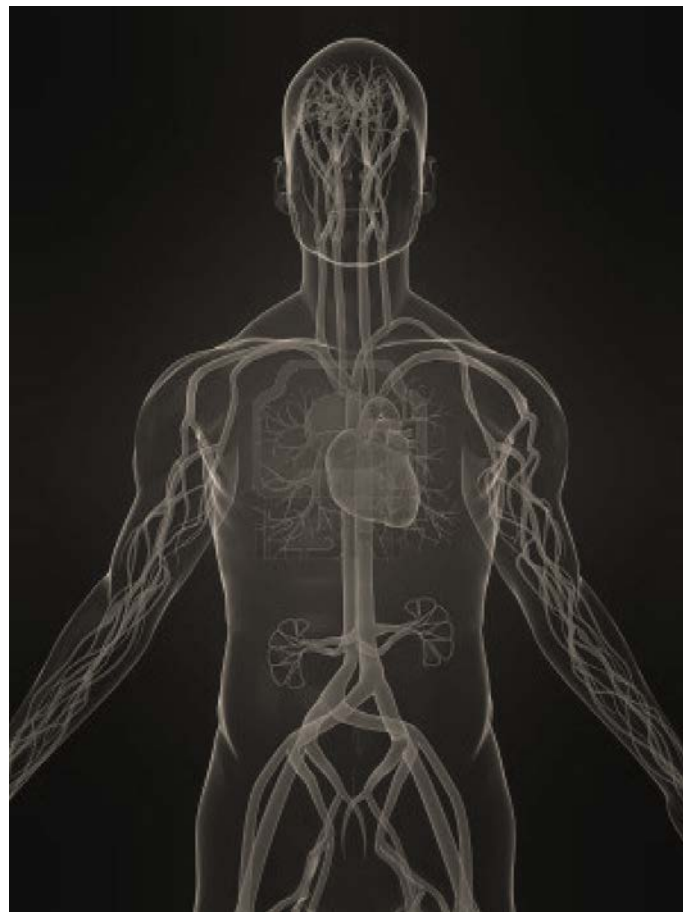


# A Level OCR

# PHYSICAL EDUCATION

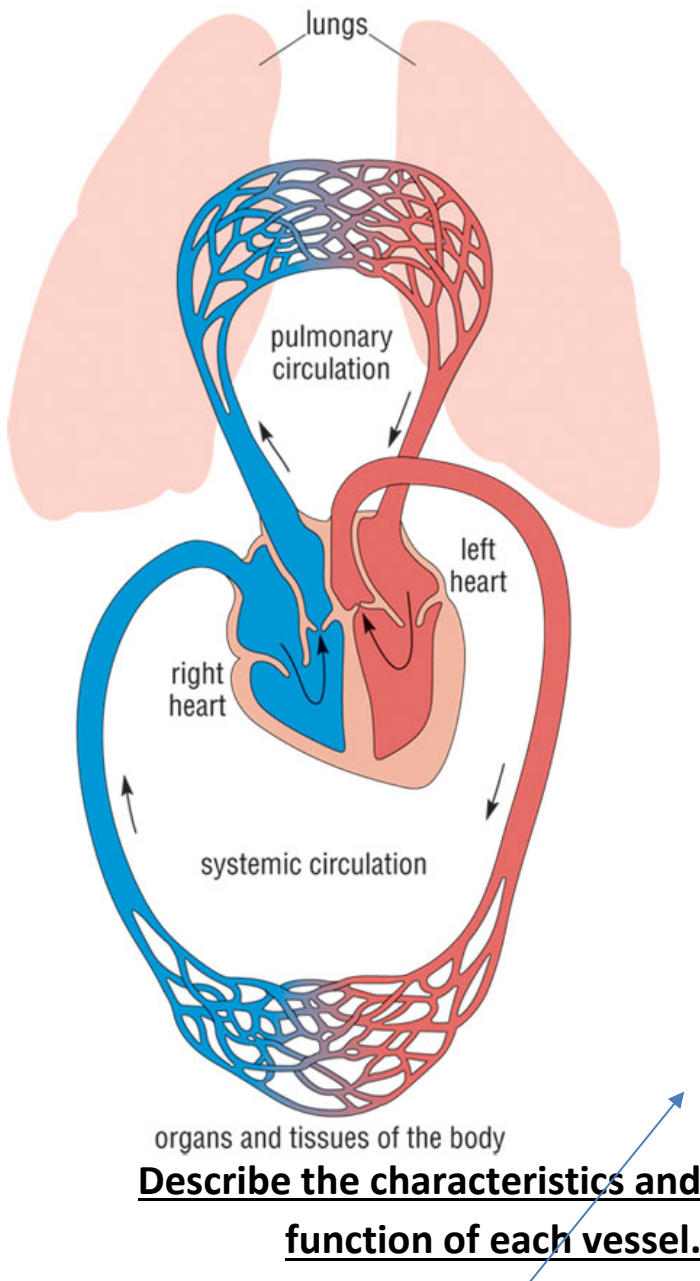
## The Vascular System



### Learning Objectives:

- Distribution of Cardiac output at rest and during exercise
- Role of the Vasomotor centre, arterioles and pre-capillary sphincters
- Oxygen and Carbon Dioxide transport and the effect of smoking
- Blood pressure
- Blood pressure in exercise and hypertension
- Maintenance of Venous return - mechanisms
