GCSE PE Topics

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Topic	Rationale	Knowledge acquisition	Key vocabulary
3.1 The relationship between health and fitness and the role that exercise plays in both	To develop knowledge of the principles of training and different training methods in order to plan, carry out, monitor and evaluate personal exercise and training programmes.	Definitions of fitness, health, exercise and performance and the relationship between them	Social, emotional, physical.
3.2 The components of fitness, benefits for sport and how fitness is measured and improved		Components of fitness and the relative importance of these components in physical activity and sport	Cardiovascular fitness (aerobic endurance), strength, muscular endurance, flexibility, body composition, agility, balance, coordination, power, reaction time, and speed
		Fitness tests: the value of fitness testing, the purpose of specific fitness tests, the test protocols, the selection of the appropriate fitness test for components of fitness and the rationale for selection	cardiovascular fitness – Cooper 12 minute tests (run, swim), Harvard Step Test, agility – Illinois agility run test, strength – grip dynamometer, muscular endurance – oneminute sit-up, one-minute press-up, speed – 30m sprint, power – vertical jump, flexibility – sit and reach, normative data, analysis, interpret
3.3 The principles of training and their application to personal exercise/ training programmes		Planning training using the principles of training	Individual needs, specificity, progressive overload, FITT (frequency, intensity, time, type), overtraining, reversibility, thresholds of training (aerobic target zone: 60–80% and anaerobic target zone: 80%–90% calculated using simplified Karvonen formula i.e. (220) – (your age) = MaxHR; (MaxHR) x (60% to 80%) = aerobic training zone; (MaxHR) x (80% to 90%) = anaerobic training zone)
		Factors to consider when deciding the most appropriate training methods and training intensities for different physical activities and sports	Fitness/sport requirements, facilities available, current level of fitness
		The use of different training methods for specific components of fitness, physical activity and sport	Continuous, Fartlek, circuit, interval, plyometrics, weight/resistance. Fitness classes for specific components of fitness, physical activity and sport (body pump, aerobics, Pilates, yoga, spinning). The advantages and disadvantages of different training methods
3.5 How to optimise training and prevent injury		The use of a PARQ to assess personal readiness for training and recommendations for amendment to training	Physical activity readiness questionnaire
		Injury prevention	correct application of the principles of training to avoid overuse injuries; correct application and adherence to the rules of an activity during

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Topic	Rationale	Knowledge acquisition	Key vocabulary
			play/participation; use of appropriate protective clothing and equipment; checking of equipment and facilities before use, all as applied to a range of physical activities and sports
		Injuries that can occur in physical activity and sport and treatment of injuries	Concussion, fractures, dislocation, sprain, torn cartilage and soft tissue injury (strain, tennis elbow, golfers elbow, abrasions), RICE (rest, ice, compression, elevation)
		Performance-enhancing drugs (PEDs) and their positive and negative effects on sporting performance and performer lifestyle	anabolic steroids, beta blockers, diuretics, narcotic analgesics, peptide hormones (erythropoietin (EPO), growth hormones (GH)), stimulants, blood doping
3.6 Effective use of warm up and cool down		The purpose and importance of warm-ups and cool downs to effective training sessions and physical activity and sport	Phases of warm up (pulse raiser, stretches, skills specific drills), increased heart rate, increased muscle temperature, increased elasticity of muscles, phases of a cool down (light aerobic activity, stretches) blood pooling
Component 1 1.1 The structure and functions of the musculo-skeletal system	To develop knowledge of the key body systems and how they impact health, fitness and performance in sport	The functions of the skeleton applied to performance in physical activities and sports	protection of vital organs, muscle attachment, joints for movement, platelets, red and white blood cell production, storage of calcium and phosphorus
		Classification of bones	long (leverage), short (weight bearing), flat (protection, broad surface for muscle attachment), irregular (protection and muscle attachment)
		Structure of the skeleton	cranium, clavicle, scapula, five regions of the vertebral column (cervical, thoracic, lumbar, sacrum, coccyx), ribs, sternum, humerus, radius, ulna, carpals, metacarpals, phalanges (in the hand), pelvis, femur, patella, tibia, fibula, tarsals, metatarsals, phalanges (in the foot),
		Classification of joints	pivot (neck – atlas and axis), hinge (elbow, knee and ankle), ball and socket (hip and shoulder), condyloid (wrist), and their impact on the range of possible movements
		Movement possibilities at joints dependant on joint classification:	flexion, extension, adduction, abduction, rotation, circumduction, plantar-flexion, dorsi-flexion
		The role of ligaments and tendons	Connective tissue
		Classification and characteristics of muscle types	Voluntary muscles of the skeletal system, involuntary muscles in blood vessels, cardiac muscle forming the heart

