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### **Question 1**

VASCULATURE in relation to immune system is important as it serves a significant role in its participation in oxygenating the body. It loads and unloads oxygen and nutrients which occurs mostly in the capillaries. It is the function of vessels to transport nutrients to organs/tissues and to transport wastes away from organs/ tissues in the blood.

The arteries breakdown into smaller and smaller branches to bring oxygen and other nutrients to the cells of the body's tissues and organs. In addition to circulating blood and lymph throughout the body, the vascular system functions as an important component of other body systems. There are a number of easy and effective ways to improve the health of both your cardiovascular and lymphatic circulatory system which are:

- A) Drink plenty of water
- B) Exercise regularly
- C) Eat healthy
- D) Get a massage
- E) Try manual lymph and rebounding therapies.

The outbreak of the pandemic COVID-19 on the human body tends to affects the lungs which tends to cause pneumonia. It affects the throat which causes severe sore throat. The virus tends to affect the lungs in which the person will develop fever with dry cough, chest tightness and muscle pain.

However, an healthy immune system which helps in the participation of good oxygenation in the body will be able to fight against the virus if affected.

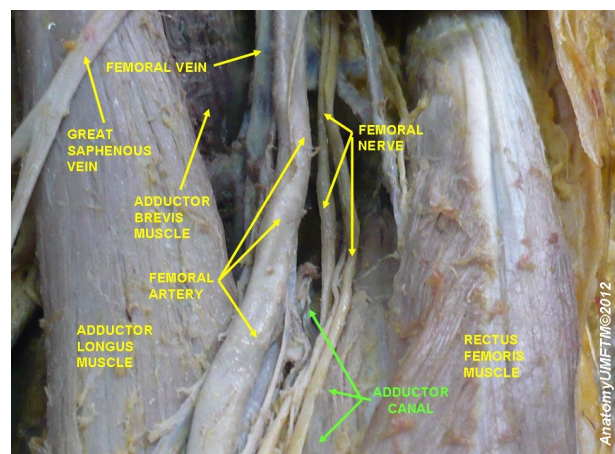
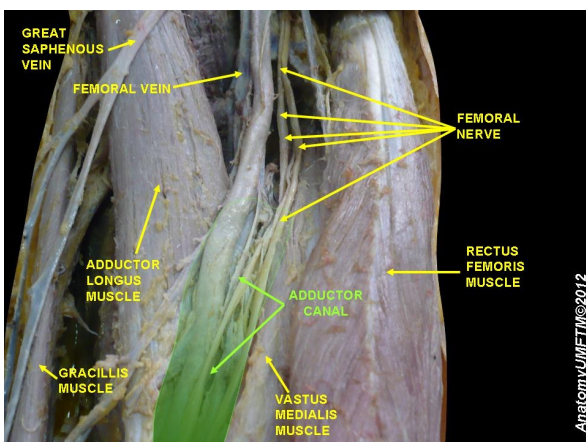
## Question 2

### Adductor canal (Subsartorial/Hunter canal)

The adductor canal is a narrow fascial tunnel in the thigh, providing an intramuscular passage through which the **femoral artery and vein** pass into the popliteal fossa of the knee. It is an aponeurotic tunnel in the middle third of the **thigh**, extending from the apex of the femoral triangle to the opening in the **adductor magnus**, the adductor hiatus. It is 15cm long and serves as a passageway for structures moving between the anterior thigh and posterior leg.

### Importance subsartorial canal

- The adductor canal serves as a **passageway** for structures moving between the anterior thigh and posterior leg.
- It transmits the **femoral artery**, femoral vein (posterior to the artery), nerve to the vastus medialis and the saphenous nerve – the largest cutaneous branch of the femoral nerve.
- As the femoral artery and vein exit the canal, they are called the **popliteal artery and vein** respectively.