- Effects of warm up and cool downs on cardiovascular system
- Coronary Heart Disease, arteriosclerosis, atherosclerosis, angina and heart

# Circulatory system



**Arteries**

**Veins**

**Arterioles**

**Venules**

**Capillaries**

**Systemic circulation is...**

**Pulmonary circulation is...**

# Venous Return (VR)

Describe VR

.....

.....

.....

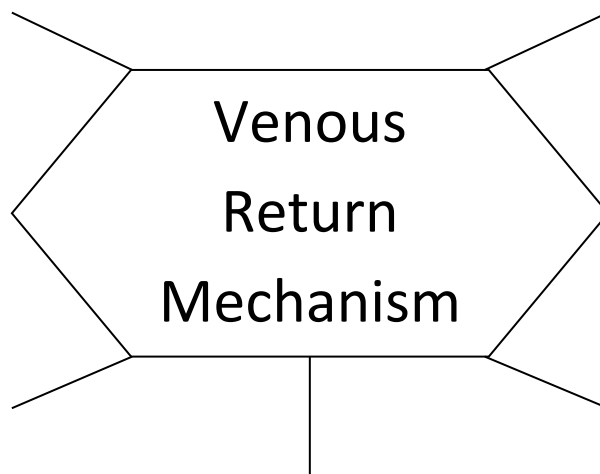
How is VR linked to Stroke Volume? (Hint: STARLING'S LAW)

.....

