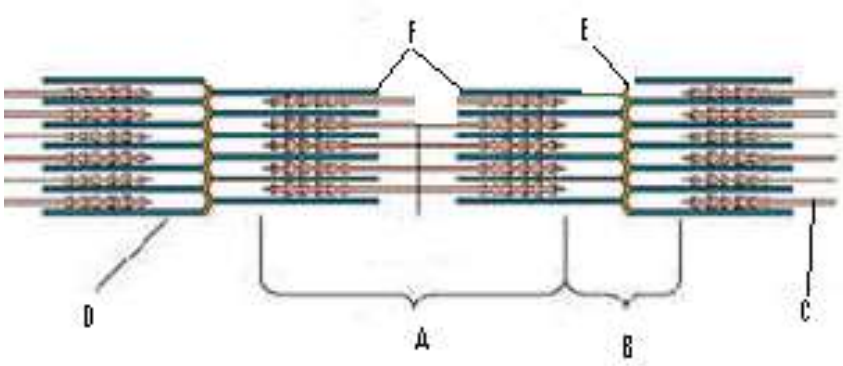
E. Fasiculus **A bundle of muscle fibers**

A. Myofibril **A threadlike structures found in abundance within the muscle cell/fiber**

14. Name the basic contractile unit within a myofibril

Answer: **Sarcomere**

15. Identify the following components found in the diagram**:**



Answer:

A: A band

B: I band

C: Thick filament

D: Thin filament

E: Z disc

F: H zone

16. Match the following characteristics with the correct type of muscle

Answer:

Spindle shaped cells which connect to each other by gap junctions - **smooth muscle**

Cells joined in series end to end , often branch to connect to other cells- **cardiac muscle**

Multiple nuclei with a single cell- **skeletal muscle**

Contains a junction between cells called an intercalated disk- **cardiac muscle**

Have a striated appearance due to myofilaments organized into very regularly ordered lengthwise sarcomeres: **skeletal muscle**

17. Hypertrophy of muscle due to exercise increases the size of a muscle by:

A: increasing motor units

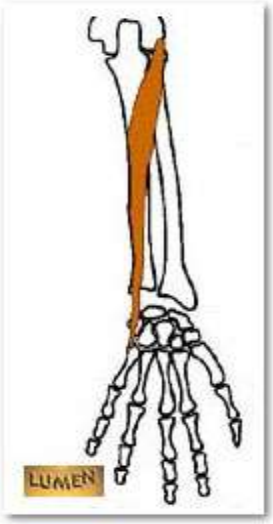
B: increasing muscle cells

C: increasing gap junctions

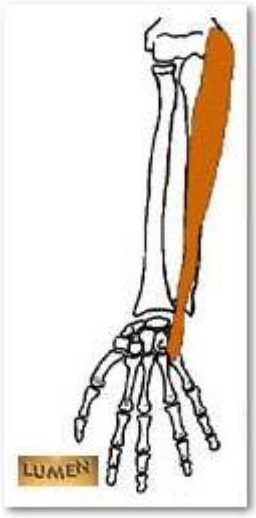
D: Increasing the number of myofibrils

Answer: **D: increasing the number of myofibrils**

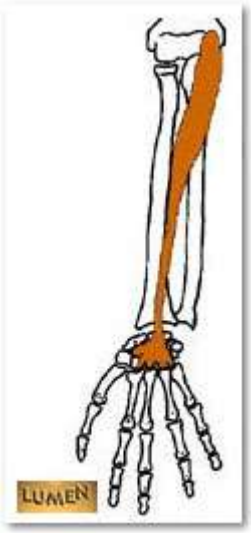
18. Match the muscles with the diagram:



A:Posterior view right arm

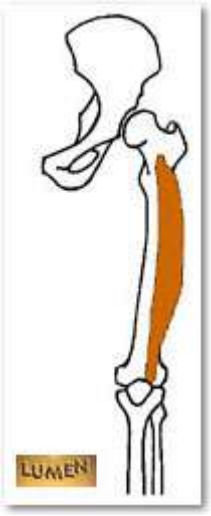


B: Anterior view right arm



C: Anterior view right arm

D: posterior view right leg



E: anterior view left leg

F: anterior view left leg

Answer:

