

The accreditation period for Units 1–4 has been extended until 31 December 2024.

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Contents

[Introduction 2](#_Toc454883789)

[Administration 2](#_Toc454883790)

[Developing a teaching and learning program 2](#_Toc454883791)

[Resources 2](#_Toc454883796)

[Employability skills 2](#_Toc454883797)

[Assessment 2](#_Toc454883798)

[Scope of tasks 2](#_Toc454883799)

[Units 1 and 2 2](#_Toc454883800)

[Units 3 and 4 2](#_Toc454883801)

[Authentication 2](#_Toc454883802)

[Learning activities 2](#_Toc454883803)

[Unit 1: The human body in motion 2](#_Toc454883804)

[Unit 2: Physical activity, sport and society 2](#_Toc454883805)

[Unit 3: Movement skills and energy for physical activity 2](#_Toc454883806)

[Unit 4: Training to improve performance 2](#_Toc454883808)

[Performance Descriptors 2](#_Toc454883811)

[Appendix: Employability skills 2](#_Toc454883812)

Introduction

The VCE Physical Education *Advice for teachers* handbook provides curriculum and assessment advice for Units 1 to 4. It contains advice for developing a course with examples of teaching and learning activities and resources for each unit.

Assessment information is provided for school-based assessment in Units 3 and 4 and advice for teachers on how to construct assessment tasks with suggested performance descriptors and rubrics.

The course developed and delivered to students must be in accordance with the [VCE Physical Education Study Design Units 1 and 2: 2017–2022; Units 3 and 4: 2018–2022](http://www.vcaa.vic.edu.au/Pages/vce/studies/physicaledu/phyeduindex.aspx).

Administration

Advice on matters related to the administration of Victorian Certificate of Education (VCE) assessment is published annually in the [*VCE and VCAL Administrative Handbook.*](file://VCAAFS01/Curriculum%24/VCE/Implementation/2015/VCE%20and%20VCAL%20Administrative%20Handbook.) Updates to matters related to the administration of VCE assessment are published in the [*VCAA Bulletin.*](file://VCAAFS01/Curriculum%24/VCE/Implementation/2015/VCAA%20Bulletin%20VCE%2C%20VCAL%20and%20VET.)

Teachers must refer to these publications for current advice.

VCE Physical Education Study Design examination specifications, past examination papers and corresponding examination reports can be accessed at: [www.vcaa.vic.edu.au/Pages/vce/studies/physicaledu/exams.aspx](http://www.vcaa.vic.edu.au/Pages/vce/studies/physicaledu/exams.aspx)

Graded Distributions for Graded Assessment can be accessed at [www.vcaa.vic.edu.au/Pages/vce/statistics/subjectstats.aspx](http://www.vcaa.vic.edu.au/Pages/vce/statistics/subjectstats.aspx)

Developing a teaching and learning program

The program outlines the nature and sequence of teaching and learning necessary for students to demonstrate achievement of the set of outcomes for a unit. The areas of study describe the learning context and the knowledge and skills required for the demonstration of each outcome.

Teachers should use the study design and this advice to develop a teaching and learning program that includes appropriate learning activities to enable students to develop the knowledge and skills identified in the outcomes in each unit.

Practical work

Experiential learning should be at the forefront of the planning and delivery of VCE Physical Education to allow students to learn in, through and about movement. Practical activities should be used as learning tasks and not treated separately from theory classes.

While practical work may be used to reinforce or support the understanding of theoretical concepts, much of the learning that occurs in VCE Physical Education should be taking place through student participation in a broad range of movement experiences.

Through the integration of theoretical concepts with practical experiences, students develop an understanding of the core concepts within VCE Physical Education. Practical activities may include laboratory work, data collection, physical activity, sports and games. Activities do not necessarily need to run for the whole class and may be a demonstration, a whole- class activity or a small group task. Activities can be done outside and/or in the classroom, gym, a sporting facility, or at another suitable venue for the activity. Students who are injured or unable to participate should have practical activities modified accordingly or, where appropriate, they should be given an alternative task. Teachers must allocate sufficient time to ensure that the practical component of VCE Physical Education is adequately covered. As a guide, across each unit between 10 and 15 hours of class time should be devoted to student practical work.

