

YEAR 13 A-LEVEL PE REVISION TIMETABLE

Physiological factors affecting performance - PMC

Week Beginning	Topic Area	Revision Tasks to do	Exam Questions to complete
23 rd February	<ul style="list-style-type: none"> • <u>CV System At Rest</u>: Relationship between HR, SV and Q. Methods of calculating all three. • Cardiac cycle and conduction system. • <u>CV System During Different Exercise Intensities & Recovery</u>: Effect of different intensities of exercise and recovery on HR, SV and Q. Methods of calculating all three. • Redistribution of Q during different exercise intensities and recovery: Vascular shunt, VCC, role of arterioles and pre-capillary sphincters. • Mechanisms of venous return. • Regulation of HR during exercise: Neural, hormonal, intrinsic. • 		<ul style="list-style-type: none"> • Use Everlearner to assist when you are reviewing your learning. Then use the connected EverLearner tests.
2 nd March	<ul style="list-style-type: none"> • <u>Respiratory System At Rest</u>: Relationship between & resting values for breathing frequency, tidal volume, minute ventilation and methods of calculating all three. • Mechanics of breathing at rest and muscles involved; diaphragm & external intercostals. • Gaseous exchange at the alveoli and muscles. • 	<ul style="list-style-type: none"> • Using your syllabus print out from me, make a checklist each week of the key areas you must understand from each topic. • Use your notes, text book and any past papers you have done to make further detailed notes, revision cards etc on each specific area. • Once you are confident you understand each area, tick it off your weekly checklist and move onto the next topic. • At the end of every fortnight try to set time aside to revisit previous areas and test yourself again using the exam questions tips in the next column. 	<ul style="list-style-type: none"> • Complete past exam questions each week that I set you.
9 th March	<ul style="list-style-type: none"> • <u>Respiratory System During Different Exercise Intensities & Recovery</u>: Effect of different intensities of exercise and recovery on breathing frequency, tidal volume, minute ventilation and methods of calculating all three. • Mechanics of breathing during different intensities of exercise & recovery to include additional muscles. • Regulation of breathing during different intensities of exercise & recovery, neural and chemical control. • Effect of different intensities of exercise & recovery on gas exchange at alveoli and muscles; changes in pressure gradient & dissociation of oxyhaemoglobin. 		<ul style="list-style-type: none"> • Finally use the OCR website or Revision world to search for additional past papers on each topic.
16 th March	<ul style="list-style-type: none"> • <u>Biomechanical Principles</u>: Newton's Laws Of Motion. • Force: Net force, balanced and unbalanced force, weight, reaction, friction, air resistance, factors affecting friction and air resistance & manipulation in sporting performance. • Free body diagrams showing vertical & horizontal forces acting on a body at an instant in time and the resulting motion. • Calculations of force, momentum, acceleration and weight. • Definition of centre of mass. Factors affecting the position of CoM. 		

	<ul style="list-style-type: none"> • Relationship between CoM and stability. 		
23 rd March	<ul style="list-style-type: none"> • <u>Levers</u>: Load, effort, fulcrum, effort arm, load arm. • 1st, 2nd, 3rd class levers. Mechanical advantage of a 2nd class lever. • <u>Analysis Through Use Of Technology</u>: Definitions & use of limb kinematics, force plates and wind tunnels. • How each type of technology may be used to optimise performance in sport. 		
30 th March	<ul style="list-style-type: none"> • <u>Diet & Nutrition</u>: New: Function and importance of healthy, balanced diet; carbs, proteins, fats, vitamins/minerals, fibre, water. • Energy intake and expenditure; energy balance in physical activity. • <u>Ergogenic Aids</u>: Pharmacological, physiological & nutritional. 		
6 th April	<ul style="list-style-type: none"> • <u>Aerobic Training</u>: Definitions, affecting factors, methods of evaluating, methods of training to include HIIT (New). Use of target heart rates as an intensity guide. Adaptations to include CV, respiratory, muscular and metabolic. Activities in which aerobic capacity is key. • <u>Strength Training</u>: Types of strength to include strength endurance, maximal, explosive/elastic and static and dynamic. Affecting factors, methods of evaluating all types, methods of training. Adaptations to include muscle and connective tissue, neural and metabolic. Activities in which strength is key. 		
13 th April	<ul style="list-style-type: none"> • <u>Flexibility Training</u>: Types of flexibility to include static and dynamic. Affecting factors, methods of evaluating. Methods of training to include passive, static, dynamic, ballistic, PNF and isometric. Adaptations to muscle and connective tissue and activities in which flexibility is key. • <u>Periodisation Of Training</u>: Cycles and phases of training. Tapering to optimise performance. How to plan a health and fitness programme for each of the principles of training. 		
20 th April	<ul style="list-style-type: none"> • <u>Impact Of Training On Lifestyle Diseases</u>: • CV System: CHD, stroke, atherosclerosis, heart attack. • Respiratory System: Asthma. New: Chronic obstructive pulmonary disease (COPD). • <u>*Exercise At Altitude</u>: Effect of altitude on both CV and respiratory systems. Reduced PP and elevated HR and VR. • Acclimatisation including importance of timing of arrival at altitude (above 2400m) • <u>*Exercise In The Heat</u>: Effect of heat on CV and respiratory systems. Temperature regulation and cardiovascular drift. 		