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Topic	Rationale	Knowledge acquisition	Key vocabulary
		Location and role of the voluntary muscular system to work with the skeleton to bring about movement, and the specific function of each muscle	deltoid, biceps, triceps, pectoralis major, latissimus dorsi, external obliques, hip flexors, gluteus maximus, quadriceps, hamstrings, gastrocnemius and tibialis anterior
		Antagonistic pairs of muscles (agonist and antagonist) to create opposing movement at joints to allow physical activities	gastrocnemius and tibialis anterior acting at the ankle -plantar flexion to dorsi flexion; and quadriceps and hamstrings acting at the knee, biceps and triceps acting at the elbow, and hip flexors and gluteus maximus acting at the hip – all flexion to extension
		Characteristics of fast and slow twitch muscle fibre types	type I, type IIa and type IIx
1.2 The structure and functions of the cardiorespiratory system		Functions of the cardiovascular system applied to performance in physical activities	transport of oxygen, carbon dioxide and nutrients, clotting of open wounds, regulation of body temperature
		Structure of the cardiovascular system	atria, ventricles, septum, tricuspid, bicuspid and semi-lunar valves, aorta, vena cava, pulmonary artery, pulmonary vein
		Structure of arteries, capillaries and veins	blood pressure, oxygenated, deoxygenated blood
		Redistribution of blood flow	Vasodilation, vasoconstriction, vascular shunting
		Component of blood	Red blood cells, white blood cells, platelets and plasma
		Composition of inhaled and exhaled air and the impact of physical activity on this composition	Oxygen, carbon dioxide
		Vital capacity and tidal volume, and change in tidal volume due to physical activity and sport, and the reasons that make the change in tidal volume necessary	Tidal Volume, Vital Capacity
		Location of main components of respiratory system and their role in movement of oxygen and carbon dioxide into and out of the body	lungs, bronchi, bronchioles, alveoli, diaphragm
		Structure of alveoli to enable gas exchange and the process of gas exchange to meet the demands of varying intensities of exercise	Aerobic, anaerobic

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Topic	Rationale	Knowledge acquisition	Key vocabulary
1.3 Anaerobic and Aerobic exercise		Energy: the use of glucose and oxygen to release energy aerobically and the impact of insufficient oxygen on energy release	Oxygen, carbon dioxide, water, lactic acid
		Energy sources	Fats as fuel for aerobic activity , carbohydrates as fuel for aerobic and anaerobic
1.4 The short- and long- term effects of exercise		Short-term effects of physical activity and sport	Lactate accumulation, muscle fatigue, Heart rate, stroke volume and cardiac output, Depth and rate of breathing
		How the respiratory and cardiovascular systems work together to allow participation in, and recovery from, physical activity and sport:	Oxygen intake into lungs, transfer to blood and transport to muscles, and removal of carbon dioxide
3.4 The long-term effects of exercise		Long-term training effects	Train for longer, train more intensely
		Long-term training effects and benefits: for performance of the muscular-skeletal system:	increased bone density, increased strength of ligaments and tendons, muscle hypertrophy, the importance of rest for adaptations to take place, and time to recover before the next training session
		Long-term training effects and benefits: for performance of the cardio-respiratory system:	decreased resting heart rate, faster recovery, increased resting stroke volume and maximum cardiac output, increased size/strength of heart, increased capilliarisation, increase in number of red blood cells, drop in resting blood pressure due to more elastic muscular wall of veins and arteries, increased lung capacity/volume and vital capacity, increased number of alveoli, increased strength of diaphragm and external intercostal muscles
2.1 Lever systems, examples of their use in activity and the mechanical advantage they provide in movement	To develop knowledge of the basic principles of movement and their effect on performance in physical activity and sport.	First, second and third class levers and their use in physical activity and sport	Fulcrum, load, effort, lever
		Mechanical advantage and disadvantage of the body's lever systems and the impact on sporting performance	Loads, efforts and range of movement
		Movement patterns using body planes and axes	sagittal, frontal and transverse plane and frontal, sagittal, vertical axes
		Movement in the sagittal plane about the frontal axis, Movement in the frontal plane about the sagittal axis, Movement in the transverse plane about the vertical axis	Somersaults, cartwheel, full twist