Context for learning

When providing students with suitable activities, teachers need to consider both the performance and participation aspects of physical activity, sport and exercise. The intention is to develop an understanding across the units of the refinement of movement skills and improvement in performance and/or physical activity from both a physiological and socio-cultural perspective at the individual level, the population level and at the elite level.

Data collection

Throughout VCE Physical Education, students are expected to collect and analyse both primary and secondary data. Primary data collected from student involvement in practical activities may include numerical data, visual evidence and written observations. Students should be provided with opportunities to collect and record data as well as to take part in the movement experiences being analysed. Where students are collecting data for analysis, the process may involve the whole group or small groups of students; however, the analysis of data must be an individual task. Secondary data may also include numerical data, visual evidence and written accounts. Secondary data could be sourced from organisations such as the Australian Bureau of Statistics, the Australian Institute of Sport, the AFL and Tennis Australia (see the Resource list for a comprehensive list of organisations). Secondary data can be used for analysis and/or for comparisons to primary data.

The use of technology for gathering and analysing data, such as personal physical activity tracking devices, apps and digital recording devices, should enable students to demonstrate an understanding of the relationship being investigated or to demonstrate a theoretical connection.

In designing courses and developing learning activities for VCE Physical Education, teachers should make use of applications of information and communications technology (ICT). As well as capturing and recording data for analysis, as detailed above, information and communications technology could also assist students to:

* simulate laboratory activities
* organise data and identify relationships
* analyse data, movement or activity
* communicate with others online to share ideas, discuss content, conduct research, gather information and co-create new understandings
* present findings and ideas.

Glossary

For the purposes of this study design the following definitions will apply.

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| **Term** | **Definition** |
| Acute  | The immediate response the body has to physical stress (exercise).  |
| Aerobic power | The rate of energy production from the aerobic energy system (i.e. energy produced in the presence of oxygen).  |
| Aerobic glycolysis | The breakdown of glycogen in the presence of oxygen to produce energy, carbon dioxide, water and heat.  |
| Anaerobic capacity | The total amount of energy obtainable from the anaerobic energy systems (the combined capacity of the ATP-PCr system and anaerobic glycolysis system).  |
| Anaerobic glycolytic energy system | An energy system that relies on the breakdown of glycogen, in the absence of oxygen, to produce energy. Also known as the glycolytic/ non-oxidative energy system.  |
| Anaerobic power  | The amount of energy that can be generated by the anaerobic energy systems per unit of time. Rate of energy production anaerobically. |
| ATP-PCr energy system  | An immediate energy system that does not require oxygen. Also known as the phosphagen system.  |
| Associative phase | The second phase in the learning of a new skill in which movement patterns become more refined and consistent through practice. |
| Autonomous phase | The final phase in the learning of a new skill in which the control of movement appears to be automatic and free of the need for constant attention. |
| Blocked practice | A type of practice in which each skill component is practiced repetitively as an independent block. |
| Centre of mass | The theoretical point in an object at which its entire mass appears to be concentrated; also known as centre of gravity. |
| Chronic adaptations | Physiological changes of the cardiovascular, respiratory and muscular systems as a result of long-term training.  |
| Cognitive phase | The initial phase in the learning of a motor skill where the emphasis is on conscious understanding of the task requirements. |
| Degrees of freedom | The number of independent variables (muscles, joint angles) that must be simultaneously controlled to produce purposeful movement. |
| Displacement  | The difference between the initial position and the final position of an object.  |
| Erythropoietin (EPO) | A polypeptide hormone produced in the kidneys. Synthetic EPO is an illegal performance-enhancing supplement that may improve performance in endurance events. |
| Force summation | The correct timing and sequencing of body segments and muscles through a range of motion.  |
| Hypertrophy | An increase in the size of each cell forming a tissue. |
| Homeostasis | Maintenance of metabolic equilibrium in an organism. |
| Inactivity | Not being physically active – failure to meet the desired levels of physical activity as described by the Physical Activity Guidelines.  |
| Interplay  | The three energy systems working together to produce the energy required for the activity being undertaken.  |
| Inertia | The resistance of a body to a change in its state of motion. |
| Isoinertial | Muscle action where the force is constant throughout the motion. |
| Isokinetic | Muscle action where the velocity of movement is constant throughout the motion. |
| Isometric | Muscle action where the muscle length remains constant while force is developed.  |
| Kinematics | The description of motion. |
| Lactate inflection point (LIP) | The point of inflection on the curve of blood lactate vs. exercise intensity above which, as the rate of lactate production exceeds removal, blood lactate concentrations increase disproportionally with increasing exercise intensity. |
| Kinetics | The study of forces that cause motion. |
| Moment of inertia | A measure of an object’s resistance to change in its rate of rotation.  |
| Momentum | The product of mass and velocity. For example, a body with greater mass moving faster will have greater momentum than a lighter object moving slower.  |
| Muscular endurance  | The ability of a muscle or group of muscles to sustain repeated contractions against a resistance for an extended period of time.  |
| Muscular power  | The ability of a muscle or group of muscles to exert a maximum amount of force in the shortest period of time.  |
| Muscular strength  | Peak force that a muscle can develop.  |
| Physical activity | Bodily movement produced by contraction of skeletal muscle that increases energy expenditure above the basal level. This may include activities such as sport, exercise and active transport, household chores and recreational activities. |
| Reciprocal inhibition  | Muscles working together to produce movement – muscles on one side of the joint relaxing to accommodate contraction on the other side of the joint.  |
| Sedentary behaviour  | Activities that do not increase energy expenditure substantially above the resting level. Sedentary behaviours include activities such as sleeping, lying down, sitting, watching television and other screen-based entertainment.  |
| Sociocultural | Of, or relating to the interaction of social and cultural elements such as family, peers, community, gender, socio-economic status, cultural beliefs and traditions. |
| Size principle | The principle by which motor units are recruited in order of their size from smallest to largest. |
| Social-ecological model  | A model that recognises the interwoven relationship that exists between the individual and their environment and the factors that affect their behaviour.  |
| Speed  | The rate of motion (distance/time). |
| Stabilisers | Muscles which contract to fixate the area so that another limb or body segment can exert a force and move.  |
| Static equilibrium | The state in which a body has zero velocity and zero acceleration. A body is in equilibrium when the sum of all forces and the sum of all moments acting on the body are zero. |

