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Week Beginning	Topic Area	Revision Tasks to do	Exam Questions To Do
16th February	• **Analyse movement** with reference to: joint type movement produced, agonist and antagonist muscles involved, type of muscle contraction taking place. • **Roles of muscles:** agonist, antagonist, fixator, types of contraction, isotonic, concentric, eccentric, isometric. • **Shoulder** :flexion, extension, abduction, adduction, horizontal flexion/extension, medial and lateral rotation, circumduction. Deltoid, latissimus dorsi, pectoralis major, trapezius, teres minor. • **Elbow:** flexion, extension. Biceps brachii, triceps brachii • **Wrist:** flexion, extension. Wrist flexors, wrist extensors • **Hip:** flexion, extension, abduction, adduction, medial and lateral rotation. Iliopsoas, gluteus maximus, medius and minimus, adductor longus, brevis and magnus • **Knee:** flexion, extension. Hamstring group: biceps femoris, semi-membranosus, semi-tendinosus. Quadriceps group: rectus femoris, vastus lateralis, vastus intermedius and vastus medialis. • **Ankle:** dorsi flexion, plantar flexion. Tibialis anterior, soleus, gastrocnemius • **Planes of movement**: frontal, transverse & sagittal. • **Structure & role of motor units** in skeletal muscle contraction. Nervous stimulation of the motor unit. Motor neuron, action potential, neurotransmitter, 'all or none' law. • **Muscle fibre types.** ST, FOG, FG. Structural & functional characteristics.	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	2024 Paper: Qu 1: Agonist muscle for knee extension & plane of movement. Qu 6(a): Motor units. Qu 9 (First part of 20 marker) Joint movement analysis of shoulder, elbow and wrist during basketball free throw. 2023 Paper: Qu 6 (a): Upward and downward phase of a pull up focussing on shoulder joint. 2022 Paper: Qu 6 (a) (i): Upward phase of leg curl focussing on knee joint. 2019 Paper: Qu 6 (a): Stimulation of a motor unit. Qu 6 (b): Joint movement analysis at ankle joint of a calf raise.
23rd February	• <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.		2024 paper: Qu 6(b): Changes in HR from submaximal training. 2023 Paper: Qu 9: (First part of 20 marker): HR, SV, Q, VR, Vascular shunt mechanism. How is blood flow increased to working muscles & back to heart during exercise. 2022 Paper: Qu 6 (b): Neural factors controlling heart rate.

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2nd March	• Respiratory System At Rest: 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.	• previous areas and test yourself again using the exam questions tips in the next column. • Use Everlearner to assist when you are reviewing your learning. Then use the connected EverLearner tests. • Complete past exam questions each week that I set you. • Finally use the OCR website or Revision World to search for additional past papers on each topic.	2022 Paper: Qu 6 (a) (ii):Role of respiration muscles during rest. Qu 6 (c): Pressure gradient & dissociation of oxyhaemoglobin during exercise.
9th March	• Respiratory System During Different Exercise Intensities & Recovery: 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.		2023 Paper: Qu 6 (b): Role of SCM (inspiration) & internal intercostals (expiration) as additional muscles in respiration. 2019 Paper: Qu 9 (First part of 20 marker): Mechanics of breathing at rest and during exercise.
16th March	• Biomechanical Principles: Newton's Laws Of Motion. • Force: New: 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. • Relationship between CoM and stability.		2024 Paper: Qu 4: Description of net force and effect of net force practical example. 2023 Paper: Qu 8 (b): Factors affecting stability. 2022 Paper: Qu 8 (a): Friction and why do performers want to increase it. In sport what examples are there of this? Qu 8 (b): Vertical forces acting on basketball player jumping. Qu 8 (c): Calculate weight, acceleration & momentum of rugby player. 2019 Paper: Qu 8 (b): Vertical forces acting on gymnast with handstand.
23rd March	• Levers: Load, effort, fulcrum, effort arm, load arm. • 1st, 2nd, 3rd class levers. Mechanical advantage of a 2nd class lever. • Analysis Through Use Of Technology: Definitions & use of limb kinematics, force plates and wind tunnels. • How each type of technology may be used to optimise performance in sport.		2024 Paper: Qu 8 (a) (iii): Use of force plates to improve performance. 2023 Paper: Qu 9: (Second part of 20 marker): 2nd & 3rd class levers describe and evaluate. 2022 Paper: Qu 5: Wind tunnel to help a track cyclist. 2019 Paper: Qu 4: Examples of second/third class levers.

