Bio 20 IB - Circulatory and Immune System Cheat Sheet by qazwsxedc via cheatography.com/169258/cs/35881/

Systems

Cardiovascular System

Systemic Circul- ation -	LV(ox)> body tissue>RA (deox)
Pulmonary Circulation -	RV (deox)> lungs>LA (ox)
Coronary Circul- ation-	LV (ox)> heart (coronary arteries)>?
Lymphatic System	
Organ	filters lymph and produces phagocytic lyphocyte- s(WBC)
Vessels	transport intersitial fluid(in between cells) to cardiovasular system

Heart control

heat = myogenic tissue - creates its own electrical contraction, subconscious (direct innervation)

how the heat beats

1. blood makes **Synoatrial Node (SA node)/Pacemaker** to activate, causing atria to contract, moving blood to ventricles

in top wall of atrium, generates electrical impulses

2.when ventricles fill, Atrioventricular Node (AV node)relays impulses to bundles of Him and Purkinje fibres, causing ventricles to contract, moving blood to arteries

at base of atrium to delay impulse and allow ventricles to fill

Electrical Activity in the Heart

https://www.google.com/url?sa=i&url=https%3A%2F%2Fbiologydictionary.net%2Fp-wave%2F&psig=AOvVaw2OiBJZ6EoIO_VqzH8yxT-I9&ust=1670283205835000&source=images&cd=vfe&ved=0CA8-QjRxqFwoTCNCwoKiQ4fsCFQAAAAAdAAAABAE

Electrocardigram (EKG/ECG)	impluses of the heart picked up by electrodes on the skin
ECG wave or PQRST	wave cycle -ECG pattern
Ρ	atria starts contraction, AV opens, SL closes
Q	impluse from SA node to AV node is delayed, ventricles fill
R (Lub)	ventricular systole in apex, atrioventricular valves close
S	ventricular systole finishs

Electrical Activity in the Heart (cont) T (Dub) ventricular diastole Indicators of Cardiovascular Health 1. Heart Rate (bpm) - low resting heart rate = high cardiovasular health |_> indicates high stoke volume/ stonger pumps - short recovery time = good 2. Stroke Volume (mL/beat) - the extent that ventricles can fill (strech) and empty (strength) - cardiovensular exercise improve ventricular strength and volume 3.Cardiac Output (mL/min) - heart rate(beats/min) x stroke volume(mL/beat) Indicators of Cardiovascular Health 1. Heart Rate (bpm) - low resting heart rate = high cardiovasular health |_> indicates high stoke volume/ stonger pumps - short recovery time = good 2. Stroke Volume (mL/beat) - the extent that ventricles can fill (strech) and empty (strength) - cardiovensular exercise improve ventricular strength and volume 3.Cardiac Output (mL/min) - heart rate(beats/min) x stroke volume(mL/beat) **Blood Vessels**

aorta, artery, arterioles, cappilaries, venuoles, veins, vena cava

Name	Structure	Function
artery	thick, muscular, elastic walls	withstand high blood pressu- re/volume
	narrower than veins	recoil to propel blood
	no valves	carry blood away from heart
cappil- aries	1 cell thick (diffusion)	easy exchange w/ all tissues
	v narrow, v branched	slows blood flow
	has precapillary sphincter	blood plasma can leak
veins	large internal diameter, w/ valves	lower blood flow pressure



