Physiology (2) , M106

Research Topics for 1st Year Physiotherapy

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Topic		Objectives
1	**Electrical activity of the heart**	**N.B. Discuss the following objectives and support your research with diagrams.** - Resting membrane potential - Pacemaker action potential - Factors affecting heart rate - Cardiac conducting system - Ventricular action potential - Normal ECG waves & segments.
2	**Mechanical Properties of Cardiac Muscle**	**N.B. Discuss the following objectives and support your research with diagrams.** - Physiological anatomy of the heart - Histological structure of cardiac muscle. - Excitation contraction coupling. - Regulation of contractility (inotropic state) of cardiac myocytes.
3	**Cardiac cycle**	**N.B. Discuss the following objectives and support your research with diagrams.** - The duration of normal cardiac cycle & in relation to changes in heart rate. - Factors affecting heart rate. - Phases of cardiac cycle. - Heart sounds.
4	**Arterial blood pressure**	**N.B. Discuss the following objectives and support your research with diagrams.** - What is BP, Systolic & diastolic pressure,

		mean, pulse pressure - Determinants of ABP. - Nervous regulation of ABP (Arterial baroreceptors, atrial stretch receptors, peripheral chemoreceptors) + areas responsible for nervous regulation. - Intermediate regulation (Capillary fluid shift, renin angiotensin system). - Long term regulation of ABP (Renal pressure natriuresis, aldosterone,ANP & ADH).
5	**Circulatory shock**	**N.B. Discuss the following objectives and support your research with diagrams.** - Types of circulatory shock. - Hemorrhagic shock (manifestations, compensation). - Outcome of shock - Refractoryshock. - Treatment of shock
6	**Capillary circulation**	**N.B. Discuss the following objectives and support your research with diagrams.** - Structure of the capillary bed. - Capillary pressure. - Capillary blood flow. - Equilibrium with interstitial fluid. - Causes of edema
7	**Oxygen Transport by the Blood**	**N.B. Discuss the following objectives and support your research with diagrams.** - Oxygen in physical form - Oxygen in chemical form - Oxyhemoglobin dissociation curve. - Factors affecting oxyhemoglobin dissociation curve.
8	**Control & chemical regulation of**	**N.B. Discuss the following objectives and support your research with diagrams.**

	respiration	- Physiological anatomy & connections of respiratory centers. - Functions of respiratory centers. - Genesis of rhythmic respiration - Central chemoreceptors - Peripheral chemoreceptors.
9	**Hypoxia**	**N.B. Discuss the following objectives and support your research with diagrams.** - Definition - Types of hypoxia - Causes & characters of each type - What is cyanosis & its relation to hypoxia.
10	**Na^+ handling by renal tubules**	**N.B. Discuss the following objectives and support your research with diagrams.** - Structure of nephron. - Na^+ handling in all parts of nephron. - Juxtaglomerular apparatus & its role in Na^+ regulation. - Hormones affecting Na^+ handling (Renin angiotensin aldosterone system, atrial natriuretic peptide, estrogen).

Instructions : Text include (cover page , objectives of the research , list of contents ,list of diagrams and pictures , titles in bold times new roman 18 , each paragraph not more than 6 lines times new roman 16 , references, numbering of pages). each one participation should be determined and illustrated.