**Belfairs Academy**

# PE Fundamentals Map

GCSE PE
Cardiorespiratory System

| **Knowledge** | **Skills** |
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| Learners must understand the long-term effects of exercise on:<br><br>- bone density<br>- hypertrophy of muscle<br>- muscular strength<br>- muscular endurance<br>- resistance to fatigue<br>- hypertrophy of the heart<br>- resting heart rate and resting stroke volume<br>- cardiac output<br>- rate of recovery<br>- aerobic capacity<br>- respiratory muscles<br>- tidal volume and minute volume during exercise<br>- capilliarisation | Students are able to:<br><br>- Apply the effects to examples from physical activity/ sport<br>- Collect and use data relating to long-term effects of exercise.<br>- Students can compare and contrast the long term benefits on each system. |
| Learners must:<br>understand the short-term effects of exercise on:<br>- muscle temperature<br>- heart rate, stroke volume, cardiac output<br>- redistribution of blood flow during exercise<br>- respiratory rate, tidal volume, minute ventilation<br>- oxygen to the working muscles<br>- lactic acid production | Students are able to:<br><br>- Apply the effects to examples from physical activity/ sport<br>- Collect and use data relating to short-term effects of exercise.<br>- Students can compare and contrast the long term benefits on each system. |
| Learners must know the definitions of:<br>- Aerobic exercise<br>- Anaerobic exercise | Students are able to apply practical examples of aerobic and anaerobic activities in relation to intensity and duration. |
| Learners must know the key definitions related to the cardiorespiratory system:<br>- Heart rate<br>- Stroke Volume | Students can define the key terms and relate them to sports specific situations. Students are able to use the key terms in the correct context and can reference them in answering relevant exam questions. |

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| - Cardiac Output<br>- Breathing rate<br>- Tidal volume<br>- Minute ventilation<br>Students know the role of red blood cells. | Students can calculate their own heart rate, cardiac output, tidal volume and stroke volume and can explain factors which can affect them.<br><br>Students can relate the red blood cells to the functions of the cardiovascular system. |
| Learners must know the role of the respiratory muscles in breathing and understand about alveoli as the site for gas exchange:<br>- Diaphragm<br>- Intercostals<br>- Gas exchange | Students can apply this process to active and non-active performers, explaining the difference between the two. |
| Learners must understand the pathway of air through the respiratory system:<br>- Mouth<br>- nose<br>- trachea<br>- bronchi<br>- bronchiole<br>- alveoli | Learners will understand the pathway of air through the respiratory system and know the role of the respiratory muscles and alveoli during breathing. |
| Learners must understand the pathway of blood through the heart:<br>- Atria<br>- Ventricles<br>- Bicuspid, tricuspid and semilunar valves<br>- Septum and major blood vessels:<br>- Aorta<br>- Pulmonary artery<br>- Vena cava<br>- Pulmonary vein | Students can describe the journey of blood through the heart using key terminology. Students are able to reference the different blood vessels that blood travels through explaining the key characteristics of them. |
| Pupils know the three types of blood vessel:<br>- Arteries<br>- Veins<br>- Capillaries | Pupils can identify and describe the different blood vessels drawing basic differences between them i.e. arteries have thicker walls and carry oxygenated blood as opposed to veins that carry deoxygenated with thinner walls. |

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| Some knowledge of the double-circulatory system. | Students can differentiate between oxygenated and deoxygenated blood and attempt to explain the terms systemic and pulmonary. |

**Muscular Skeletal**

| **Knowledge** | **Skill** |
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| Learners must know the location of the axes of rotation in the body and their application to physical activity and sport:<br>- Frontal<br>- Transverse<br>- Longitudinal. | Learners will know the three planes of movement and be able to give examples of these levers from different physical activities and sports. Frontal, transverse and longitudinal axes of rotation will be recognised by learners who will be able to apply these to examples from physical activities and sports |
| Learners must know the location of the planes of movement in the body:<br>- Frontal<br>- Transverse<br>- Sagittal | Students can apply the planes of movement to specific sporting actions comparing and contrasting them with one another.<br><br>Students are able to apply knowledge of muscle action and skeletal functions to exam style questions on planes of movement. |
| Learners must know the three classes of lever and their use in physical activity and sport:<br><br>- 1st class – neck<br>- 2nd class – ankle<br>- 3rd class – elbow<br><br>Learners must know the definition of mechanical advantage | Learners are able to explain the three classes of lever with reference to specific sporting actions and are able to analyse the differences between the three. |
| Pupils know the 6 types of movements available at the 2 major joints:<br><br>Hinge:<br>- Flexion<br>- Extension<br>Ball and Socket: | Pupils are able to apply the types of movement at hinge and ball and socket joints to examples from physical activity and sport.<br><br>Pupils can analyse the muscles or muscles groups that create particular muscle actions using key terminology i.e.<br><br>Triceps- Extension of the arm at the elbow |