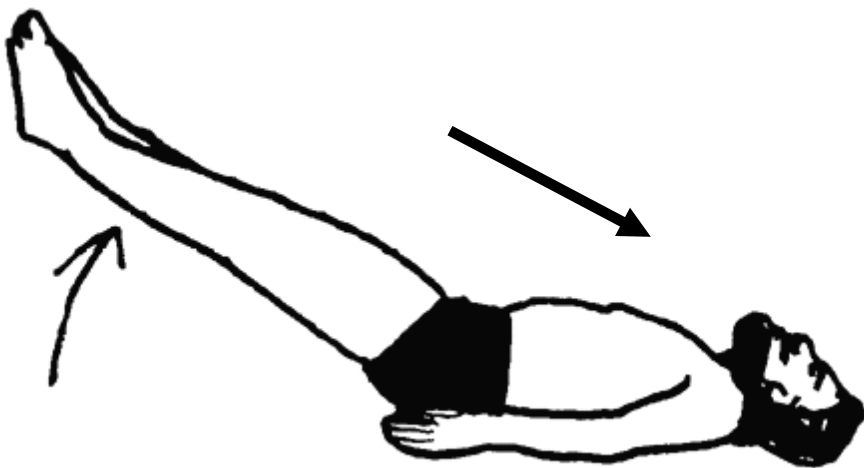
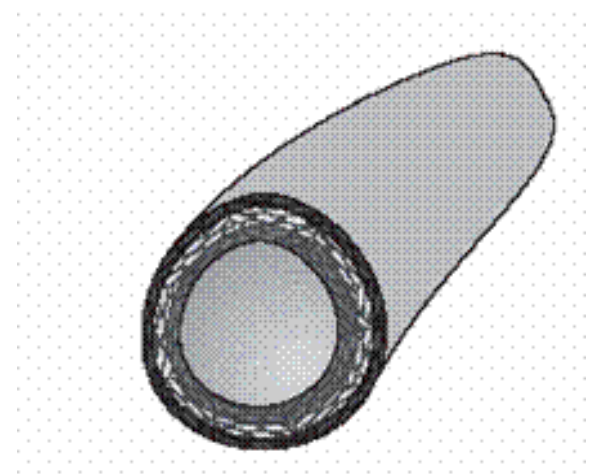
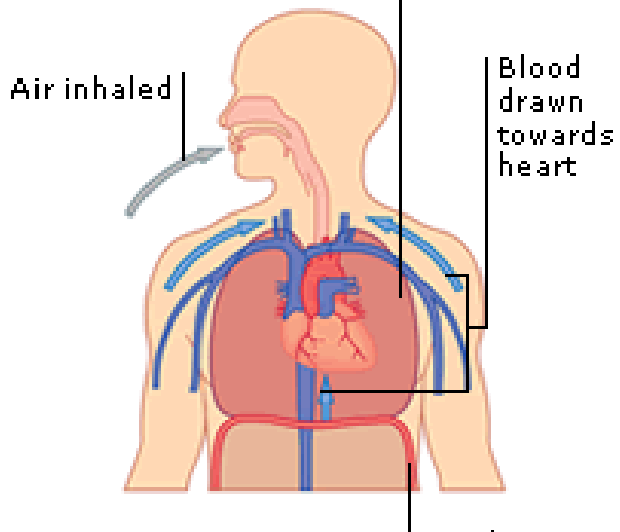
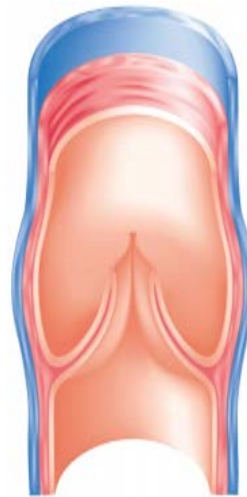
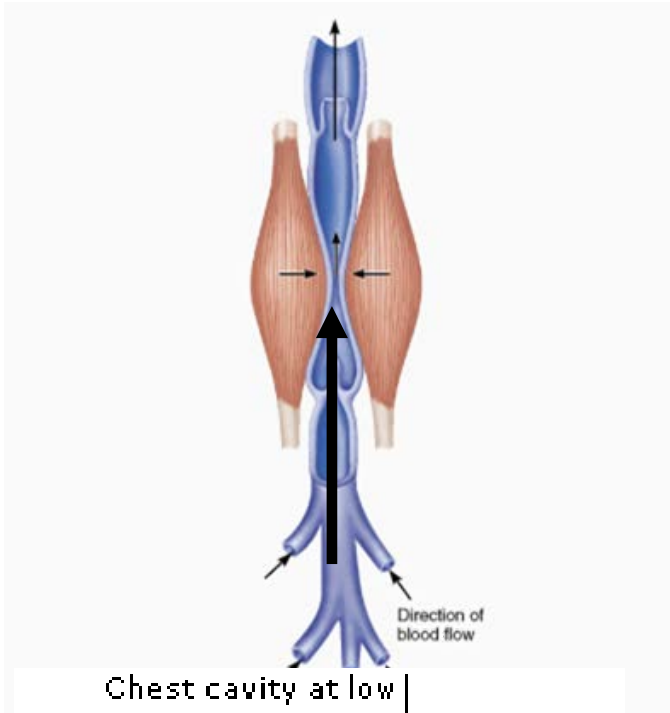
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State and describe the 5 mechanisms that maintain VR.



# Name the Venous return mechanisms



Describe how a good venous return would benefit the performance of a midfielder in football/hockey/netball?

.....  
.....  
..... What is blood pooling and how is it prevented?  
.....  
.....  
.....

