The Sutton Academy

Knowledge Rich Curriculum Plan

Level 3 BTEC sport – Topic D Cardiovascular system

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
Lesson 1 and 2: To know the structure of the heart and how it works a double pump	• Students will know the structure of the heart and the location of key components. • Students will know that the heart works as a double pump. • Students will know that double circulation consists of pulmonary circulation and systemic circulation • Students will know that circulation means movement of fluid around a closed system. • Students will know that pulmonary means relating to the lungs • Students will know that systemic means relating to the body	Circulation Pulmonary Systemic	• Students already need to know that the heart consists of four chambers • Students already need to know that the heart pumps blood around the body	Short answer "pathway of blood" application questions
Lesson 3: To know the structure and function of blood vessels	• Students will know the structure of the blood vessels • Students will know that a vessel is something that carries a fluid or object • Students will know the function of the different blood vessels (Artery, vein, capillary) • Students will know that elasticity means the ability to change and adapt • Students will know that contractility means the ability to shrink and draw itself together	Vessel Elasticity Contractility	• Students will already need to know what an artery and vein is • Students will already need to know the blood vessels connected to the heart	Short answer application questions
Lesson 4: To know the composition of blood and what its function is	• Students will know the different components of the blood and what their function is • Students will know how to relate the different functions of blood to sporting scenarios • Students will know that a pathogen is a microorganism that can cause disease.	Pathogens	• Students will already need to know how O2 diffuses into the blood stream • Students will already need to know that blood carries nutrients and waste products	Short answer component of blood application questions
Lesson 5: To know the key functions of the cardiovascular system	• Students will know that the cardiovascular system has the following key functions: • Delivery of oxygen and nutrients. • Removal of waste products – carbon dioxide and lactate. • Thermoregulation – vasoconstriction, vasodilation of blood vessels.	Thermoregulation Vasodilation Vasoconstriction	• Students will already need to know how the components of blood carry nutrients • Students will already need to know what by-product muscles produce due to exercise • Students will already need to know the key properties of arteries	MCQ Short answer application questions

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	• Students will know that thermoregulation means to control and maintain a steady internal temperature • Students will know that vasodilation means the widening of blood vessels as a result of the relaxation of the blood vessel's muscular walls • Students will know that vasodilation means he narrowing (constriction) of blood vessels by small muscles in their walls. • Fight infection. • Clot blood.			
Lesson 6: To know how the cardiac cycle is controlled and changes during exercise	• Students will know how key structures within the heart and brain control the cardiac cycle • Students will know that the cardiac cycle is the process of the heart from the beginning of one heartbeat to the beginning of the next • Students will know that diastole means when the heart fills with blood • Students will know that systole means when the contracts and forces blood out into the arteries • Students will know how the sympathetic and parasympathetic nervous system effects heart rate	Cardiac cycle Diastole Systole	• Students will already need to know that the heart works as a double pump • Students will already need to know the key structures of the heart • Students will already need to know that heart rate increases with exercise and decreases after exercise.	Short answer application questions
Lesson 7: To know the responses of the cardiovascular to exercise	• Students will know the following short term responses and their impact on performance: Anticipatory increase in heart rate prior to exercise. Increased heart rate. Increased cardiac output. Increased blood pressure. Redirection of blood flow.	Anticipatory Redirection Pressure	• Students will already need to know that responses are changes that happen straight away • Students will already need to know the difference between systolic and diastolic • Students will already need to know the difference between vasodilation and vasoconstriction	Short answer application questions

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Lesson 8: To know the adaptations of the cardiovascular to exercise	• Students will know the following long term adaptations and their impact on performance: Cardiac hypertrophy. Increase in resting and exercising stroke volume. Decrease in resting heart rate. Capillarisation of skeletal muscle and alveoli. (The development of the capillary network) • Students will need to know that density means the number of something in a particular area Reduction in resting blood pressure. Decreased heart rate recovery time. Increase in blood volume.	Capillarisation Density	• Students will already need to know what hypertrophy is • Students will already need to know what stroke volume is	Short answer application questions
Lesson 8: To know the additional factors that can adaptations of the cardiovascular to exercise	• Students will know the following additional factors and how they impact performance: Sudden arrhythmic death syndrome (SADS) Students will know that arrhythmic means without rhythm or irregular High and low blood pressure Hyperthermia/Hypothermia Student will know that hyper means to increase and hypo means to decrease	Arrhythmic Hyper Hypo	• Students will already need to know the difference between systolic and diastolic • Students will already need to know how the nervous system control heart rate and how the heart beats	Short answer application questions