	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	Bones. Structure of the skeleton. Functions of the skeleton. Muscles of the body. Structure of a synovial joint. Types of freely movable joints that allow different movements. How joints differ in design to allow certain types of movement at a joint. How the major muscles and muscle groups	Knowledge of the bones at the following locations: • head/neck – cranium, vertebrae • shoulder – scapula and humerus • chest – ribs and sternum • elbow – humerus, radius and ulna • hip – pelvis and femur • knee – femur and tibia (students should also know that the patella sits in front of the knee joint) • ankle – tibia, fibula and talus. . How the skeletal system provides a framework for movement (in conjunction with the muscular system): • the skeletal system allows movement at a joint • the shape and type of the bones determine the amount	Name the bones. Correlate knowledge with location (joint). Correlate to muscles that move the bones. Apply the knowledge and understanding to prescribed movements/skills. Know the main points. Apply these points to basic movements. Apply this knowledge to sports specific skills in a variety of sports. Know the functions. Be able to explain the functions. Be able to give applied examples, eg protection of the heart and lungs by the ribs when 'chesting' a ball.	Subject specific vocabulary (see Knowledge column) Command words: Analyse Separate information into components and identify their characteristics. Apply Put into effect in a recognised way. Calculate Work out the value of something. Compare Identify similarities and or differences. Complete Finish a task by adding to given information. Consider Review and respond to given information.	Continuous formative assessment in lessons. Q&A Online knowledge tests (BOOST) End of unit summative assessment (Unit 1A)

	of the body work antagonistically on the major joints of the skeleton to affect movement in physical activity at the major movable joints.	of movement (short bones enable finer controlled movements, long bones enable gross movement • flat bones for protection of vital organs • the different joint types allow different types of movement • the skeleton provides a point of attachment for muscles – when muscles (contract) they pull the bone. • support • protection of vital organs by flat bones • movement • structural shape and points for attachment • mineral storage • blood cell production. Functions should be applied to performance in physical activity. Identification of the following muscles within the body: • latissimus dorsi • deltoid • rotator cuffs	Know the names of the muscles. Locate the anatomical position of each muscle. Apply this knowledge to basic movements. Apply this knowledge to sports specific skills. Know the names. Explain what they do. Identify where they are in a joint. Apply their function to practical examples, eg kick a ball. Know the names of the joint types. Locate examples of these joints. Apply this knowledge to the movements during basic skills. Apply this knowledge to varying sporting skills.	Define Specify meaning. Describe Set out characteristics. Discuss 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 evidence. Outline Set out main characteristics. Suggest Present a possible case/solution.	

		• pectorals • biceps • triceps • abdominals • hip flexors • gluteals • hamstring group (not individual names) • quadriceps group (not individual names) • gastrocnemius • tibialis anterior. Students should know the role of tendons (attaching muscle to bone). • synovial membrane • synovial fluid • joint capsule • bursae • cartilage • ligaments. Students should know the basic role of tendons. Identification of the types of joints with reference to the following:	Know the names of the movements. Understand what movements take place at specific joints. Apply this knowledge to sporting skills (as part of movement analysis). Know the terms. Understand how these terms work in conjunction with each other eg an agonist will act as the prime mover to cause concentric contraction. Applied knowledge to basic movements. Applied knowledge to specific sporting skills.	State Express clearly and briefly.	

		• elbow, knee and ankle – hinge joint • hip and shoulder – ball and socket. • flexion/extension at the shoulder, elbow, hip and knee • abduction/adduction at the shoulder • rotation of the shoulder • plantar flexion/ dorsiflexion at the ankle. • major muscle groups operating at these joints (see above) • the action of prime movers (agonists)/ antagonists • bones located at the joint (see above) • how these muscle groups work isometrically and isotonically (concentric/ eccentric).			
Michaelmas 2	Pathway of air. Gaseous exchange. Blood vessels.	Identification of the pathway of air (limited to): • mouth/nose • trachea	Names of pathways. Order of pathways.	Subject specific vocabulary (see Knowledge column)	Continuous formative assessment in lessons. Q&A