A: Extensor carpi ulnaris **B: Flexor carpi ulnaris** **C: Palmaris longus**

D: Biceps Femoris **E: Vastus lateralis** **F: Sartorius**

19. Match the muscle name with one of the primary actions

Answer:

Orbicularis Oris -Lip closure

Masseter-Jaw closure

Trapezius-shoulder/scapular elevation

Deltoid-Humeral abduction

Triceps Brachii-elbow extension

External Oblique- trunk rotation to opposite side

Serratus Anterior-protraction of the scapula

Gluteus Medius-Hip abduction

Tibialis Anterior-Ankle dorsiflexion

Soleus-Ankle plantarflexion

21. Match the following structures with the number on the model:

Hard palate 8

Soft palate 6

Trachea 2

Epiglottis 5

Larynx 3

Primary Bronchus 4

Lung middle lobe 1

Lung inferior lobe 9

Lung Superior lobe 7

10. Name at least 3 of the 5 primary functions of the respiratory system:

1.provides oxygen to the blood stream and removes carbon dioxide

2.Enables sound production or vocalization

3. Enables protective and reflexive non breathing air movement to keep air passages clear(cough/sneeze)

4.Controls Acid-Base balance

5. Controls the Ph of the blood

11. Why does the right lung have 3 lobes and the left lung has only 2 lobes?:

The cardiac notch accommodates the heart (allows room on the left side for the heart)

12. The following steps describe the pathway of air during inhalation. Place them in order from start to finish by numbering each from 1-8.

Secondary Bronchi **5**

Pharynx **2**

Alveoli **8**

Nasal/oral cavity **1**

Bronchioles **7**

Tertiary Bronchi **6**

Trachea **3**

Primary Bronchi **4**

13. What gas is brought into the lungs during inhalation? **Oxygen**

14. What gas is removed from the blood at exhalation? **Carbon Dioxide**

15. Name three muscles involved with respiration:

Diaphragm, Pectoralis Minor, Intercostals

16. Are these muscles active during inspiration or expiration? **Inspiration**

17. Match the following terms related to lung capacity with the correct description:

1. **d** Tidal Volume
2. **f** Inspiratory Reserve Volume
3. **e** Expiratory Reserve Volume
4. **c** Residual Volume
5. **a** Vital Capacity
6. **g** Inspiratory Capacity
7. **h** Functional Residual Capacity
8. **b** Total Lung Capacity

a.: The maximum amount of air that can be expired after taking the deepest breath possible

b.: The total volume of air that the lungs can hold

c.: The amount of air remaining in the lungs after a forced exhalation

d.: The amount of air the is inhaled or exhaled with each breath under resting conditions

e.: The amount of air that can be exhaled during forced breathing in addition to the tidal volume.

f.: The amount of air that can be inhaled during forced breathing in addition to resting tidal volume.

g.: The maximum volume of air that can be inhaled following exhalation of resting tidal volume.

h.: The volume of air remaining in the lungs following exhalation of resting volume.

18. Match the following respiratory conditions with the correct definition:

Tuberculosis ___**d**_____

Chronic Bronchitis ____**f**_____

Pneumonia ___**a**_____

Laryngitis ____**e**_____

Asthma _____**c**_____

Emphysema ___**b**_____

a.: lower respiratory infection that causes fluid build up in the lungs

b.: alveolar walls break down and the surface area of the lungs is reduced

c.: intense bronchoconstriction related to underlying inflammatory process

d.: pulmonary infection with a mycobacterium tuberculosis , reduces lung compliance

e.: inflammation of the vocal folds

f.: cilia reduction and immobilization, increase mucus production causing airway obstruction and infection.

Effects of exercise on the Muscular and Respiratory systems:

30. Briefly explain why your breathing rate increased when you are performing exercise:

During exercise the muscle cells use up more oxygen and produce increased amounts of carbon dioxide

The lungs and heart have to work harder to supply the extra oxygen and remove the carbon dioxide.

The breathing rate increases and you breathe more deeply. The hear rate increases in order to transport more oxygenated blood to muscles

31. Give 3 examples of exercise's effect on the muscular system:

Exercise helps muscles become more effective/efficient

Tendons become thicker and able to withstand greater force

Muscular endurance increases with low intensity exercie for long durations

Strength, muscle size, power increase with high intensity exercise

Promotes good posture, enabling muscles to work effectively and prevents injury