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high surface area (cappilares = low speed of blood Pulse Points arteries can be against bone at these points to feel blood flow radial • wrist caratoid • neck/treachea brachial • bicep brachial • bicep femeral • cortch femeral • cortch femeral • cortch femeral • cortch femeral • adrenalin, epinphrine, nor increases body high bpn temp • adrenalin, epinphrine, nor increases body high bpn vagus nerve • blood in aorta>> inbibliotry effect (paras- ympatheic) Aorta strech recoptor> impluse to medula oblongata> sugulation accertar nerve> icrease SA node activity bigh [CO2] In pH 7.35-7.45 bigh [CO2] + Hactic scid in arteries controlled fortaceast struet + blood in vena canva> simulation gaftect (sympatheric) korta - strease SA node activity high [CO2] In pH 7.35-7.45 bigh [CO2] + Hactic scid in arteries contracth, + saft (sympatheric) korta + heart speed +CO + heart speed +CO + heart speed					
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help push blod heart (2) Elasticity of atterial wills cross sectional area of blood vessels (3) Ateriole - diameter> + resistance> + b.p. - changes depending on vessel (3) Ateriole - diameter> + resistance> + b.p. - regulates local blood flow in arteries controlled + CO22, + lactic acid high surface area (cappilares = low speed of blood flow in arteries controlled + CO22, + lactic acid arteries can be against bore at these points to feel blood flow - dislond volume = - b.p. - Regulation - vasomotor center (unconsious) radial • wrist - cortech - bioh b.p. - bioh b.p. - bioh b.p. femeral - cortech - adrenalin, epinphrine, nor - high b.p. can cause blood vessels to rupture - wes systolic, sound disappear, min pressure during ventricular conctor citon renzeses bot - adrenalin, epinphrine, nor - x = systolic, sound disappear, min pressure during ventricular conctor citon resistance - vasomotor center (webland bloongata> vagus nerve> korceases SA node activity - x = systolic, sound disappear, min pressure during ventricular conctor vesses (sound experiments) vasomotor center (webland bloongata> simulate activation - x = systolic, sound disappear, min pressure during ventricular conctor vesses (sound experments) </td <td></td> <td></td> <td>backflow</td> <td>(1) Contraction of</td> <td>+mL/min = +b.p.</td>			backflow	(1) Contraction of	+mL/min = +b.p.
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+O2 - heart speed		+ heart speed			
	nicotine, alcohol,	+heart speed			



caffeine

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Blood Pressure		Blood Pressure	
Factors		Factors	
(1) Contraction of ventricles	+mL/min = +b.p.	(1) Contraction of ventricles	+mL/min = +b.p.
(2) Elasticity of atreria	I walls	(2) Elasticity of atreria	I walls
(3) Ateriole Resistance	- diameter> +resistance> +b.p.	(3) Ateriole Resistance	- diameter> +resistance> +b.p.
(4) Smooth musclesin arteries controlledby:	nerves(medulla oblongata), hormones, +CO2, +lactic acid	(4) Smooth musclesin arteries controlledby:	nerves(medulla oblongata), hormones, +CO2, +lactic acid
(5) Blood volume	- blood volume = - b.p.	(5) Blood volume	- blood volume = - b.p.
Regulation	- vasomotor center (unconsious)	Regulation	- vasomotor center (unconsious)
	artoid arteries strech receptors> vasomotor gata)>increse arteriole diameter> low		artoid arteries strech receptors> vasomotor gata)>increse arteriole diameter> low
- high b.p can cause blood vessels to rupture		- high b.p can cause blood vessels to rupture	
Measure		Measure	
- uses sphygmomano x/y)	meter to cut off blood flow in brachial artery (- uses sphygmomano x/y)	meter to cut off blood flow in brachial artery (
- x = systolic, sound h ction	eard, max pressure during ventricular contra-	- x = systolic, sound h ction	eard, max pressure during ventricular contra-
- y = diastolic, sound or relaxation	disappear, min pressure during ventriular	- y = diastolic, sound or relaxation	disappear, min pressure during ventriular
ave: 120/80mmHg		ave: 120/80mmHg	
Hypertension		Hypertension	
140/90mmHg +		140/90mmHg +	
factors responsible:	obesity (+capppilaries to service extra fatty tissue), Stress (arteries contract), +salt(kid- neys)	factors responsible:	obesity (+capppilaries to service extra fatty tissue), Stress (arteries contract), +salt(kid- neys)
consequences:		consequences:	
Treatment:	increase urine (-salt, diuretic drugs), drud that dialate arteriole, blood thinnners	Treatment:	increase urine (-salt, diuretic drugs), drud that dialate arteriole, blood thinnners
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Compone	nts of Blood
Plasma	- suspend blood cells
	- CO2 dissolves, forms carbonic acid in rbc cytoplasm, out of rbc as bicarbonate ions, to the lungs
Red blood cells	- erythocyte, de-nucleated, contain hemoglobin
	- O + CO2 transport
	largest %
White blood cells	-leukocyte, colourless,w/nucluei, increase when fighting infection
	granulocytes: engluf and destroy foreign bodies, Largest
	monocytes: ^ , also leaves blood stream to destroy macrophages
	lyphocytes: include B+T cells, formation of antibodies
Platlets	 thrombocytes, no nueclus bc fragment of larger cell from bone marrow, smallest
	- key role in cloting:
	thrombus- clot that seals blood vessel
	embolus- clot that dislodges+ carries through cu=

С

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