	Structure of the heart. The cardiac cycle and the pathway of the blood. Cardiac output and stroke volume. Mechanics of breathing – the interaction of the intercostal muscles, ribs and diaphragm in breathing. Interpretation of a spirometry trace.	• bronchi • bronchioles • lungs • alveoli. Gas exchange at the alveoli – features that assist in gaseous exchange: • large surface area of alveoli • moist thin walls (one cell thick) • short distance for diffusion (short diffusion pathway) • lots of capillaries • large blood supply • movement of gas from high concentration to low concentration. Oxygen combines with haemoglobin in the red blood cells to form oxyhaemoglobin. Students should also know that haemoglobin can carry carbon dioxide. arteries, capillaries and veins: • size/diameter • wall thickness • valves in veins.	Identification of pathways on diagrams. Characteristics and functions of the alveoli. Identify features/ characteristics. Identify features/ characteristics on a diagram. Understand the role of haemoglobin in the transport of oxygen and carbondioxide. Explain how the features/ characteristics assist with gaseous exchange. Name the vessels. Describe the vessels (diameter etc). Identify the vessels from an illustration. Apply the structure to the function of each vessel. Assess each vessels relative importance.	Command words: Analyse Separate information into components and identify their characteristics. Apply Put into effect in a recognised way. Calculate Work out the value of something. Compare Identify similarities and or differences. Complete Finish a task by adding to given information. Consider Review and respond to given information. Define Specify meaning. Describe Set out characteristics. Discuss Present key points about different ideas or strengths and weaknesses of an idea.	Online knowledge tests (BOOST) End of unit summative assessment (Unit 1B)

		How the structure of each blood vessel relates to the function: • carrying oxygenated/ deoxygenated blood to/ from the heart • gas exchange • blood pressure • redistribution of blood during exercise (vasoconstriction and vasodilation). • Students should know the names of the arteries and veins associated with blood entering and leaving the heart. The vessels entering/leaving the heart should be identified from a diagram. Structure of the heart: • atria (left and right atria) • ventricles (left and right ventricles). The order of the cardiac cycle, including diastole (filling) and systole (ejection) of the chambers. This starts from a specified chamber of the heart, eg the cardiac cycle starting at the right ventricle. Pathway of the blood:	Further apply the learning to the vessels entering/ exiting the heart. Names of the chambers. Position within the heart. Basic role of each chamber. Correlate the chamber to the adjoining vessels. Re-cap of heart chambers/ vessels. Order of the cardiac cycle. Understanding of the cardiac cycle from different starting points. Identification of the cardiac cycle in relation to illustrated diagrams. Full knowledge and understanding linked to blood vessels/systole/ diastole. Know the terms. Understand the relationship to calculate cardiac output.	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 evidence. Outline Set out main characteristics. Suggest Present a possible case/solution. State Express clearly and briefly.	

		• deoxygenated blood into right atrium • then into the right ventricle • the pulmonary artery then transports deoxygenated blood to the lungs • gas exchange occurs (blood is oxygenated) • pulmonary vein transports oxygenated blood back to the left atrium • then into the left ventricle • before oxygenated blood is ejected and transported to the body via the aorta. • Valve names are not required but students should be taught that valves open due to pressure and close to prevent backflow. Cardiac output, stroke volume and heart rate, and the relationship between them. Cardiac output (Q) = stroke volume x heart rate. Students should be able to interpret heart rate graphs, including an 'anticipatory rise', and changes in intensity.	Be able to analyse data and spot changes in heart rate. Plot graphs to demonstrate heart rate data that can be explained/ analysed. Name the anatomical parts involved. Explain how these work together during inhalation. Explain how these work together during exhaling (including the role of other muscles). Evaluate their role, eg evaluate the role of the diaphragm. Names of the lung volumes. Explain what each volume is. Be able to identify each on a spirometer trace. Be able to interpret/analyse each on a spirometer trace. Be able to predict what each will do based on information/ draw continuation of the trace.		