**Redistribution of Cardiac Output**

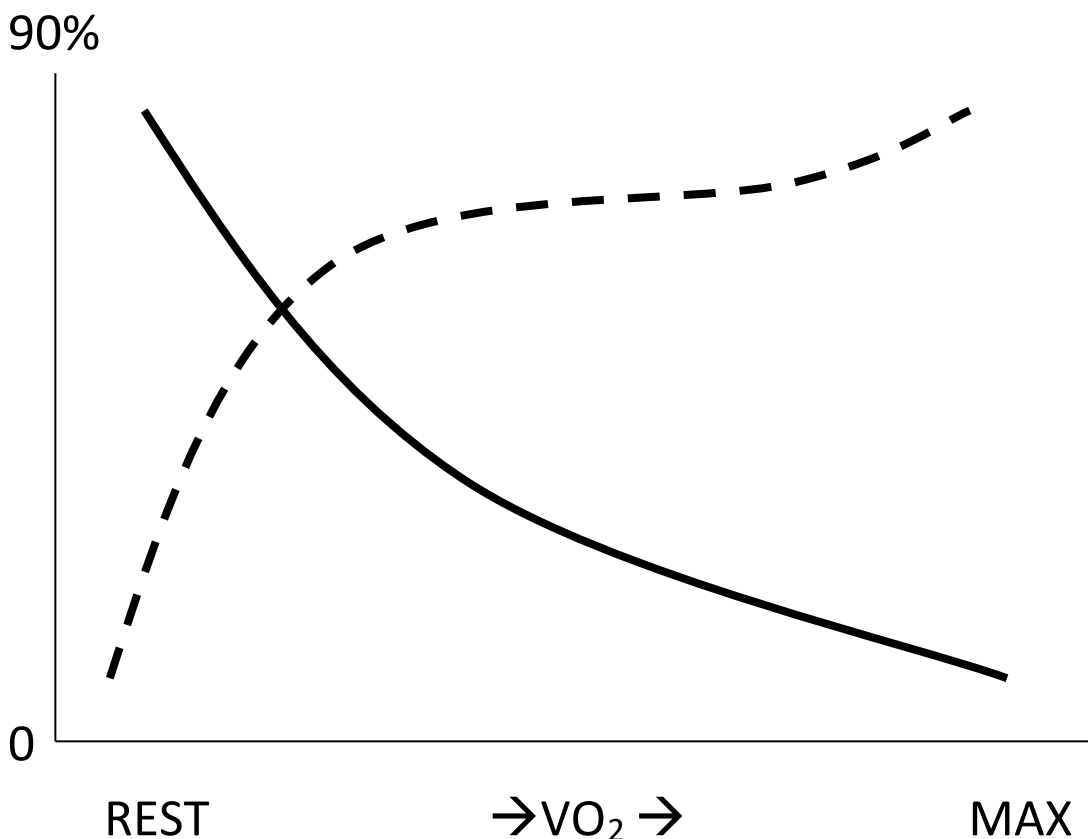
Why do we faint? .....

.....  
.....

Cardiac output at rest = \_\_\_\_ Litres/min

Cardiac output during exercise = \_\_\_\_ Litres/min

Which is muscle blood flow and which is organ blood flow?



**At rest** .....% of Cardiac output goes to .....  
and .....% goes to .....

**During exercise** the majority (.....%) of Cardiac output goes to ....., and .....% goes to the ..... . Blood supply to the ..... is maintained, in order to keep up vital functions.

The vascular shunt mechanism is controlled by the **Vasomotor control centre (VCC)** in the Medulla Oblongata.

The VCC receives information from ***Chemoreceptors*** and ***Baroreceptors*** about chemical and pressure changes.

The VCC uses the Sympathetic Nervous System (SNS) to either vasodilate or vasoconstrict ***arterioles*** and ***pre-capillary sphincters***, meaning blood is *shunted* from one location to where it is required (from organs to working muscles).

**During exercise:**

1. The VCC *increases* sympathetic stimulation of arterioles and pre-capillary sphincters leading to **organs**. = VASOCONSTRICTION
2. The VCC *decreases* sympathetic stimulation of arterioles and pre-capillary sphincters leading to **muscles**. = VASODILATION