



Government of **Western Australia**
School Curriculum and Standards Authority

PHYSICAL EDUCATION STUDIES

ATAR Year 11

Syllabus support document

Acknowledgement of Country

Kaya. The School Curriculum and Standards Authority (the Authority) acknowledges that our offices are on Whadjuk Noongar boodjar and that we deliver our services on the country of many traditional custodians and language groups throughout Western Australia. The Authority acknowledges the traditional custodians throughout Western Australia and their continuing connection to land, waters and community. We offer our respect to Elders past and present.

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Purpose

This document is intended to support the delivery of the Year 11 Physical Education Studies ATAR syllabus. It contains conventions, definitions and examples to provide teachers and students with clarity relating to the expected depth of teaching of most content points in the syllabus.

Syllabus content

Content	Notes
Developing physical skills and tactics	
<ul style="list-style-type: none"> develop a range of sport-specific movement skills and techniques to enhance performance 	
<ul style="list-style-type: none"> select, adapt and apply skills and techniques in games and other competitive situations 	
<ul style="list-style-type: none"> select and apply tactics to solve sport specific tactical problems <ul style="list-style-type: none"> use of space positioning decision making 	Tactic: a predetermined skill or action aimed to achieve a certain goal, used to outplay an opponent.
Functional anatomy	
<ul style="list-style-type: none"> bones 	<ul style="list-style-type: none"> identification of the bones in the body listed in the syllabus and their main uses in the creation of movement
<ul style="list-style-type: none"> muscles 	<ul style="list-style-type: none"> identification of the muscles in the body listed in the syllabus and their main uses in the creation of movement
<ul style="list-style-type: none"> characteristics of skeletal muscle tissue and their relationship to the production of movement for physical activity <ul style="list-style-type: none"> excitability contractibility extendibility elasticity 	<ul style="list-style-type: none"> identification of the different characteristics of skeletal muscle examples of how each characteristic affects movement relevance of each characteristic to sports/activities <p>Excitability: the capability of a muscle to respond to a stimulus.</p> <p>Contractibility: the ability of muscle to shorten with force.</p> <p>Extendibility: the ability of a muscle to lengthen or stretch; also referred to as extensibility.</p> <p>Elasticity: the ability of a muscle to return to its original length after being stretched.</p>
<ul style="list-style-type: none"> relationship between the musculoskeletal system and joint movement in the creation of movement <ul style="list-style-type: none"> antagonist pairs 	<ul style="list-style-type: none"> definition of relevant terms examples of muscles that work in partnership to produce movement specific sports skills and the muscles responsible for the relevant movements as a pair

Content	Notes
<ul style="list-style-type: none"> ▪ origin and insertion points of muscles 	<p>Musculoskeletal system: the bones, muscles and all connective tissue in the body responsible for movement.</p> <p>Antagonist pairs: the pair of muscles that contract/relax to produce movement.</p> <p>Agonist: the muscle that contracts in the creation of movement.</p> <p>Antagonist: the muscle that relaxes when movement is produced.</p> <p>Origin: the end of the muscle that is attached to the bone that is fixed (does not move).</p> <p>Insertion: the end of a muscle attached to the moving bone.</p>
<ul style="list-style-type: none"> • movement types created by muscle action and joint movement <ul style="list-style-type: none"> ▪ flexion ▪ extension ▪ circumduction ▪ supination ▪ pronation ▪ rotation ▪ dorsi flexion ▪ plantar flexion ▪ abduction ▪ adduction 	<ul style="list-style-type: none"> • definition of relevant terms • examples of sports skills and types of movement required at relevant joints <p>Flexion: action in which the angle at a joint is decreased, e.g. elbow joint during a bicep curl.</p> <p>Extension: action in which the angle at a joint is increased, e.g. knee joint during execution of a kick.</p> <p>Circumduction: action in which a cone shaped movement is made at a joint, e.g. pitching a softball.</p> <p>Supination: the movement of the palm of the hand to face upward.</p> <p>Pronation: the movement of the palm of the hand to face downward.</p> <p>Rotation: the movement of a body part around its long axis, e.g. turning the head.</p> <p>Dorsi flexion: flexion of the foot so that the toes are brought toward the front of the lower leg.</p> <p>Plantar flexion: extension of the foot so that the toes are pushed away from the front of the lower leg.</p> <p>Abduction: moving a body part away from the body's midline, e.g. raising a straight arm out from the side of the body.</p> <p>Adduction: moving a body part toward the body's midline, e.g. lowering a straight arm towards the side of the body.</p>
<ul style="list-style-type: none"> • structure and function of the circulatory system <ul style="list-style-type: none"> ▪ heart ▪ arteries ▪ veins ▪ capillaries ▪ blood 	<ul style="list-style-type: none"> • functions of the circulatory system • location of each component • function of each component • interrelationship between components