		Inhaling (at rest) with reference to the roles of the: • intercostals • rib cage • diaphragm. Exhaling (at rest) with reference to the roles of the: • intercostals • rib cage • diaphragm. During exercise (expiration), the rib cage is pulled down quicker to force air out quicker due to use of the abdominal muscles. No other muscles are needed. Changes in air pressure cause the inhalation and exhalation. Identification of the following volumes on a spirometer trace and an understanding of how these may change from rest to exercise: • tidal volume • expiratory reserve volume • inspiratory reserve volume • residual volume. Students should be able to analyse and draw traces.			

Lent 1	Understanding the terms aerobic exercise (in the presence of oxygen) and anaerobic exercise (in the absence of enough oxygen). The use of aerobic and anaerobic exercise in practical examples of differing intensities. The use of aerobic and anaerobic exercise in practical examples of differing intensities. Excess post-exercise oxygen consumption (EPOC)/oxygen debt as the result of muscles respiring anaerobically	Definition of the terms: • aerobic exercise • anaerobic exercise. students understand: • Summary of aerobic exercise (glucose + oxygen → energy + carbon dioxide + water). • Summary of anaerobic exercise (glucose → energy + lactic acid). Link practical examples of sporting situations to aerobic or anaerobic exercise. Identification of the duration and/or intensity of a physical activity in order to identify and justify why it would be aerobic or anaerobic, eg marathon (aerobic), sprint (anaerobic). Several sporting examples should be used. Link practical examples of sporting situations to aerobic or anaerobic exercise. Identification of the duration and/or intensity of a physical activity in order to identify and justify why it would be aerobic or anaerobic, eg marathon (aerobic), sprint (anaerobic).	Understand the terms aerobic and anaerobic. Recite the equations. Link knowledge to the box below. Link knowledge from above to sporting examples. Vary the examples. Provide justified answers with reasoned conclusion as to why an activity is likely to be aerobic or anaerobic. Link knowledge from above to sporting examples. Vary the examples. Provide justified answers with reasoned conclusion as to why an activity is likely to be aerobic or anaerobic. Reasons why recovery is needed. Understanding of the process of recovery. Ability to identify the process of recovery on diagrams.	Subject specific vocabulary (see Knowledge column) Command words: Analyse Separate information into components and identify their characteristics. Apply Put into effect in a recognised way. Calculate Work out the value of something. Compare Identify similarities and or differences. Complete Finish a task by adding to given information. Consider Review and respond to given information. Define Specify meaning. Describe Set out characteristics. Discuss	Continuous formative assessment in lessons. Q&A Online knowledge tests (BOOST) End of unit summative assessment (Unit 1C)

	during vigorous exercise and producing lactic acid. The recovery process from vigorous exercise. Immediate effects of exercise (during exercise). Short-term effects of exercise (24 to 36 hours after exercise). Long-term effects of exercise (months and years of exercising).	Several sporting examples should be used. Definition of the term EPOC (oxygen debt). An understanding that EPOC (oxygen debt) is caused by anaerobic exercise (producing lactic acid) and requires the performer to maintain increased breathing rate after exercise to repay the debt. The following methods to recover from exercise, including the reasons for their use: • cool down – maintain elevated breathing rate/heart rate (blood flow), stretching, removal of lactic acid • manipulation of diet – rehydration, carbohydrates for energy • ice baths/massage – prevention of delayed onset of muscle soreness (DOMS). Justify methods of recovery and cover the effects: • hot/sweaty/red skin • increase in depth and frequency of breathing • increased heart rate. • tiredness/fatigue	Know the name of each method. Explain how each method is carried out. Justify why these methods are used. Name the effects. Explain the effects. Name the effects. Explain the effects. Name the effects. Explain the effects.	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 evidence. Outline Set out main characteristics. Suggest Present a possible case/solution. State Express clearly and briefly.	

