

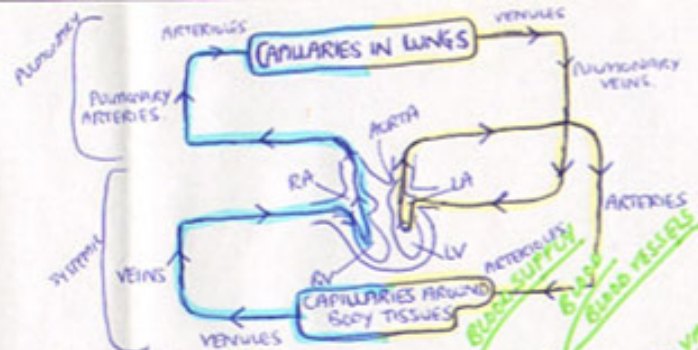
ALWAYS LINK REDISTRIBUTION OF Q WITH VASCULAR SHUNT MECHANISM

23% IN HEMOGLOBIN AS OXYGENATED Hb(O₂)
 7% DISSOLVED IN PLASMA

70% LUNG W/ WATER IN RBC BLOOD CELLS

O₂ & CO₂ TRANSPORTED VIA THE BLOOD

47% IN HEMOGLOBIN, IN RBC AS OXYHEMOGLOBIN (HbO₂)
 3% IN BLOOD PLASMA



Response of Cardiovascular System to Physical Activity
 PART 2. Chp3 AS

TO OXYGENS.
 BLOOD FLOW INCREASE TO MUSCLES.

TO OXYGENS.
 OF Q REDISTRIBUTION RELOCATED CONTINUALLY

VSMEN.
 CHEMORECEPTORS STIMULATED BY O₂ & CO₂ TRANSPORT

VIA INCREASE/DECREASE
 AEROBIC PROLONGED
 ANAEROBIC
 THRESHOLD ANAEROBIC DELAYS RECOVERY SPEEDS
 AIDING PARTI. O₂ TRANSPORT

VASOMOTOR CONTROL (VMC) VASCULAR SHUNT MECHANISM

ORGANS	MUSCLES
↑ SYMPATHETIC STIMULATION	↓ SYMPATHETIC STIMULATION
VASOCONSTRICTION OF ARTERIOLES	VASODILATION OF ARTERIOLES
... AND PRECAPILLARY SPHINCTERS	... AND PRECAPILLARY SPHINCTERS
DECREASE BLOOD FLOW/Q TO CAPILLARIES/NECESSARY ORGANS.	INCREASE BLOOD FLOW/Q TO CAPILLARIES/WORKING MUSCLES

CO₂ CONCENTRATION IN HEMOGLOBIN
 HbO₂ RELEASED IN LUNGS
 OPTIMAL PERFORMANCE MET EFFECT

VASCULAR SYSTEM

- CONTROLS BLOOD SUPPLY TO VARIOUS ORGANS ACCORDING TO NEED O₂.
- CONSISTS OF:
 - ARTERIES
 - ARTERIOLES
 - CAPILLARIES
 - VENUES
 - VEINS
 - VENULES
- CARDIAC OUTPUT
- CIRCULATORY NETWORKS
- BLOOD VESSEL STRUCTURE:
 - ARTERIOLES: 3-LAYERED, EXCEPT 1 CAPILLARY
 - ARTERY WALLS: LAYERED, MUSCULAR, VASODILATE (WIDE) VASOCONSTRICT (NARROW)
 - CAPILLARIES: THIN, 1 CELL THICK, SUCROVAL CAPILLARIES, PRECAPILLARY SPHINCTERS
 - VENULES/VEINS: THICKER, MUSCULAR, UNDER VASOCONSTRICT DILATION
 - VALVES: STOP BACK FLOW, VASOCONSTRICT MUSCLES

VR MECHANISMS

DEOXYGENATED BLOOD TO HEART

STARLINGES LHM 'SV DEPENDENT' OPEN VR'

VR ↑ SV/Q ↑

HR DURING EXERCISE ENDS SV/Q - SUFFICIENT

BLOOD POOLING MECHANISMS

- POCKET VALVES
- SKELETAL MUSCLE PUMP
- RESPIRATORY PUMP
- SMOOTH MUSCLE
- GRAVITY

VR ⇒ FORCE TO PUSH BLOOD TO HEART

MAINTAINS PUMP EFFICIENCY

PREVENTS BLOOD POOLING

UNWANTED PRESSURE BLOOD POOLING

PERFORMANCE QUALITY ON VR IMPACT

- REDUCTION IN STARLINGES LHM
- REDUCTION IN METABOLIC
- REDUCE SV/Q
- EXERCISE REDUCTION IN METABOLIC
- SPEEDS RECOVERY TO MUSCLES
- PERFORMANCES TO MUSCLES

TO MUSCLES, O₂ TRANSFER SV/Q

WORK ABILITY REDUCE

AMPHIBOLY MUSCLES

MUSCLE FIBRE INJURY

WORK MUSCLES