Content	Notes
<ul style="list-style-type: none"> • structure and function of the respiratory system <ul style="list-style-type: none"> ▪ lungs, diaphragm, alveoli (gaseous exchange) ▪ inspiration (inhalation) <ul style="list-style-type: none"> ○ diaphragm contracts ○ thoracic cavity expands ○ air pressure in the lungs drops ○ air is drawn into lungs due to pressure difference ▪ expiration (exhalation) <ul style="list-style-type: none"> ○ diaphragm relaxes ○ pleural cavity contracts ○ air pressure in the lungs increases ○ air is pushed out of the lungs 	<ul style="list-style-type: none"> • definition of relevant terms • location of each component of the respiratory system • function of each component of the respiratory system • the process of gas exchange • the process of inspiration • the process of expiration <p>Gaseous exchange: the process of exchanging oxygen (O₂) and carbon dioxide (CO₂) in the body. This occurs in the lungs and the various tissues.</p> <p>Inspiration (inhalation): the process of taking a breath in.</p> <p>Expiration (exhalation): the process of breathing out.</p>
Exercise physiology	
<ul style="list-style-type: none"> • responses to physical activity <ul style="list-style-type: none"> ▪ heart rate (HR) ▪ stroke volume ▪ blood pressure (BP) ▪ cardiac output ▪ respiratory rate ▪ perspiration ▪ blood redistribution 	<ul style="list-style-type: none"> • definition of relevant terms • reason for and extent of each response to various levels of physical activity • interrelationships between responses

Content	Notes
	<p>Heart rate: the number of times a heart beats in one minute.</p> <p>Stroke volume: the amount (volume) of blood that is pumped out by the heart's left ventricle with each contraction.</p> <p>Blood pressure: the pressure of the blood (measured in mm Hg) against the walls of the blood vessels.</p> <p>Cardiac output: the volume of blood that is pumped by the heart in one minute.</p> <p>Respiratory rate: the number of breaths a person takes in one minute.</p> <p>Perspiration: the release of fluid from the skin, also referred to as sweating.</p> <p>Blood redistribution: the redirection of blood supply to working muscles during exercise.</p>
<ul style="list-style-type: none"> • long-term cardiovascular and respiratory effects of training <ul style="list-style-type: none"> ▪ cardiac hypertrophy ▪ heart rate (HR) ▪ stroke volume ▪ blood pressure (BP) ▪ blood volume/haemoglobin ▪ maximum oxygen uptake (VO₂ max) ▪ capillarisation ▪ ventilation ▪ oxygen exchange 	<ul style="list-style-type: none"> • definition of relevant terms • reason for and extent of each effect at various levels of training • interrelationships between effects • possible influence of these effects on sports performance <p>Cardiac hypertrophy: the increase of the thickness of the ventricle wall following endurance training.</p> <p>Heart rate: the number of times a heart beats in one minute.</p> <p>Stroke volume: the amount (volume) of blood that is pumped out by the heart's left ventricle) with each contraction.</p> <p>Blood pressure: the pressure of the blood (measured in mm Hg) against the walls of the blood vessels.</p> <p>Blood volume/haemoglobin: the volume of blood in an average human adult body; approximately five litres. The average amount of haemoglobin per 100 mL of blood in a human body.</p> <p>Maximum oxygen uptake (VO₂ max): the maximum amount of oxygen the body can use during activity.</p> <p>Capillarisation: the increase of the number of capillaries at the alveoli and muscles, which results in more oxygen being supplied to working muscles.</p> <p>Ventilation: the exchange of air between the environment and the lungs.</p> <p>Oxygen exchange: the process of exchanging oxygen (O₂) and carbon dioxide (CO₂) in the body. This occurs in the lungs and the various tissues.</p>