Resources

A list of [resources](http://www.vcaa.vic.edu.au/Pages/vce/studies/physicaledu/phyeduindex.aspx) is published online on the VCAA website and is updated annually. The list includes teaching, learning and assessment resources, contact details for subject associations and professional organisations.

Employability skills

The VCE Physical Education study provides students with the opportunity to engage in a range of learning activities. In addition to demonstrating their understanding and mastery of the content and skills specific to the study, students may also develop employability skills through their learning activities.

The nationally agreed employability skills are: Communication; Planning and organising; Teamwork; Problem solving; Self-management; Initiative and enterprise; Technology; and Learning.

The [table](#EmploySkills) links those facets that may be understood and applied in a school or non-employment related setting, to the types of assessment commonly undertaken within the VCE study.

Assessment

Assessment is an integral part of teaching and learning. At the senior secondary level it:

* identifies opportunities for further learning
* describes student achievement
* articulates and maintains standards
* provides the basis for the award of a certificate.

As part of VCE studies, assessment tasks enable:

* the demonstration of the achievement of an outcome or set of outcomes for satisfactory completion of a unit
* judgment and reporting of a level of achievement for school-based assessments at Units 3 and 4.

The following are the principles that underpin all VCE assessment practices. These are extracted from the [VCAA *Principles and guidelines for the development and review of VCE Studies*](http://www.vcaa.vic.edu.au/Pages/vce/generaladvice/index.aspx) published on the [VCAA website](http://www.vcaa.vic.edu.au/Pages/index.aspx).