27 th April	<ul style="list-style-type: none"> • <u>Acute & Chronic Injuries</u>: New Hard/soft tissue injuries. Concussion. Chronic injuries resulting from continuous stress to the body. Soft/hard tissue injuries here. • *<u>Injury Prevention</u>: Intrinsic and extrinsic risk factors to include training effects, poor technique, incorrect equipment/clothing, inappropriate intensity. Debate around effective warm-up and cool down. • <u>Responding To Injuries & Medical Conditions</u>: Assessing sports injuries using SALTAPS. • Acute management of soft tissue injuries using PRICE • <u>Concussion & 6R's</u>. Rehabilitation of injury & treatment to include stretching, massage, physio and surgery. 		
4 th May	<ul style="list-style-type: none"> • *<u>ATP & Energy Transfer</u>: Coupled reaction and breakdown/resynthesis of ATP. • <u>Energy Systems</u>: Three energy systems and how each resynthesise ATP. • *<u>ATP Resynthesis During Exercise Of Different Intensities</u>: Energy continuum. • Pre-dominant energy system used during exercise. Influence of intensity/duration. • Interplay of energy systems during intermittent exercise and factors that affect this; intensity, duration, recovery, fitness levels. • *<u>Recovery Process</u>: Fast/Slow components of EPOC & processes that occur. • Effect of exercise intensity on EPOC & implications of recovery process for planning training sessions. 		
11 th May	<ul style="list-style-type: none"> • <u>Linear Motion</u>: Definition and creation of linear motion. Application of direct force through centre of mass. • New: Definitions, calculations and units of measurement for each of the following: distance, displacement, speed, velocity, acceleration/deceleration. • Plot and interpret graphs of linear motion: distance/time graphs, speed/time graphs, velocity/time graphs. • <u>Angular Motion</u>: Definition and creation of angular motion. Application of eccentric force about one or more of 3 axes of rotation: longitudinal, frontal, transverse. • New: Definitions, calculations and units of measurement for each quantity of angular motion, moment of inertia, angular velocity, angular momentum. • Factors like mass and distribution of mass from axis of rotation affecting moment of inertia of rotating body. • Relationship between moment of inertia and angular velocity. • Conservation of angular momentum during flight in relation to the angular analogue of Newton's first law of motion. Interpret graphs of angular velocity, moment of inertia and angular momentum. 		
18 th May	<ul style="list-style-type: none"> • *<u>Fluid Mechanics</u>: Factors impacting on magnitude of air resistance (on land) or drag (in water) on a body or object: • Velocity, mass, frontal cross-sectional area, streamlining and shape, surface characteristics. 		

<ul style="list-style-type: none"> • Projectile Motion: Factors like height, speed and angle of release affecting horizontal distance travelled by a projectile. • Free body diagrams showing the forces acting on a projectile once in flight like weight & air resistance. • Resolution of forces acting on a projectile in flight using the parallelogram of forces. • Patterns of flight paths as a consequence of the relative size of air resistance and weight: • Parabolic (symmetrical) flight path – shot putt. Non-parabolic (asymmetric) flight path – badminton shuttle • The addition of lift to a projectile through the application of Bernoulli's principle: • Angle of attack to create an upwards lift force on a projectile: discus, javelin, ski jumper. • Design of equipment to create a downwards lift force: F1 racing cars, track cycling. • Use of spin in sport to create a Magnus force, causing deviations to expected flight paths. • Imparting spin to a projectile through the application of an eccentric force • Types of spin: – top spin, side spin and back spin in tennis and table tennis, side spin in football, hook and slice in golf. 		
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We will aim to cover most of the topics in lesson time, but you must be completing work on these areas at home too.