Content	Notes
<ul style="list-style-type: none"> • utilisation of carbohydrates, fats and proteins as energy sources for physical activity 	<ul style="list-style-type: none"> • energy provided by carbohydrates, proteins and fats • ways in which energy from carbohydrates, proteins and fats are used by the body during various activities
<ul style="list-style-type: none"> • the energy systems and their response to physical activity <ul style="list-style-type: none"> ▪ anaerobic <ul style="list-style-type: none"> ○ adenosine triphosphate creatine phosphate (ATP-CP) ○ lactic acid ▪ aerobic 	<ul style="list-style-type: none"> • characteristics of anaerobic and aerobic energy systems • responses of each energy system to physical activity • interrelationship between energy systems <p>Anaerobic energy system: the production of energy without the use of oxygen. There are two energy systems in this category: ATP-CP and lactic acid.</p> <p>ATP-CP system: the first source of energy. This system uses creatine phosphate by breaking it down and using the energy to produce ATP. This system lasts for approximately 10 seconds of high intensity exercise.</p> <p>Lactic acid system: the next source of energy without the presence of oxygen through the breakdown of glycogen. It may produce energy for approximately two minutes. Lactic acid is produced as a by-product.</p> <p>Aerobic energy system: the system that produces energy when a sufficient amount of oxygen is available.</p>
<ul style="list-style-type: none"> • relationship between energy systems and types of physical activity <ul style="list-style-type: none"> ▪ the energy system continuum 	<ul style="list-style-type: none"> • the duration of each energy system • periods when more than one energy system is being used • maximum duration of each system • graph indicating the continuum <p>The energy system continuum: refers to the overlap between energy systems. This overlap may be influenced by the intensity and nature of the activity.</p>
<ul style="list-style-type: none"> • interrelationship between training methods, principles of training and fitness components 	<ul style="list-style-type: none"> • the components of fitness that can be improved by each training method • the components of fitness that can be improved by each principle of training • ways in which a training principle can be incorporated into each method of training <p>Principles of training: the principles that underpin all training sessions or programs.</p> <p>Fitness components: the components that make up a person's overall fitness level.</p>
<ul style="list-style-type: none"> • training methods 	<ul style="list-style-type: none"> • characteristics of each training method • benefits of incorporating each training method into a program

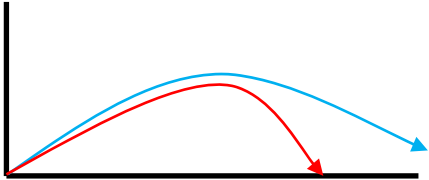
Content	Notes
<ul style="list-style-type: none"> ▪ resistance training – isometric, isotonic, isokinetic ▪ interval training (short and long) ▪ continuous training ▪ circuit training ▪ fartlek ▪ flexibility ▪ plyometrics 	<p>Resistance training: providing a resistance against which a muscle works, most often characterised by lifting weights.</p> <p>Isometric: occurs when a muscle works against a force but does not change length.</p> <p>Isotonic: occurs when the working muscle changes length to produce movement against a constant load.</p> <p>Isokinetic: occurs when a working muscle changes length at an even speed against a resistance. This is usually achieved through the use of specialist equipment.</p> <p>Interval training: the use of alternate work and rest periods during a training session.</p> <p>Continuous training: a training session where the athlete works without a rest period at a lower intensity for longer periods of time.</p> <p>Circuit training: a series of exercises performed in a circuit with or without the use of weights. Each exercise is followed by a short, consistent break of approximately 15–20 seconds.</p> <p>Fartlek: this involves the variation of the duration or intensity of work periods with rest periods of varying lengths within a training session.</p> <p>Flexibility: the type of training that is specifically designed to improve an athlete’s flexibility.</p> <p>Plyometrics: the type of training that involves an athlete jumping from various heights and immediately following this with a rebounding jump.</p>
<ul style="list-style-type: none"> • principles of training <ul style="list-style-type: none"> ▪ progressive overload <ul style="list-style-type: none"> ○ frequency ○ intensity ○ time (duration) ○ type ▪ specificity ▪ reversibility (detraining) 	<ul style="list-style-type: none"> • characteristics of each principle • benefits of incorporating each principle into a program <p>Progressive overload:</p> <ul style="list-style-type: none"> • Frequency: the number of training sessions in a week. • Intensity: how hard a training session is. • Time (duration): the total duration of a training session. • Type: the type of exercise being used. <p>Specificity: refers to the benefits to the athlete’s component of fitness being related to the type of training used.</p> <p>Reversibility (detraining): refers to the reversing of any improvements or adaptations an athlete has made soon after a training regime has stopped.</p>
<ul style="list-style-type: none"> • components of fitness <ul style="list-style-type: none"> ▪ cardiorespiratory endurance 	<ul style="list-style-type: none"> • characteristics of each component • training methods with greatest benefit to each component • factors that affect each component