The canal contains the **subsartorial artery (superficial femoral artery)**, **subsartorial vein (superficial femoral vein)**, and branches of the **femoral nerve** (specifically, the **saphenous nerve**, and the **nerve to the vastus medialis**). The femoral artery with its vein and the saphenous nerve enter this canal through the superior **foramen**. Then, the saphenous nerve and artery and vein of genus descendens exit through the anterior foramen, piercing the vastoadductor intermuscular septum. Finally, the femoral artery and vein exit via the inferior foramen (usually called the **hiatus**) through the inferior space between the oblique and medial heads of adductor magnus.

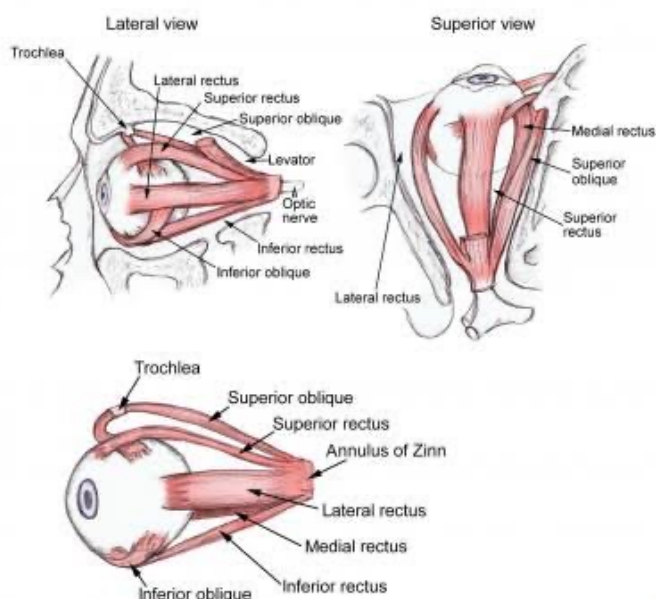
### Question 3

#### The Extraocular Muscles

The **extraocular muscles** are located within the orbit, but are extrinsic and separate from the eyeball itself. They act to control the movements of the **eyeball** and the **superior eyelid**.

There are seven extraocular muscles – the levator palpebrae superioris, superior rectus, inferior rectus, medial rectus, lateral rectus, inferior oblique and superior oblique. Functionally, they can be divided into two groups:

- **Responsible for eye movement** – Recti and oblique muscles.
- **Responsible for superior eyelid movement** – Levator palpebrae superioris.



## Nerve supply

Cranial nerve	Muscle
Oculomotor nerve (N. III)	Superior rectus muscle
	Inferior rectus muscle
	Medial rectus muscle
	Inferior oblique muscle
	Levator palpebrae superioris muscle
Trochlear nerve (N. IV)	Superior oblique muscle
Abducens nerve (N. VI)	Lateral rectus muscle

### Intraocular Muscles

The muscles of the eye are integral to its function and motion. Muscles directly associated with the eye include the extraocular muscles which control the external movement of the eye; the intraocular muscles, which are responsible for pupil accommodation and reaction to light; and the protractor and retractors of the eyelids. Deficits in the muscles or the nerves innervating these muscles can result in functional impairment of the involved structures.

The intraocular muscles include the ciliary muscle, the sphincter pupillae, and the dilator pupillae. The ciliary muscle is a smooth muscle ring that controls accommodation by altering the shape of the lens, as well as controlling the flow of aqueous humor into Schlemm's canal. The ciliary muscle is attached to the zonular fibers which suspend the lens. Upon contraction of the ciliary muscle, the tension on the lens is lessened which causes it to adopt a more spherical shape to focus on near objects. Relaxation of the ciliary muscle has the opposite effect, optimising distant

focus. The sphincter pupillae and dilator pupillae are also composed of smooth muscle. The sphincter pupillae encircles the pupil and is responsible for the constriction of its diameter, while the dilator muscle is arranged radially and increases the pupillary diameter.