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| **VCE assessment will be valid** | This means that it will enable judgments to be made about demonstration of the outcomes and levels of achievement on assessment tasks fairly, in a balanced way and without adverse effects on the curriculum or for the education system. The overarching concept of validity is elaborated as follows. |
| **VCE assessment should be fair and reasonable** | Assessment should be acceptable to stakeholders including students, schools, government and the community. The system for assessing the progress and achievement of students must be accessible, effective, equitable, reasonable and transparent.The curriculum content to be assessed must be explicitly described to teachers in each study design and related VCAA documents. Assessment instruments should not assess learning that is outside the scope of a study design.Each assessment instrument (for example, examination, assignment, test, project, practical, oral, performance, portfolio, presentation or observational schedule) should give students clear instructions. It should be administered under conditions (degree of supervision, access to resources, notice and duration) that are substantially the same for all students undertaking that assessment.Authentication and school moderation of assessment and the processes of external review and statistical moderation are to ensure that assessment results are fair and comparable across the student cohort for that study. |
| **VCE assessment should be equitable** | Assessment instruments should neither privilege nor disadvantage certain groups of students or exclude others on the basis of gender, culture, linguistic background, physical disability, socioeconomic status and geographical location.Assessment instruments should be designed so that, under the same or similar conditions, they provide consistent information about student performance. This may be the case when, for example, alternatives are offered at the same time for assessment of an outcome (which could be based on a choice of context) or at a different time due to a student’s absence. |
| **VCE assessment will be balanced** | The set of assessment instruments used in a VCE study will be designed to provide a range of opportunities for a student to demonstrate in different contexts and modes the knowledge, skills, understanding and capacities set out in the curriculum. This assessment will also provide the opportunity for students to demonstrate different levels of achievement specified by suitable criteria, descriptors, rubrics or marking schemes.Judgment about student level of achievement should be based on the results from a variety of practical and theoretical situations and contexts relevant to a study. Students may be required to respond in written, oral, performance, product, folio, multimedia or other suitable modes as applicable to the distinctive nature of a study or group of related studies. |
| **VCE assessment will be efficient** | The minimum number of assessments for teachers and assessors to make a robust judgment about each student’s progress and learning will be set out in the study design. Each assessment instrument must balance the demands of precision with those of efficiency. Assessment should not generate workload and/or stress that unduly diminish the performance of students under fair and reasonable circumstances. |

Scope of tasks

For Units 1–4 in all VCE studies assessment tasks must be a part of the regular teaching and learning program and must not unduly add to the workload associated with that program. They must be completed mainly in class and within a limited timeframe.

Points to consider in developing an assessment task:

1. List the key knowledge and key skills.
2. Choose the assessment task where there is a range of options listed in the study design. It is possible for students in the same class to undertake different options; however, teachers must ensure that the tasks are comparable in scope and demand.
3. Identify the qualities and characteristics that you are looking for in a student response and design the criteria and a marking scheme
4. Identify the nature and sequence of teaching and learning activities to cover the key knowledge and key skills outlined in the study design and provide for different learning styles.
5. Decide the most appropriate time to set the task. This decision is the result of several considerations including:
* the estimated time it will take to cover the key knowledge and key skills for the outcome
* the possible need to provide a practice, indicative task
* the likely length of time required for students to complete the task
* when tasks are being conducted in other studies and the workload implications for students.

Units 1 and 2

The student’s level of achievement in Units 1 and 2 is a matter for school decision. Assessments of levels of achievement for these units will not be reported to the Victorian Curriculum and Assessment Authority (VCAA). Schools may choose to report levels of achievement using grades, descriptive statements or other indicators.

In each VCE study at Units 1 and 2, teachers determine the assessment tasks to be used for each outcome in accordance with the study design.

Teachers should select a variety of assessment tasks for their program to reflect the key knowledge and key skills being assessed and to provide for different learning styles. Tasks do not have to be lengthy to make a decision about student demonstration of achievement of an outcome.

A number of options are provided in each study design to encourage use of a broad range of assessment activities. Teachers can exercise great flexibility when devising assessment tasks at this level, within the parameters of the study design.

Note that more than one assessment task can be used to assess satisfactory completion of each outcome in the units.

Units 3 and 4

The VCAA supervises the assessment for levels of achievement of all students undertaking Units 3 and 4.

There are two main forms of school-based assessment: School-assessed Coursework (SAC) and in some studies, the School-assessed Task (SAT).

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| School–assessed Coursework | A SAC is selected from the prescribed list of assessment tasks designated for that outcome in the study design. A mark allocation is prescribed for each SAC. Teachers may develop their own marking schemes and rubrics or may use the [performance descriptors](#PerfDescript).The [*VCE and VCAL Administrative Handbook*](http://www.vcaa.vic.edu.au/Pages/schooladmin/index.aspx) provides more detailed information about School-assessed Coursework. |

In VCE Physical Education the student’s level of achievement will be determined by School-assessed Coursework and an end-of-year examination. The VCAA will report the student’s level of performance as a grade from A+ to E or UG (ungraded) for each of three Graded Assessment components: Unit 3 School-assessed Coursework, Unit 4 School-assessed Coursework and the end-of-year examination.