		• light headedness • nausea • aching/delayed onset of muscle soreness • (DOMS)/cramp. • body shape may change • improvements in specific components of fitness • build muscle strength • improve muscular endurance • improve speed • improve suppleness • build cardio-vascular endurance • improve stamina • increase in the size of the heart (hypertrophy) • lower resting heart rate (bradycardia).			
Lent 2	First, second and third class lever systems within sporting examples.	Identification of first, second and third class lever systems. Basic drawings of the three classes of lever to illustrate the positioning of: • fulcrum	Know the names of the three components of a lever. Identify the points on a lever diagram.		Continuous formative assessment in lessons. Q&A Online knowledge tests (BOOST)

	Mechanical advantage – an understanding of mechanical advantage in relation to the three lever systems. Analysis of basic movements in sporting examples. Identification of the relevant planes (frontal, transverse, sagittal) and axes (longitudinal, transverse, sagittal) of movement used whilst performing sporting actions.	• load (resistance) • effort. Draw linear versions of a lever, showing the positioning of the fulcrum, load/resistance and effort. . Interpretation of sporting movements or actions which involve flexion or extension of the elbow, hip and/or knee, and plantar or dorsi-flexion at the ankle. Label the effort arm and load/resistance arm on the three classes of lever. Mechanical advantage = effort arm ÷ weight (resistance) arm. Labelling of the effort arm and resistance arm on lever drawings, and interpretation of the mechanical advantage of that lever. Types of movement: • flexion/extension at the shoulder, elbow, hip and knee • abduction/adduction at the shoulder • rotation of the shoulder	Link the levers to anatomical body parts (joints). Label the effort and weight/ resistance arm on a lever. Know the equation. Justify why one lever has a bigger mechanical advantage than another. Know the names of the movements and what they mean. Identify these movements when in action. Interpret movements from one position to another. Interpret sporting movements at the shoulder, elbow, hip, knee and ankle. Identify the planes of the body. Identify the axes of the body. Link the two together and make links to basic movements.		End of unit summative assessment (Unit 2)

		• plantar flexion/dorsiflexion at the ankle. This section links specific sporting actions to the types of movement. • elbow action in push-ups/football throw in • knee, hip and ankle action in running, kicking, standing vertical jump, basic squats • shoulder action during cricket bowling (overarm rotation). • Include other sporting examples within teaching. Planes (frontal, transverse, sagittal) and axes (longitudinal, transverse, sagittal) should be related to sporting actions. Teaching of these planes/axes should include but not be limited to the following sporting actions: • front somersault/forward roll/running action • 360° twist (ice skating spin)/discus thrower rotating in circle effort cartwheel.	Identify the relevant plane/ axes used within specified sporting movements.		
Trinity 1&2	Health and fitness.	Definitions of health and fitness.	Simple recall of the definitions.	Subject specific vocabulary	Continuous formative assessment in lessons.

	The relationship between health and fitness. The components of fitness. Linking sports and physical activity to the required components of fitness. Reasons for and limitations of fitness testing. Measuring the components of fitness. Demonstration of how data are collected for fitness testing. The principles of training and overload. Application of the principles of training. Types of training.	• decreased fitness because of ill health, ie poor • health can result in an inability to train which lowers fitness • increased fitness despite ill health, ie unhealthy but able to train, increases fitness. Definitions of the following components of fitness: • agility • balance • cardiovascular endurance (aerobic power) • coordination • flexibility • muscular endurance • power/explosive strength (anaerobic power) • reaction time • strength (maximal, static, dynamic and explosive) • speed.	Use of the definitions. Basic links of the relationship. How one can affect the other and vice versa. Simple recall of definitions of each. Recap the definitions above. Apply each to extreme examples, eg speed for sprinting. Apply to mixed use, eg in games. Evaluate and justify the importance of the components to varying sporting examples. Use of reasoned conclusions. Recall reasons for fitness testing. Recall limitations of fitness testing. Build on the repertoire of knowledge.	(see Knowledge column) Command words: Analyse Separate information into components and identify their characteristics. Apply Put into effect in a recognised way. Calculate Work out the value of something. Compare Identify similarities and or differences. Complete Finish a task by adding to given information. Consider Review and respond to given information. Define Specify meaning. Describe Set out characteristics. Discuss Present key points about different	Q&A Online knowledge tests (BOOST) End of unit summative assessment (Unit 3)

