**Specification for Theory in new GCSE (Year 11)**

**3.1 The human body and movement in physical activity and sport**

**3.1.1 Applied A & P**

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| ***3.1.1.2*** | ***Structure and functions of the cardio-respiratory system*** |
| The cardiac cycle and the pathway of the blood | 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:  •• 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. |
| Interpretation of a spirometer trace | 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.  Interpretation and explanation of a spirometer trace (and continue a trace on paper) to reflect the difference in a trace between rest and the onset of exercise. |
| ***3.1.1.3*** | ***Anaerobic and aerobic exercise*** |
| Excess post-exercise oxygen consumption (EPOC)/oxygen debt as the result of muscles respiring anaerobically during vigorous exercise  and producing lactic acid | 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 recovery process from vigerous exercise | 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).  Students should be taught to evaluate the use of these methods, justifying their relevance to different sporting activities. |

**3.1.3 Physical Training**

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| ***3.1.3.4*** | ***How to optimise training and prevent injury*** |
| Calculating intensities to optimise training effectiveness | 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). |
| Seasonal aspects | 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  •• 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.  An understanding of the benefits of each season to the performer.  Students should be taught to apply and justify the characteristics of the seasonal aspects to different sporting activities. |

**3.2 Socio-cultural influences and well-being in physical activity and sport**

**3.2.1 Sport Psychology**

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| ***3.2.1.5*** | ***Mental preperation for performance*** |
| Understand the difference between direct and indirect aggression with application to specific sporting examples | Definition of direct and indirect aggression.  Students should be taught to know the meaning of the terms direct and indirect aggression, and be able to suggest examples of direct/indirect aggression in sport. |
| Understand the characteristics of introvert and extrovert personality types, including examples of sports which suit these particular personality  types | Characteristics of an introvert:  •• shy/quiet  •• thoughtful  •• enjoy being on their own/loner.  Tend to play individual sports when:  •• concentration/precision (fine skill) is required  •• low arousal is required.  Characteristics of an extrovert:  •• enjoy interaction with others/sociable/aroused  by others  •• enthusiastic/talkative  •• prone to boredom when isolated/by  themselves.  Tend to play team sports when:  •• there is a fast pace  •• concentration may need to be low  •• gross skills are used. |