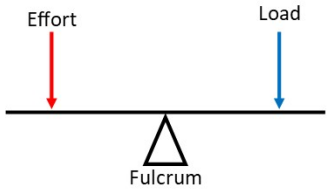
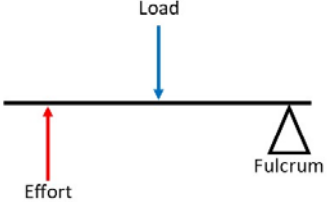
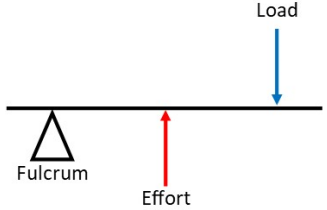
Content	Notes
<ul style="list-style-type: none"> ▪ muscular strength ▪ muscular endurance ▪ flexibility ▪ body composition ▪ agility ▪ balance ▪ coordination ▪ reaction time ▪ speed ▪ power 	<p>Cardiorespiratory endurance: the ability of the cardiac and respiratory systems to work efficiently to produce energy and allow a person to keep moving. Also referred to as aerobic fitness.</p> <p>Muscular strength: the greatest amount of force that a muscle can produce in a single contraction.</p> <p>Muscular endurance: the ability of a muscle to continue producing force over an extended period of time.</p> <p>Flexibility: the range of motion at a particular joint.</p> <p>Body composition: the proportion of fatty tissue to other tissue in the body.</p> <p>Agility: the ability of a person to move efficiently and quickly in different directions.</p> <p>Balance: the ability of a person to maintain their body in a specific position.</p> <p>Static balance: the ability to maintain balance while stationary.</p> <p>Dynamic balance: the ability to maintain balance while the body is moving.</p> <p>Coordination: the ability to perform skills using various body parts smoothly and efficiently.</p> <p>Reaction time: the time between a stimulus and a person's movement in response.</p> <p>Speed: how quickly a person or a body part moves.</p> <p>Power: the ability of a muscle to produce a force in a short amount of time.</p>
Motor learning and coaching	
<ul style="list-style-type: none"> • classification of motor skills <ul style="list-style-type: none"> ▪ gross 	<ul style="list-style-type: none"> • definition of relevant terms • examples of sporting movements in each category

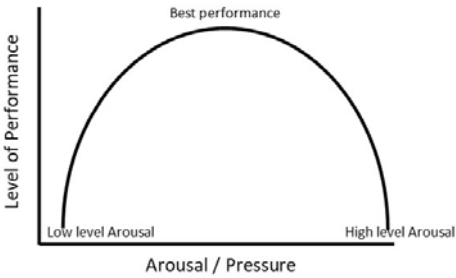
Content	Notes
<ul style="list-style-type: none"> ▪ fine ▪ open ▪ closed ▪ discrete ▪ serial ▪ continuous 	<p>Motor skill: a specific movement performed for the specific purpose of achieving a desired outcome.</p> <p>Gross motor skills: a skill that involves large muscle groups. E.g. swimming.</p> <p>Fine motor skills: a skill that involves smaller muscles and performed with much more precision. E.g. typing on a keyboard.</p> <p>Open motor skills: a skill performed which takes into account possible changing environment factors and may require adjustment to the action. E.g. a shot for goal in Australian football.</p> <p>Closed motor skills: a skill performed in which the environment is more predictable and is not likely to change. E.g. a serve in Volleyball.</p> <p>Discrete motor skills: a skill that has a distinct beginning and end. E.g. free throw in Basketball.</p> <p>Serial motor skills: a skill that is performed by following a specific sequence of movements. E.g. performing a triple jump.</p> <p>Continuous motor skills: a skill without a distinct beginning and end. E.g. running.</p>
<ul style="list-style-type: none"> • Fitts and Posner phases of motor learning and how they can be used to develop/improve specific physical skills 	<ul style="list-style-type: none"> • Fitts and Posner phases of motor learning <ul style="list-style-type: none"> ▪ cognitive ▪ associative ▪ autonomous
<ul style="list-style-type: none"> • types of cues used to improve performance 	<ul style="list-style-type: none"> • definition of each type of cue • examples of how each type can affect performance