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| - Flexion<br>- Extension<br>- Rotation<br>- Abduction<br>- Adduction<br>- Circumduction<br><br>Pupils know the roles of the other components of joints:<br>- Ligaments<br>- Tendons<br>- Cartilage | Students can reference antagonistic muscle action when discussing types of movement at the hinge joints of the elbow and knee. |
| Pupils know the roles of the other components of joints:<br>- Ligaments<br>- Tendons<br>- Cartilage | Students know the roles of ligaments, tendons and cartilage and can apply their use to specific sporting situations i.e. tendons are connective tissue that attach muscle to bone.<br><br>Students can relate the components to the previously learned knowledge. |
| Pupils know the definitions and roles of the following:<br>- Agonist<br>- Antagonist<br>- Fixator – antagonistic muscle action. | Pupils are able to apply the antagonistic muscle action at the knee and elbow to examples from physical activity/sport and can explain which muscles act as the agonist, antagonist and fixator during a sporting action. |
| Pupils know the following major synovial joints and their articulating bones:<br><br>- Knee – articulating bones – femur, tibia<br>- Elbow – articulating bones – humerus, radius, ulna<br><br>Pupils know the following ball and socket joints:<br><br>- Shoulder – articulating bones – humerus, scapula<br>- Hip – articulating bones – pelvis, femur. | Pupils are able to define what a synovial joint is and can apply sporting examples explaining how the muscles and bones work together to create movement in specific sporting actions i.e. at the knee during a football kick. |
| Pupils know the major functions of the skeletal and muscular systems including:<br>- Support<br>- Posture | Pupils are able to apply examples of how the skeleton provides or allows the 6 stated functions. |

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| - Protection<br>- Movement<br>- Blood cell production<br>- Storage of minerals | |
| Pupils know the name and location of the major muscles and bones in the human body. | Students understand and can identify the bones and their location using a blank skeletal/muscular diagram. |
| Some knowledge of the name and location of the major muscles and bones of the body. | Students attempt to identify significant bones and muscles in the body i.e. cranium, rib cage, femur, bicep, tricep |

**Sports Psychology**

| **Knowledge** | **Skill** |
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| Learners must:<br>understand types of feedback:<br>- Intrinsic<br>- Extrinsic<br>- Knowledge of performance<br>- knowledge of results<br>- positive<br>negative | Students will be able to analyse the different types of feedback to practical examples. Students will be able to recommend what type of feedback would suit particular personality traits and link them to types of guidance and other psychological factors. |
| Learners must:<br>Understand types of guidance:<br>- Visual<br>- Verbal<br>- Manual<br>Mechanical | Students can apply the types of guidance to practical examples and compare and contrast their advantages and disadvantages. |

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| <u>Mental Preparation</u><br>Learners must know the following techniques:<br>- Imagery<br>- Mental rehearsal<br>- Selective attention<br>- Positive thinking<br>- | Students can apply the techniques to practical examples.<br>Students can compare and contrast the different techniques and give advantages and disadvantages of each and link the mental preparation phase to goal setting. |
| <u>Goal Setting</u><br>Learners must:<br>understand and be able to apply examples of the use of goal setting:<br>- For exercise/training adherence<br>- To motivate performers<br>- To improve and/or optimise performance | Students understand the SMART principle of goal setting with practical examples (Specific, Measurable, Achievable, Recorded, Timed)<br><br>Students are able to apply the SMART principle to improve and/or optimise performance |
| <u>Classification of skills</u><br>Learners must:<br>Know continua used in the classification of skills, including:<br>- simple to complex skills (difficulty continuum)<br>open to closed skills (environmental continuum) | Students can apply practical examples of skills for each continuum along with justification of their placement on both continua. |
| <u>Characteristics of skilful movement</u><br>Learners must: Understand and be able to apply examples of the characteristics of skilful movement:<br>- efficiency<br>- pre-determined<br>- co-ordinated | Students can identify key terms and describe psychological concepts, using practical examples from their own performances |

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| - fluent<br>- aesthetic. | |
| Characteristics of skilful movement<br>- Some knowledge of the characteristics of skilful movement | Students can differentiate between some of the characteristics of skilful movement and attempt to define motor skills. |

**Socio-cultural**

| **Knowledge** | **Skill** |
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| Learners must:<br>Understand the different trend of physical activity and sport in the UK | Students must be familiar with current trends in participation in physical activity and sport: using different sources (such as Sport England, National Governing Bodies (NGBs) and Department of Culture. |

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| Learners must:<br>Understand participation in physical activity and sport | Students must understand how different factors can affect participation, including: -<br>- Age, gender, ethnicity, religion/culture , family, education, time/work commitments, cost/disposable income, disability, opportunity/access, discrimination, environment/climate, media coverage and role models |
| Learners must:<br>Understand how commercialisation affects sport | Students should understand the influence of the media on the commercialisation of physical activity and sport: They should know the different types of media – social – internet – TV/visual – newspapers/magazines.<br>Students should know the meaning of commercialisation, including sport, sponsorship and the media (the golden triangle): positive and negative effects of the media on commercialisation<br>Students should be able to apply practical examples to these issues. Understand the influence of sponsorship on the commercialisation of physical activity and sport. |
| Learners must:<br>Understand the different ethics in sport | Students need to know and understand: The value of sportsmanship, the reasons for gamesmanship and deviance in sport.<br>Students should be able to apply practical examples to these concepts. |

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| Learners must:<br>Know the different performance enhancing drugs that sports performers can use | Students should know and understand the reasons why sports performers use drugs • know the types of drugs and their effect on performance:<br>Students should give practical examples of the use of these drugs in sport. Know and understand the impact of drug use in sport: on performers and on the sport itself. |
| Learners must:<br>Know the different types of violence within sport | Know and understand the reasons for player violence<br>• give practical examples of violence in sport. |