	Topic	Knowledge: By the end of the unit students will know:	Skills: What skills will students have developed by the end of this unit?	Key terms: What new key terms and vocabulary will be learnt in this unit?	Summative Assessment: How will pupils be assessed in this unit?
Michaelmas 1	Musculoskeletal System and Levers	To know the types of joint, the articulating bones, main agonists and antagonists at the shoulder, elbow, hip, knee and ankle. To understand joint actions. To be able to identify the joint actions that occur at the shoulder and elbow. To apply your understanding of joint actions at the shoulder and elbow to sporting examples. To know the planes and axes of the body. To be able to identify the joint actions that occur at the hip, knee and ankle. To apply your understanding of joint actions at the hip, knee and ankle to sporting examples.	Types of joint, articulating bones, main agonists and antagonists, types of muscle contraction (Isotonic (concentric and eccentric), isometric). Joint actions in the sagittal plane/transverse axis. Shoulder (flexion, extension and hyperextension). Elbow (flexion and extension). Joint actions in the frontal plane/sagittal axis. Shoulder adduction and abduction). Joint actions in the transverse plane/ longitudinal axis. Shoulder (horizontal abduction and adduction).	(see below)	Continuous formative assessment in lessons. Q&A Online knowledge tests (BOOST) End of unit summative assessment (Musculoskeletal and Lever System Assessment)

		To know the three classes of lever and examples of their use in the body during physical activity and sport. To understand the mechanical advantage and mechanical disadvantage of each class of lever.	Joint actions in the sagittal plane/transverse axis, hip (flexion, extension and hyperextension), knee (flexion and extension). Ankle (plantar flexion and dorsi flexion). Joint actions in the frontal plane/sagittal axis. Hip (adduction and abduction) Joint actions in the transverse plane/longitudinal axis. Hip (horizontal abduction and adduction).		
Michaelmas 1	Cardiovascular system	To understand the impact of physical activity and sport on health and fitness. To understand how the heart contracts in relation to the cardiac conduction system.	Understanding the impact of physical activity and sport on the health and fitness of the individual (heart disease, high blood pressure, effects of cholesterol, stroke). Fitness (cardiac output –	Subject specific vocabulary (see Knowledge column) Command words: Analyse Separate information into components and	Continuous formative assessment in lessons. Q&A Online knowledge tests (BOOST) End of unit summative assessment

		Introduction to the nervous system. To understand the hormonal, neural and chemical regulation of heart rate during exercise. To know how and why blood redistribution changes in different locations of the body during physical activity and sport. To understand how blood is redistributed during physical activity and sport. To understand how oxygen is transported. To be able to explain the Bohr shift in relation to oxygen transport (haemoglobin and myoglobin) during exercise. To know the venous return mechanisms. To understand	trained and untrained individuals, maximal and sub-maximal exercise). The cardiac conduction system. Nervous system. Sympathetic and parasympathetic. The hormonal, neural and chemical regulation of responses during physical activity and sport (Sympathetic and parasympathetic, Carbon dioxide, Anticipatory rise). Receptors involved in regulation of responses during physical activity (Chemoreceptor, proprioceptor, baroreceptor). The hormonal, neural and chemical regulation of	identify their characteristics. Apply Put into effect in a recognised way. Calculate Work out the value of something. Compare Identify similarities and or differences. Finish a task by adding to given information. Consider Review and respond to given information. Define Specify meaning. Describe Set out characteristics. Discuss	(Cardiovascular System Assessment)

		Starling's law of the heart. To understand what is meant by the term cardiovascular drift and why it occurs during physical activity and sport. To know what is meant by the term A-VO2 diff. To understand how A-VO2 diff varies between trained/untrained individuals and different exercise sessions. To know the adaptations that occur to the body systems which account for the variations in A-VO2 diff.	responses during physical activity and sport. Redistribution of blood (vascular shunting, vasoconstriction, vasodilation). Transportation of oxygen. (Haemoglobin, Myoglobin, Oxyhaemoglobin disassociation curve, Bohr shift.) Venous return mechanisms, relationship with blood pressure (systolic, diastolic). Starling's law of the heart. Cardiovascular drift. Arterio-venous oxygen difference (A-VO2 diff). Variations in response to an exercise session, Variations between trained and	Present key points about different ideas or strengths and weaknesses of an idea. Evaluate Judge from available evidence. Explain Set out purposes or reasons. Identify Name or otherwise characterise. Illustrate Present clarifying examples. Interpret Translate information into recognisable form. Justify Support a case with Outline	

			untrained individuals, Adaptations to body systems resulting in training effect.	Set out main evidence. characteristics. Suggest Present a possible case/solution. State Express clearly and briefly.	
Michaelmas 1	Respiratory system	To be able to define the lung volumes. To label a spirometer trace and explain the effects of exercise on volumes and minute ventilation. To understand how gases are exchanged at the muscles and the lungs. Possible link to A-VO2 difference To understand the neural and chemical regulation of pulmonary ventilation during physical activity and sport.	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		Continuous formative assessment in lessons. Q&A Online knowledge tests (BOOST) End of unit summative assessment (Respiratory System Assessment)

		To understand the impact of smoking on the respiratory system and oxygen transport.	ventilation during physical activity and sport. Consider sympathetic and parasympathetic systems and 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)		
Michaelmas 2	Neuromuscular System	To be able to identify the different types of muscle fibre and their associated characteristics The recruitment of muscle fibres. Role of	Characteristics and functions of different muscle fibre types for a variety of sporting activities: • slow twitch (type i) • fast glycolytic (type iix)		Continuous formative assessment in lessons. Q&A Online knowledge tests (BOOST)

		proprioceptors in PNF	• fast oxidative glycolytic (type iia). The recruitment of muscle fibres and the frequency of impulses: • motor units • spatial summation • wave summation • all-or-none law • tetanic. • Role of proprioceptors in PNF. • Muscle spindles. • Golgi tendon organ.		End of unit summative assessment (Neuromuscular System Assessment)
Michaelmas 2	Energy Systems	Energy transfer in the body. Energy continuum of physical activity. Energy transfer during short duration/high intensity exercise.	To understand Aerobic energy system (glycolosis, kreb/citric acid cycle, beta oxidation, electron transport chain). Anaerobic energy systems		Continuous formative assessment in lessons. Q&A Online knowledge tests (BOOST) End of unit summative

		Energy transfer during short duration/high intensity exercise. Energy transfer during long duration/lower intensity exercise. EPOC Factors affecting VO2 max/aerobic power. Measurements of energy expenditure. Impact of specialist training methods on energy systems.	(ATP-PC system, anaerobic glycolytic system). Consideration for physical activity and sport of different intensities and durations. Differences in ATP generation between fast and slow twitch muscle fibre. Anaerobic energy system. ATP-PC system. Anaerobic glycolytic system (lactate accumulation, lactate threshold, OBLA, lactate producing capacity and sprint/power performance). Aerobic energy system. Oxygen consumption during exercise (maximal and submaximal oxygen deficit).		assessment (Energy System Assessment)

			Oxygen consumption during recovery (excess post-exercise oxygen consumption EPOC). Indirect calorimetry. Lactate sampling. VO2 max test. Respiratory exchange ratio (RER). Altitude training. High Intensity Interval Training (HIIT). Plyometrics. Speed Agility Quickness.		