Content	Notes
<ul style="list-style-type: none"> ▪ visual ▪ verbal ▪ proprioceptive 	<p>Visual cues: information received through the eyes (e.g. position of opponent) which may be used to affect performance.</p> <p>Verbal cues: information received through spoken language (e.g. coach's instructions) which may be used to affect performance.</p> <p>Proprioceptive cues: information received through knowledge of the position of a person's body (e.g. during a somersault) which may be used to affect performance.</p>
<ul style="list-style-type: none"> • information processing model during skill performance <ul style="list-style-type: none"> ▪ identification of stimuli/ input ▪ response identification/ decision making ▪ response/output ▪ feedback 	<ul style="list-style-type: none"> • definition of each stage • examples of actions at each stage • links between each stage and the one before/after • factors that may affect each stage
<ul style="list-style-type: none"> • types of feedback <ul style="list-style-type: none"> ▪ intrinsic (inherent) ▪ extrinsic (augmented) <ul style="list-style-type: none"> ○ terminal – knowledge of results, knowledge of performance ○ concurrent ○ verbal ○ non-verbal 	<ul style="list-style-type: none"> • definition of each type of feedback • examples of each type of feedback • appropriate use of each type in specific sporting situations <p>Feedback: information provided to an athlete regarding their performance, designed to be used for improvement.</p> <p>Intrinsic (inherent) feedback: the feedback provided to the athlete by the way a movement feels while it is being performed.</p> <p>Extrinsic (augmented) feedback: feedback provided to the athlete from external sources such as a coach, regarding their performance.</p> <p>Terminal feedback: feedback provided to the athlete following the completion of a performance.</p> <p>Knowledge of results: information provided to the athlete from external sources about how successfully the skill was performed.</p> <p>Knowledge of performance: information provided to the athlete about the way the skill was performed.</p> <p>Concurrent feedback: feedback provided to the athlete during the performance of a skill or routine.</p> <p>Verbal feedback: feedback that is provided verbally as in a discussion following a performance.</p> <p>Non-verbal feedback: feedback that is provided without use of language such as hand signals, arm gestures etc.</p>

Content	Notes
<ul style="list-style-type: none"> • purpose of feedback <ul style="list-style-type: none"> ▪ reinforcement ▪ motivation 	<ul style="list-style-type: none"> • outline of how feedback can be used to reinforce performance or motivate the athlete/team • examples of how different types of feedback can be used for each purpose
	<p>Reinforcement: motivating aspects that support a person’s action and encourage its continued use.</p> <p>Motivation: the level of intensity and involvement of an athlete’s effort towards a given task.</p>
Biomechanics	
<ul style="list-style-type: none"> • definition of the following terms: <ul style="list-style-type: none"> ▪ linear motion ▪ angular motion ▪ general motion ▪ projectile motion 	<ul style="list-style-type: none"> • definition of all relevant terminology • links between different types of motion • sporting examples of activities that utilize the different types of motion • different paths followed by a variety of projectiles <p>Linear motion: when all parts of an object move in the same direction.</p> <p>Angular motion: the rotation of an object about a fixed point, e.g. the arm of a pedal on a bike.</p> <p>General motion: a combination of linear and angular motion.</p> <p>Projectile motion: the motion of a projectile after being launched/released and the curved path it travels in under the action of gravity.</p>
<ul style="list-style-type: none"> • application of linear motion to sport in relation to: <ul style="list-style-type: none"> ▪ speed ▪ velocity ▪ acceleration 	<ul style="list-style-type: none"> • definition of each term • sporting examples of activities that utilize each aspect of linear motion <p>Speed: refers to the distance an object travels over a certain period.</p> <p>Velocity: the speed of an object in a specific direction.</p> <p>Acceleration: the process of increasing speed.</p>
	<ul style="list-style-type: none"> • definition of relevant terms • examples of how each aspect may be used in a sporting context