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			Qu 5: Technology in sport with wind tunnels and limb kinematics.
30th March	• Diet & Nutrition: New: Function and importance of healthy, balanced diet; carbs, proteins, fats, vitamins/minerals, fibre, water. • Energy intake and expenditure; energy balance in physical activity. • Ergogenic Aids: Pharmacological, physiological & nutritional.		2024 paper: Qu 7(a): Compare blood doping with IHT. 2023 Paper: Qu 1: Function of fibre and iron in diet. 2022 Paper: Qu 3: Factors used to work out daily energy expenditure. Qu 7 (a): anabolic steroids risks/benefits. 2019 Paper: Qu 7 (a. ii): Use of cooling aids to enhance performance.
6th April	• Aerobic Training: 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. • Strength Training: 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.		2024 Paper: Qu 2: Factors affecting maximum strength. Qu 7 (b) (i): Define aerobic capacity & sporting example. (ii): Genetic make-up affecting VO2Max. 2023 Paper: Qu 7 (a): Continuous training & muscular adaptations for aerobic training. Qu 7 (b): Type of strength needed for x-country skier and ski jumper. 2022 Paper: Qu 7 (b): Strength endurance weight training for marathon runner & adaptations. 2019 Paper: Qu 7 (d): Aerobic training adaptations to delay OBLA.
13th April	• Flexibility Training: 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. • Periodisation Of Training: Cycles and phases of training. Tapering to optimise performance. How to plan a health and fitness programme for each of the principles of training.		2024 Paper: Qu 3: Periodisation of training definition & benefit. Qu 7(c) (i) (ii): Flexibility type for hurdler & flexibility adaptations to benefit a hurdler. 2023 Paper: Qu 2: How joint type & connective tissue length affect flexibility. 2022 Paper: Qu 7 (c): Flexibility for a swimmer & isometric stretching method of training. 2019 Paper: Qu 2: Compare sit and reach with goniometer. Qu 7 (b): Static/dynamic flexibility.
20th April	• Impact Of Training On Lifestyle Diseases: • CV System: CHD, stroke, atherosclerosis, heart attack. • Respiratory System: Asthma. New: Chronic obstructive pulmonary disease (COPD).		2024 paper: Qu 6(d): Effect of exercising in the heat. 2023 Paper: Qu 7 (c): Lifestyle diseases & impact of training for respiratory system. 2022 Paper:

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	• *Exercise At Altitude: 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) • *Exercise In The Heat: Effect of heat on CV and respiratory systems. Temperature regulation and cardiovascular drift.		Qu 1: How does conduction system control diastole (Trick question..it doesn't!) Qu 6 (d): Altitude acclimatisation. 2019 Paper: Qu 1: Effects of exercise in heat on CV system.
27th April	• Acute & Chronic Injuries: New Hard/soft tissue injuries. Concussion. Chronic injuries resulting from continuous stress to the body. Soft/hard tissue injuries here. • *Injury Prevention: Intrinsic and extrinsic risk factors to include training effects, poor technique, incorrect equipment/clothing, inappropriate intensity. • Debate around effective warm-up and cool down. • Responding To Injuries & Medical Conditions: Assessing sports injuries using SALTAPS. • Acute management of soft tissue injuries using PRICE • Concussion & 6R's. Rehabilitation of injury & treatment to include stretching, massage, physio and surgery.		2024 Paper: Qu 7 (d): Intrinsic risk factors to prevent injury. Qu 9: (Second part of 20 marker): SALTAPS & PRICE treatment of injuries. 2023 Paper: Qu 3: Treatments for exercise-induced muscle damage. Qu 7 (d): Chronic sports injuries. 2022 Paper: Qu 4: 6R's concussion protocols. Qu 7 (d): Acute, hard tissue injury & surgery to treat it. 2019 Paper: Qu 7 (a. i.): Physiological benefits of a warm up to games player. Qu 7 (c): PRICE to teat hamstring strain. Qu 9: (Second part of 20 marker): Types of ankle injuries. Contrast therapy treatment compared to anti-inflammatory drugs.
4th May	• ATP & Energy Transfer: Coupled reaction and breakdown/resynthesis of ATP. • *Energy Systems: Three energy systems and how each resynthesise ATP. • *ATP Resynthesis During Exercise Of Different Intensities: 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. • *Recovery Process: Fast/Slow components of EPOC & processes that occur. • Effect of exercise intensity on EPOC & implications of recovery process for planning training sessions.		2024 paper: Qu 6(c): Contributions of each energy system. 2023 Paper: Qu 4: ATP-Pc system yield and example from sport. Qu 6 (c): Krebs cycle & ETC stages of aerobic energy system. Qu 6 (d): Recovery process comparing low to high intensity exercise. 2022 Paper: Qu 2: Process during fast stage of EPOC recovery Qu 9: (Second part of 20 marker): Energy systems and energy continuum at work during a team sport like hockey. 2019 Paper: Qu 3: Identify predominant energy systems in sporting examples. Qu 6 (c): Pre-dominant energy system in long jump? ATP-PC system effectiveness? Qu 6 (d): EPOC knowledge in recovery to help plan training.
11th May	• Linear Motion: Definition and creation of linear motion. Application of direct force through centre of mass.		2024 Paper: Qu 8 (b): Angular motion, moment of inertia and angular velocity of a somersault.

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	• 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.		2023 Paper: Qu 8 (a): Displacement, average velocity, average speed. Qu 8 (c): Factors affecting moment of inertia. Angular motion & relationship with moment of inertia & angular velocity. 2022 Paper: Qu 8 (d): Angular momentum & angular velocity and moment of inertia. Qu 9: (first part of 20 marker): Velocity/time graph of a hockey ball hitting a post. 2019 Paper: Qu 8 (a): Distance/time graph for 100m sprinter. Velocity/time graph. Qu 8 (c): Angular motion generated by trampolinist with somersault & factors affecting moment of inertia.
18th May	• <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. • 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.		2024 Paper: Qu 5: Parallelogram of forces acting on a shot put. Qu 8 (c): Factors affecting horizontal distance travelled by projectile. Qu 8 (d): Bernoulli's principle of upward & downward force. 2023 Paper: Qu 5: How does speed and height of release affect distance travelled by projectile? Qu 8 (d): How topspin is created & it's benefit. 2019 Paper: Qu 8 (d): Factors that affect horizontal distance travelled by shot putt & its flight path.

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	• 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.		

We will aim to cover most of the topics in lesson time, but you must be completing work on these areas at home too.