In Units 3 and 4 school-based assessment provides the VCAA with two judgments:

S (satisfactory) or N (not satisfactory) for each outcome and for the unit; and levels of achievement determined through specified assessment tasks prescribed for each outcome.

School-assessed Coursework provides teachers with the opportunity to:

* select from the designated assessment task/s in the study design
* develop and administer their own assessment program for their students
* monitor the progress and work of their students
* provide important feedback to the student
* gather information about the teaching program.

Teachers should design an assessment task that is representative of the content (key knowledge and key skills underpinning the outcome) and allows students the opportunity to demonstrate the highest level of performance. It is important that students know what is expected of them in an assessment task. This means providing students with advice about the outcome’s key knowledge and key skills to be assessed. Students should know in advance how and when they are going to be assessed and the conditions under which they will be assessed.

Assessment tasks should be part of the teaching and learning program. For each assessment task students should be provided with the:

* type of assessment task as listed in the study design and approximate date for completion
* time allowed for the task
* allocation of marks
* nature of any materials they can utilise when completing the task
* information about the relationship between the task and learning activities should also be provided as appropriate.

Following an assessment task:

* teachers can use the performance of their students to evaluate the teaching and learning program
* a topic may need to be carefully revised prior to the end of the unit to ensure students fully understand the key knowledge and key skills required in preparation for the examination
* feedback provides students with important advice about which aspect or aspects of the key knowledge they need to learn and in which key skills they need more practice.

Authentication

Teachers should have in place strategies for ensuring that work submitted for assessment is the student’s own. Where aspects of tasks for school-based assessment are completed outside class time teachers must monitor and record each student’s progress through to completion. This requires regular sightings of the work by the teacher and the keeping of records. The teacher may consider it appropriate to ask the student to demonstrate his/her understanding of the task at the time of submission of the work.

If any part of the work cannot be authenticated, then the matter should be dealt with as a breach of rules. To reduce the possibility of authentication problems arising, or being difficult to resolve, the following strategies are useful:

* Ensure that tasks are kept secure prior to administration, to avoid unauthorised release to students and compromising the assessment. They should not be sent by mail or electronically without due care.
* Ensure that a significant amount of classroom time is spent on the task so that the teacher is familiar with each student’s work and can regularly monitor and discuss aspects of the work with the student.
* Ensure that students document the specific development stages of work, starting with an early part of the task such as topic choice, list of resources and/or preliminary research.
* Filing of copies of each student’s work at given stages in its development.
* Regular rotation of topics from year to year to ensure that students are unable to use student work from the previous year.
* Where there is more than one class of a particular study in the school, the VCAA expects the school to apply internal moderation/cross-marking procedures to ensure consistency of assessment between teachers. Teachers are advised to apply the same approach to authentication and record-keeping, as cross-marking sometimes reveals possible breaches of authentication. Early liaison on topics, and sharing of draft student work between teachers, enables earlier identification of possible authentication problems and the implementation of appropriate action.
* Encourage students to acknowledge tutors, if they have them, and to discuss and show the work done with tutors. Ideally, liaison between the class teacher and the tutor can provide the maximum benefit for the student and ensure that the tutor is aware of the authentication requirements. Similar advice applies if students receive regular help from a family member.

Learning activities

Unit 1: The human body in motion

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| **Area of Study 1: How does the musculoskeletal system work to produce movement?** |
| **Outcome 1**: | **Examples of learning activities** |
| Collect and analyse information from, and participate in, a variety of practical activities to explain how the musculoskeletal system functions and its limiting conditions, and evaluate the ethical and performance implications of the use of practices and substances that enhance human movement. | * participate in three different sessions:
* a bush walk or walk around the local area
* a game of hockey, netball, basketball, soccer, tennis etc.
* an aerobics, ‘pump’ or ‘boxercise’ class or weight training session;