Content	Notes
<ul style="list-style-type: none"> • application of projectile motion to sport in relation to: <ul style="list-style-type: none"> ▪ optimal projection ▪ parabolic trajectory ▪ release of projectiles <ul style="list-style-type: none"> ○ angle ○ velocity ○ height 	<p>Optimal projection: the combination of height of release and angle at which a projectile must travel to maximise distance travelled or to meet the demands of the task.</p> <p>Parabolic trajectory: the path of a projectile as it travels through the air and is acted on by gravity and other forces such as drag.</p> 
<ul style="list-style-type: none"> • definition of the principle of balance and how it applies to sport in relation to: <ul style="list-style-type: none"> ▪ base of support ▪ height of centre of gravity ▪ line of centre of gravity ▪ mass ▪ static balance ▪ dynamic balance 	<p>Balance: the ability to maintain stability and keep the centre of gravity within the base of support to maintain or hold an object's position.</p> <p>Centre of gravity: the point around which a body's weight is evenly distributed.</p> <p>Static balance: the ability to maintain stability in a fixed position.</p> <p>Dynamic balance: the ability to maintain stability while the body is in motion.</p>
<ul style="list-style-type: none"> • definition of Newton's First, Second and Third Laws of Motion, and how they apply to sporting contexts 	<p>First Law of Motion: an object will remain at rest or in uniform motion, maintaining its speed and direction, until acted on by an external force.</p> <p>Second Law of Motion: the acceleration of an object is proportional to the force and inversely proportional to its mass ($F=ma$).</p> <p>Third Law of Motion: for every action, there is an equal and opposite reaction.</p>

Content	Notes
<ul style="list-style-type: none"> definition of the three classes of levers <ul style="list-style-type: none"> axis (fulcrum) resistance (load) force (effort) 	<p>Class 1: the fulcrum is situated between the effort and the load.</p>  <p>Class 2: the load is situated between the fulcrum and the effort.</p>  <p>Class 3: the effort is situated between the fulcrum and the load.</p>  <p>Axis (fulcrum): the point of support within a lever.</p> <p>Resistance (load): the object or force that requires moving.</p> <p>Force (effort): that part of a lever where force is applied to move an object.</p>
<p>Sport psychology</p>	
<ul style="list-style-type: none"> psychological considerations for improved performance 	<ul style="list-style-type: none"> definition of each term examples of how each aspect can affect performance

Content	Notes
<p>and achieving the ideal performance state ('the zone')</p> <ul style="list-style-type: none"> ▪ motivation ▪ self-confidence ▪ stress management ▪ concentration or attentional control – Nideffer's model ▪ arousal regulation for optimal performance, including the inverted U hypothesis 	<p>Ideal performance state: the level of mental preparation or arousal that an athlete needs to achieve in order to perform at their optimal best. Also referred to as 'the zone'.</p> <p>Motivation: the level of intensity and involvement of an athlete's effort towards a given task.</p> <p>Self-confidence: the belief that you will be successful towards a given task or behaviour.</p> <p>Concentration: the ability to focus on a task whilst ignoring irrelevant cues or distractions.</p> <p>Attentional control: the ability of a person to select what is important and useful and what is not.</p> <p>Arousal regulation: controlling the degree of 'readiness' or alertness present in a performer at the time of performance.</p> <p>Inverted U hypothesis:</p> 
<ul style="list-style-type: none"> • influence of age, skill level, and type of activity on motivation, arousal regulation (inverted U hypothesis), concentration in physical activity 	
<ul style="list-style-type: none"> • goal setting <ul style="list-style-type: none"> ▪ characteristics of goals (SMARTER) ▪ types of goals <ul style="list-style-type: none"> ○ performance ○ outcome ○ process 	<ul style="list-style-type: none"> • specific – goals that are precise and detailed • measurable – goals that outline a way in which an athlete can quantify or rate their performance • achievable – the goal is realistic for the timeframe set but also challenges the performer • relevant – the goal is linked directly to the performer or part of the overall plans of their team • timely – a date is set by which the goal is to be achieved • evaluated – an evaluation is made of any outcome or progress toward the attainment of the goal • revised – following the evaluation of an outcome, the goal is either achieved or revised due to specific circumstances

Content	Notes
	<p>Performance goals: refer directly to the level of performance expected, e.g. throwing 33 m in javelin or running the 200 m sprint in 23 seconds.</p> <p>Outcome goals: refer to the result in comparison to others, e.g. finishing in the top four of the soccer league.</p> <p>Process goals: refer to the performance in executing a skill such as improvement in batting technique.</p>