	Identification of the advantages and dis-advantages (the effects on the body) of training types linked to specific aims. Calculating intensities to optimise training effectiveness. Considerations to prevent injury. Specific training techniques – high altitude training as a form of aerobic training. Seasonal aspects. Warming up and cooling down.	Understand and justify why the components of fitness (as stated above) may or may not be needed when performing certain physical activities and sports. Reasons for fitness testing should include: • to identify strengths and/or weaknesses in a performance/the success of a training programme • to monitor improvement • to show a starting level of fitness • to inform training requirements • to compare against norms of the group/national averages • to motivate/sets goals • to provide variety to a training programme. Limitations of fitness testing should include: • tests are often not sport specific/too general	Link to the box below, eg reasons for carrying out an agility test. The basic protocol of each test. Full explanation of how to administer/ carry out each test. Include how data is collected – see box below. Evaluate the suitability of using each test for differing sports people. As per the box to the left. This is simply what the terms mean. The application to sporting activities is included below. Re-cap of the terms above. How the principles can be applied to a sport. How the principles can be applied to varying sports. Evaluate how certain principles hold particular	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 evidence. Outline Set out main characteristics. Suggest Present a possible case/solution. State Express clearly and briefly.	

		• they do not replicate movements of activity • they do not replicate competitive conditions required in sports • many do not use direct measuring/sub-maximal, therefore inaccurate/some need motivation/some have questionable reliability • they must be carried out with the correct procedures to increase validity. Knowledge of the main procedures of the tests used to measure the following components of fitness: • agility – Illinois Agility Test • balance – Stork Balance • cardiovascular endurance (aerobic power) – Multi Stage Fitness Test • coordination – Wall Toss Test	importance when training for certain sports. Make links to the training types below. Name of each training type and basic understanding. Make links to the box above. Evaluate as per the box below. Recap of the training types. Basic evaluation of the importance of a training type to an activity. Evaluation and justification (with reasoned conclusions) as to why some training types are particularly useful for specified sports. Basic recall of the specified intensities. Applications of each to specific training types. Linking the principles of training to sporting activities and training		

		• flexibility – Sit and Reach Test • muscular endurance – Sit-Up Bleep Test • power/explosive strength (anaerobic power) – Vertical Jump Test • reaction time – Ruler Drop Test • maximal strength – One Rep Max Test • speed – 30 metre sprint test • strength – Handgrip Dynamometer Test. • Testing procedures refers to 'how each test is carried out' and includes reference to how the test is organised (when applicable) in relation to the following: • the facilities and the equipment needed to set it up	types, justifying the choice and the calculated intensity to be used. Basic recall of the potential ways to prevent injury. Evaluation of which ways are appropriate to which training types and sporting activities. What is meant by altitude training. Knowledge of the physiology whilst at altitude. Knowledge of the benefits when returning to sea level. Evaluation of who would use altitude training with reasoned conclusions. The names of the three seasons. Explanation of what each season entails. Application to varying sporting examples.		

		• the procedures that have to be followed – the tasks and the rules • the measurements that are used to score the performance • the way conclusions are drawn from the scores/results. • Evaluate whether or not these tests are relevant to performers in different sporting activities. Understanding of how test scores are measured/recorded (eg in seconds, levels, centimeters, numbers). Definitions of the terms qualitative and quantitative, in relation to the collection of fitness testing data. Understanding that the quantitative data collected during fitness testing can be compared to national averages. SPORT to include: • specificity	Evaluation of the importance of each season. What 'parts' a warm up and cool down should entail. How these 'parts' can be done. Applied examples to sporting activities. Evaluation of the benefits to be achieved.		