at the completion of the sessions, identify the characteristics of each activity and determine the classification of each as either physical activity, sport or exercise* discuss the following statements in relation to the factors that may enable or be a barrier to movement opportunities:
* Thomas, 15 years old, lives on a farm two hours from the nearest town
* Sardanah is 12 years old, and her mother thinks that playing sport and getting sweaty is unladylike
* Jack, 10 years old, loves cricket but his parents cannot afford to pay for his membership, uniform and equipment
* Katie is 15 years old, lives in a large city with sports grounds, swimming pools and extensive walking and cycling paths
* construct a human skeleton, either a model or a paper version, and identify each of the bones
* participate in a game of softball or baseball; for each of the key skills (catching, batting and pitching) identify and name the major joint involved and movement that is occurring
* photocopy, cut and laminate the names of the major muscles of the human body; using a life size outline of the human body, call out or hold up the name of one muscle at a time; the task is to identify where that muscle belongs on the body; the first student who answers correctly, takes the label and sticks it to the body; continue until all major muscles have been labelled
* use a web-based interactive muscle labelling activity to revise the major muscles of the human body such as [www.innerbody.com/image/musfov.html](file://VCAAFS01/Curriculum%24/VCE/Publications/Physical%20Education/2017/Proofs/www.innerbody.com/image/musfov.html) or [www.realbodywork.com/articles/game-muscles-1/](http://www.realbodywork.com/articles/game-muscles-1/)
* complete a 100m sprint and a 20-minute continuous run and use these activities as a context to create a Venn diagram that compares and contrasts the characteristics of fast and slow twitch muscle fibres
* develop and perform a series of weight training exercises that use isoinertial, isometric and isokinetic muscular actions
* design a cartoon, song, animation or diagram to explain the role of agonists, antagonists and stabilisers
* investigate the production of force and the relationship between motor unit recruitment in a variety of movement skills, e.g. throwing for distance versus accuracy, kicking a dry versus wet football, hitting a line drive versus a bunt in softball
* construct a model to demonstrate how muscles pull on bones to create movement
* investigate musculoskeletal overuse injuries in sport and the contributing factors
* research the perceived and actual benefits of including a stretch in a warm up to prevent musculoskeletal injuries
* brainstorm the different physical aids that are used in sports to support the musculoskeletal system; sports could include tennis, gridiron, netball and boxing
* participate in a resistance/weight training session; compare the outcomes of weight training to the use of creatine supplementation and steroids by identifying the similarities and differences between the benefits and potential harms of each method
* role-play the following scenario: Josh is 18 and is playing seniors football for the first time in the amateur league; after the first game, the head trainer tells him he needs to ‘beef up a little’ so that he can compete with the older guys; the coach is known to be a ‘win at all costs’ kind of coach and was heard telling Josh ‘you know what you need to do’; Josh doesn’t know what to do and so he speaks to the captain at the club, his best mate, who also plays football with him and his parents; consider the ethical and sociocultural influences on Josh and his decision, expecially if he is pressured to use an illegal substance to gain the muscle mass needed
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| [**Detailed example**](file://VCAAFS01/Curriculum%24/VCE/Implementation/2015/Detailed%20example) |
| **TO STRETCH OR NOT TO STRETCH, THAT IS THE QUESTION***‘***Task**Students research the perceived and actual benefits of including a stretch in a warm up to prevent musculoskeletal injuries. **Practical activity**Students perform, in order:* a traditional warm up (jogging around the oval/gym followed by a stretch of the major muscles of the body)
* a 20-minute continuous run
* a 20-minute resistance circuit (sit-ups, lunges, push-ups, triceps dips, squats, plank, suicide sprints and Turkish get ups)
* a cool down (5-minute walk, followed by a stretch of the major muscles of the body).

**Reflection**Students record how they feel in terms of muscle soreness over the following one and two days after the exercise. Discuss as a class what factors may contribute to different people feeling different degrees of muscular soreness.**Research task**Students investigate the causes of muscular soreness post exercise and the perceived benefits of including stretching as part of a warm up prior to undertaking physical activity.Using a cause and effect graphic organiser such as a fishbone graphic or flow chart, students summarise the causes of muscular soreness post exercise and the impact of a warm up and stretching on muscular soreness.**Conclusion**Students use the information collected through the practical activity and reflection, in conjunction with the information obtained through the research task to determine if a stretch should or should not be part of a pre-exercise or pre-game warm up. |

