

<u>Topic</u>	<u>Description</u>	<u>R</u>	<u>A</u>	<u>G</u>
Components of fitness	• Types of sports requiring specific components of fitness: • aerobic endurance - events/sports lasting more 30 minutes • muscular endurance - events/sports lasting more 30 minutes • muscular strength - activities requiring force, e.g. throwing events • speed - activities requiring fast movement, e.g., sprinting • flexibility - activities requiring a wide range of movement around a joint, • e.g. gymnastics, martial arts • body composition - low body fat, e.g. gymnastics, high muscle mass, e.g. sprinters • power - activities requiring explosive movement e.g. gymnastics, basketball • agility - activities requiring quick changes of direction, e.g. dodging the opposition • in a team game, freestyle skiing • reaction time - any activity where a quick decision or response to a stimulus is needed • balance - an activity requiring the control of the distribution of weight or to remain upright and steady • coordination - any activity requiring the movement of two or more body parts and • can include the use of sporting equipment, e.g. hand, eyes and tennis racquet to • connect with the tennis ball.			
Principles of Training	The basic principles of training frequency, intensity, time, and type (FITT): - o frequency - the number of training sessions completed over a period of time, usually per week - o intensity - how hard an individual will train - o time - how long an individual will train for - o type - how an individual will train by selecting a training method to improve a specific component of fitness.			

	Additional principles of training: - o progressive overload - in order to progress, training needs to be demanding enough to cause the body to adapt, improving performance - o specificity - training should meet the needs of the sport, or physical/skill-related fitness goals to be developed - o individual differences - training should meet the needs of an individual - o adaptation - changes to the body due to increased training loads - o reversibility - if training stops, or the intensity of training is lowered, fitness gains from training are lost - variation - altering types of training to avoid boredom and maintain motivation to train - o rest and recovery - to allow the body to recover and adapt.			
Exercise Intensity	Intensity: - o measure heart rate (HR) - o HR intensity to fitness training methods. Target zones and training thresholds: - o calculate training zones - o apply HR max to training - o aerobic training zone - o anaerobic training zone. The Borg (6-20) Rating of Perceived Exertion (RPE) Scale - o $RPE \times 10 = \text{Heart Rate (HR)}$. The relationship between RPE and heart rate where: $RPE \times 10 = HR \text{ (bpm)}$. Calculate 1RM for strength and 15RM for muscular endurance. Technology to measure exercise intensity: - o heart rate monitors - o smart watches - o apps.			

Fitness Testing	Reasons for fitness testing: - o gives baseline data for monitoring/improving performance - o can design training programmes based on test results - o determine if training programmes are working - o results can give a performer something to aim for - o provide goal setting aims. Pre-test procedures: - o calibration of equipment - o complete informed consent - o complete Physical Activity Readiness Questionnaire (PAR-Q) - o participant pre fitness test check e.g. prior exercise participation. Aerobic endurance: - o multi-stage fitness test, also known as the bleep test (20 metre distance) - o Yo-Yo test - o Harvard step test - o 12-minute Cooper run or swim. Muscular endurance: - o one-minute press-up - o one-minute sit-up - o timed plank test. Flexibility: - o sit and reach test - o calf muscle flexibility test - o shoulder flexibility test. Speed: - o 30 metre sprint test - o 30 metre flying sprint. Muscular strength: - o grip dynamometer - o 1 Rep Max. Body composition: - o Body Mass Index (BMI) - o Bioelectrical Impedance Analysis (BIA) - o waist to hip ratio. Agility: - o Illinois agility run test - o T Test. Balance: - o stork stand test - o Y balance test.			
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	Coordination: - o Alternate-Hand Wall-Toss test - o stick flip coordination test. Power: - o vertical jump test - o standing long/broad jump - o Margaria-Kalamen power test. Reaction time: - o ruler drop test - o Online reaction time test			
Validity, Reliability & Interpretation of results	Reliability of test: - o consistency of results - o factors affecting reliability: - calibration of equipment - motivation of the participant - conditions of the testing environment (inside versus outside conditions) - experience of the person administering the test - compliance with standardised test procedure. Validity of results. Practicality: - o cost - o time taken to perform the test - o time taken to set up the test - o time taken to analyse data - o number of participants that can take part in the test at any time. Comparison to normative published data. Analyse and evaluate test results. Recommendations for improvements to fitness performer based on test results.			
Provision	Public provision - advantages and disadvantages. Private provision - advantages and disadvantages. Voluntary provision - advantages and disadvantages.			
Long term effects of exercise	Aerobic endurance training: - o adaptations to the cardiovascular and respiratory systems - o cardiac hypertrophy - o decreased resting heart rate - o increased strength of respiratory muscles - o capillarisation around alveoli. Flexibility training:			

	- o adaptations to the muscular and skeletal systems - o increased range of movement permitted at a joint - o increased flexibility of ligament and tendons - o increased muscle length. Muscular endurance training: - o adaptations to the muscular system - o capillarisation around muscle tissues - o increased muscle tone. Muscular strength and power training: - o adaptations to the muscular and skeletal systems - o muscle hypertrophy - o increased tendon and ligament strength - o increased bone density. Speed training: - o adaptations to the muscular system - o increased tolerance to lactic acid.			
Motivation	Definition of motivation – the internal mechanisms and external stimuli that arouse and direct behaviour. Types of motivation: - o intrinsic - o extrinsic. Principles of setting goals to increase and direct motivation. Personal goals – specific, measurable, achievable, realistic, time-related, exciting, recorded (SMARTER): - o short-term goals (set over a short period of time, between one day and one month) - o long-term goals (what they want to achieve in the long term, and the best way of doing this). Influence of goal setting on motivation: - o provide direction for behaviour - o maintain focus on the task in hand. Benefits of motivation on the sports performer: - o increase participation - o maintain training and intensity - o increased fitness - o improved performance.			
Training methods	Aerobic endurance: o continuous training – steady pace and moderate intensity for a minimum period of 30 minutes			

	o Fartlek training - the intensity of training is varied by running at different speeds and/or over different terrain o interval training - work period followed by a rest or recovery period o for aerobic endurance decrease the number/length of rest periods and decrease work intensity (compared to speed training) o circuit training - use of a number of stations/exercises completed in succession with minimal rest periods in between to develop aerobic endurance. Flexibility: o static active - the performer applies internal force to stretch and lengthen the muscle o static passive - requires the help of another person or an object, e.g. a wall to apply external force causing the muscle to stretch o Proprioceptive Neuromuscular Facilitation (PNF) technique - the technique involves the use of a partner or immovable object, isometric muscle contractions to inhibit the stretch reflex. Muscular endurance: o free weights and fixed resistance machines - high repetitions and low loads o circuit training - using body resistance exercises or weights with low loads and high repetitions. Muscular strength training: o free weights and fixed resistance machines - high loads and low repetitions. Speed: o acceleration sprints - pace is gradually increased from a standing or rolling start to jogging, then to striding, and then to a maximal sprint o interval training - work period followed by a rest or recovery period. For speed short, high intensity work periods, increasing the number of rest periods and increasing work intensity (compared to aerobic endurance training) o resistance drills - hill runs, parachutes, sleds, bungee ropes, resistance bands.			
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	Agility: o Speed Agility and Quickness training (SAQ) - drills used to develop physical ability and motor skills. Power: o plyometrics - lunging, bounding, incline press-ups, barrier hopping and jumping. Balance: o use of specific training exercises that require balancing on a reduced size base of support. Coordination: o use of specific training exercises using two or more body parts together. Reaction time: o use of specific training exercises to practise quick responses to an external stimulus.			
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