		• progressive overload • reversibility • tedium. Key principles of overload. FITT to include: • frequency • intensity • time • type. How the principles of training can be applied to bring about improvements in fitness. Application of the principles to sporting examples. Understand the distinctions between different types of training. Circuit training – consider space available, equipment available, number of circuit stations, work: rest ratio, the content/demand of the circuit can be altered in order to improve different components of fitness.			

		Continuous training – sustained exercise at a constant rate (steady state) without rests, involving aerobic demand for a min of 20 minutes, eg running, swimming, rowing, cycling. Fartlek training – varying speed, terrain and work: rest ratios. Interval training/high intensity interval training – periods of exercising hard, interspersed with periods of rest or low intensity exercise. Static stretching – a way to stretch to increase flexibility, held (isometric) for up to 30 seconds, using correct technique, advisable to avoid over stretching. Weight training – choice of weight/exercise depends on fitness aim, eg strength/power training or muscular endurance, the importance of safe practice/lifting technique, the need for spotters. Plyometrics – to increase power. Use of plyometric exercises (eg bounding, depth jumping). Basic physiological understanding –			

		eccentric contraction followed by larger concentric contraction. Any training (and practice) method must take account of: • the training purpose(s), training thresholds/training targets/training zones (see calculating intensities below) • rest/recovery. The advantages and disadvantages (the effects on the body) of each type of training method stated above. Evaluate appropriate training methods for various (aerobic and anaerobic) fitness needs and make links to sporting activity, eg continuous training is fully appropriate to marathon runners. Definition of training threshold. Calculate the aerobic/anaerobic training zone: • calculate maximum heart rate (220 minus age) • calculate aerobic training zone (60–80% of maximal heart rate)			

		• calculate anaerobic training zone (80- 90% of maximal heart rate). • For circuit training, altering the time/rest/content of the circuit will determine the fitness aim. How to calculate one repetition maximum (one rep max) as part of weight training and how to make use of one rep max, with reference to: • strength/power training (high weight/low reps – above 70% of one rep max, approximately three sets of 4–8 reps) • muscular endurance (low weight/high reps – below 70% of one rep max, approximately three sets of 12–15 reps). Calculate intensities for varying examples. The training type/intensity should match the training purpose (eg aerobic or anaerobic).			

		Where applicable, the following factors should be taken into account in order to prevent injury: • a warm up should be completed • over training should be avoided, eg appropriate weight • appropriate clothing and footwear should be worn • taping/bracing should be used as necessary • hydration should be maintained • stretches should not be overstretched or bounce • technique used should be correct, eg lifting technique • appropriate rest in between sessions to allow for recovery. How high altitude training is carried out: • train at high altitude			

		• there is less oxygen in the air and oxygen carrying capacity is reduced • the body compensates by making more red blood cells to carry oxygen. • Who it benefits: • endurance athletes • athletes that work aerobically. Limitations: • can be difficult to complete training • fitness can be lost • can suffer from altitude sickness • benefits are lost quite quickly. Names of the three training seasons: • pre-season/preparation • competition/peak/playing season • post-season/transition.			

		An understanding of what each of the seasons entails (aims): • pre-season/preparation – general/aerobic fitness, specific fitness needs, being ready for competitive season • competition/peak/playing season – maintain fitness levels, work on specific skills • post-season/transition – rest and light aerobic training to maintain a level of general fitness. The constituent parts of warming up and cooling down. Warming up should include: • gradual pulse raising activity • stretching • skill based practices/ familiarisation • mental preparation • increase amount of oxygen to the working muscles. Cooling down should include:			

		• maintain elevated breathing and heart rate, eg walk, jog • gradual reduction in intensity • stretching. • The benefits of warming up: • effect on body temperature • range of movement increased • gradual increase of effort to full pace • psychological preparation • practice of movement skills through the whole range of movement • injury prevention. The benefits of cooling down: • allowing the body to recover • the removal of lactic acid/CO2/ • waste products			

		prevent (delayed onset of) muscle soreness/ DOMS.			