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Topic	Rationale	Knowledge acquisition	Key vocabulary
Component 2 1.1 Physical, emotional and social health, fitness and well-being	To develop knowledge of the benefits of participating in physical activity and sport to health, fitness and wellbeing	Physical health: how increasing physical ability, through improving components of fitness can improve health/reduce health risks and how these benefits are achieved	Physical, cardiovascular, body composition
		Emotional health: how participation in physical activity and sport can improve emotional/psychological health and how these benefits are achieved	Emotional, serotonin, self esteem, confidence, psychological challenge, aesthetic appreciation
		Social health: how participation in physical activity and sport can improve social health and how these benefits are achieved	Social, cooperation
		Impact of fitness on well-being: positive and negative health effects	Well-being,
		How to promote personal health through an understanding of the importance of designing, developing, monitoring and evaluating a personal exercise programme to meet the specific needs of the individual	
		Lifestyle choices	diet, activity level, work/ rest/sleep balance, and recreational drugs (alcohol, nicotine)
		Positive and negative impact of lifestyle choices	health, fitness and well-being, e.g. the negative effects of smoking (bronchitis, lung cancer)
1.2 The consequences of a sedentary lifestyle		A sedentary lifestyle and its consequences	Overweight, overfat, obese, increased risk to long-term health, e.g. depression, coronary heart disease, high blood pressure, diabetes, increased risk of osteoporosis, loss of muscle tone, posture, impact on components of fitness
1.3 Energy use, diet, nutrition and hydration		The nutritional requirements and ratio of nutrients for a balanced diet to maintain a healthy lifestyle and optimise specific performances in physical activity and sport	Fats, carbohydrates, protein, vitamins, minerals, fibre and water

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Topic	Rationale	Knowledge acquisition	Key vocabulary
		The role and importance of macronutrients	Carbohydrates, proteins and fat, carbohydrate loading for endurance athletes, and timing of protein intake for power athletes
		The role and importance of micronutrients	Vitamins and minerals), water and fibre
		The factors affecting optimum weight and variation in optimum weight according to roles in specific physical activities and sports	Sex, height, bone structure and muscle girth, energy balance e
		Hydration for physical activity and sport	Maintaining correct levels, dehydration
2.1 Classification of skills (basic/ complex, open/closed)	To develop knowledge of the psychological factors that can affect performers.	Classification of a range of sports skills	Open-closed, basic (simple)-complex, and low organisation-high organisation continua
		Practice structures	massed, distributed, fixed and variable
2.2 The use of goal setting and SMART targets to improve and/or Optimise performance		The use of goal setting to improve and/or optimise performance and principles of SMART targets	Specific, measureable, achievable, realistic, time-bound
2.3 Guidance and feedback on performance		Types of guidance to optimise performance	visual, verbal, manual and mechanical
		Advantages and disadvantages of each type of guidance and its appropriateness in a variety of sporting contexts	Skill level, elite, novice, activity
		Types of feedback to optimise performance	intrinsic, extrinsic, concurrent, terminal
2.4 Mental preparation for performance		Mental preparation for performance	warm up, mental rehearsal
3.1 Engagement patterns of different social groups in	To develop knowledge of the socio-cultural factors that impact on physical activity and sport, and	Participation rates in physical activity and sports and the impact on participation rates considering the following personal factors	Gender, age, socio-economic group, ethnicity, disability, analysis of data

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Topic	Rationale	Knowledge acquisition	Key vocabulary
physical activity and sport	impact of sport on society		
3.2 Commercialisation of physical activity and sport		The relationship between commercialisation, the media and physical activity and sport	Golden Triangle
		The advantages and disadvantages of commercialisation and the media	the sponsor, the sport, the player/performer, the spectator, analysis of data
3.3 Ethical and socio-cultural issues in physical activity and sport		The different types of sporting behaviour	Sportsmanship, gamesmanship, and the reasons for, and consequences of, deviance at elite level, analysis of data