



Paper 1: Factors affecting participation in physical activity and sport

Section A: Applied anatomy and physiology

Cardiovascular System				
Content	What you need to know	Confident	Developing	Unsure
Understanding of the impact of physical activity and sport on the health and fitness of the individual.	Health (heart disease, high blood pressure, effects of cholesterol, stroke). Fitness (cardiac output – trained and untrained individuals, maximal and submaximal exercise).			
The hormonal, neural and chemical regulation of responses during physical activity and sport.	Anticipatory rise. Redistribution of blood (vascular shunting vasoconstriction, vasodilation). Cardiac conduction system. Sympathetic and parasympathetic. Carbon dioxide.			
Receptors involved in regulation of responses during physical activity.	Chemoreceptor, Proprioceptor Baroreceptor			
Transportation of oxygen	Haemoglobin, Myoglobin Oxyhaemoglobin disassociation curve Bohr shift.			
Starling's law of the heart.				
Cardiovascular drift.				
Arterio-venous oxygen difference (A-VO ₂ diff).	Variations in response to an exercise session. Variations between trained and untrained individuals. Adaptations to body systems resulting in training effect.			
Respiratory system				
Content	What you need to know	Confident	Developing	Unsure
Understanding of lung volumes and the impact of and on physical activity and sport.	Residual volume Expiratory reserve volume Inspiratory reserve volume Tidal volume Minute Ventilation.			
Gas exchange systems at alveoli and muscles	Oxygen and carbon dioxide Principles of diffusion and partial pressures.			
The neural and chemical regulation of pulmonary ventilation during physical activity and sport.	Sympathetic and parasympathetic. Carbon dioxide			
Receptors involved in regulation of pulmonary ventilation during physical activity.	Chemoreceptor Proprioceptor baroreceptor			
Impact of poor lifestyle choices on the respiratory system.	Smoking Oxygen transport.			

Neuromuscular system				
Content	What you need to know	Confident	Developing	Unsure
Characteristics and functions of different muscle fibre types for a variety of sporting activities.	Slow twitch (type I) Fast glycolytic (type IIx) Fast oxidative glycolytic (type IIa).			
Nervous system.	Sympathetic Parasympathetic			
Role of proprioceptors in PNF	Muscle spindles Golgi tendon organ.			
The recruitment of muscle fibres	Motor units Spatial summation Wave summation All or none law Tetanic.			
The musculo-skeletal system and analysis of movement in physical activities				
Content	What you need to know	Confident	Developing	Unsure
Joint actions in the sagittal plane/transverse axis.	Shoulder and hip (flexion, extension and hyperextension) Elbow and knee (flexion and extension) Ankle (plantar flexion and dorsi flexion).			
Joint actions in the frontal plane/sagittal axis.	Shoulder and hip (adduction and abduction).			
Joint actions in the transverse plane/longitudinal axis.	Shoulder and hip (horizontal abduction and adduction).			
Types of joint, articulating bones, main agonists and antagonists, types of muscle contraction.	Isotonic (concentric and eccentric) Isometric.			
Energy Systems				
Content	What you need to know	Confident	Developing	Unsure
Energy transfer in the body	Aerobic energy system (glycolysis, kreb/citric acid cycle, beta oxidation, electron transport chain) Anaerobic energy systems (ATP-PC system, anaerobic glycolytic system).			
Energy continuum of physical activity	Consideration for physical activity and sport of different intensities and durations. Differences in ATP generation between fast and slow twitch muscle fibre.			
Energy transfer during short duration/high intensity exercise.	Anaerobic energy system ATP-PC system Anaerobic glycolytic system (lactate accumulation, lactate threshold, OBLA, lactate producing capacity and sprint/power performance).			
Energy transfer during long duration/lower intensity exercise	Aerobic energy system Oxygen consumption during exercise (maximal and submaximal oxygen deficit).			

	Oxygen consumption during recovery (excess post-exercise oxygen consumption EPOC).			
Factors affecting VO2 max/aerobic power				
Measurements of energy expenditure.	Indirect calorimetry Lactate sampling VO2 max test Respiratory exchange ratio (RER).			
Impact of specialist training methods on energy systems	Altitude training High Intensity Interval Training (HIIT) Plyometrics Speed Agility Quickness.			