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| **Area of Study 2: How does the cardiorespiratory system function at rest and during physical activity?** |
| **Outcome 2**: | **Examples of learning activities** |
| Collect and analyse information from, and participate in, a variety of practical activities to explain how the cardiovascular and respiratory systems function, limiting conditions of each system, and explain the ethical and performance implications of the use of practices and substances to enhance the performance of these two systems. | * explore the structure of the heart through a dissection of a sheep’s heart
* create a flow chart to describe the process of how deoxygenated blood is oxygenated in the body
* research the function of the components of the blood (red blood cells, white blood cells, platelets and plasma) and describe if and how that role changes during exercise compared to being at rest
* investigate the changes in heart rate from rest to sub-maximal exercise through participation in a game (e.g. basketball, netball, soccer or volleyball); use heart rate monitors, and/or an app and/or a manual recording of the heart rate; compare the data collected
* determine the relationship between heart rate and blood flow
* create a visual representation (poster, animation, digital image) of the terms homeostasis, hyperthermia and hypothermia
* demonstrate vasoconstriction and vasodilation using modelling balloons and water
* analyse data to determine the relationship between stroke volume, heart rate and cardiac output at rest, sub-maximal and maximal exercise intensities
* hypothesise what would happen if breathing was not an involuntary muscular contraction
* construct a working model of the lungs
* design and undertake a practical investigation into the effects of physical activity on the respiratory rate
* investigate one cardiovascular or respiratory health issue and identify the physiological, social, cultural and environmental enablers or barriers to the issue selected
* produce a mind map that demonstrates the links between physical activity, sport and exercise and enhanced cardiovascular and respiratory health
* discuss, debate, decide, debrief task: discuss the use of EPO in cycling; debate the issue of illegal drug use in cycling; decide if you agree or disagree with the arguments presented; debrief by identifying the ethical and sociocultural considerations associated with illegal drug use in cycling
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| [**Detailed example**](file://VCAAFS01/Curriculum%24/VCE/Implementation/2015/Detailed%20example) |
| **CARDIOVASCULAR AND RESPIRATORY HEALTH – MODIFIABLE OR NOT?****Task**Students investigate one cardiovascular or respiratory health issue and identify the physiological, social, cultural and environmental enablers or barriers to the issue selected.**Identify the issue**Students select a health issue associated with the cardiovascular or respiratory system (for example, atherosclerosis, coronary heart disease, hypertension or chronic obstructive pulmonary disease).**Analyse the problem**Students research physiological, social, cultural and environmental influences on the identified issue. They analyse data relating to the prevalence of the health issue in Australia and compare this to other countries. **Evaluate possible solutions**Students investigate physiological, social, cultural and environmental enablers of good cardiovascular or respiratory health.**Determine what can be done**Students determine if the enablers and barriers of cardiovascular and respiratory health are modifiable or non-modifiable.**Suggest a plan of action**Students use the information collected, analysed and evaluated to suggest four practical strategies to maintain or improve the identified cardiovascular or respiratory health issue. |

Unit 2: Physical activity, sport and society

Physical Activity and Sedentary Behaviour Guidelines

In Unit 2, students will develop an activity plan that meets the relevant physical activity and sedentary behaviour guidelines. For students studying VCE Physical Education in Australia, the appropriate guidelines are those released by the Australian Government, Department of Health [(www.health.gov.au/internet/main/publishing.nsf/content/health-pubhlth-strateg-phys-act-guidelines](http://(www.health.gov.au/internet/main/publishing.nsf/content/health-pubhlth-strateg-phys-act-guidelines)). If the study of VCE Physical Education is undertaken in a different location, then the guidelines relevant to that country or region or the World Health Organization’s ‘Global recommendations on physical activity for health’ ([www.who.int/dietphysicalactivity/factsheet\_recommendations/en/](http://www.who.int/dietphysicalactivity/factsheet_recommendations/en/)) are suitable to be studied.

Social-ecological models

In Unit 2, students are also expected to apply a social-ecological model to critique physical activity and sedentary behaviour initiatives and strategies. Teachers may use the social-ecological model (SEM) and/or the Youth Physical Activity Promotion (YPAP) model. Models are used to provide a framework to understand the factors and behaviours that enable or act as barriers to physical activity participation. Models help us to identify factors related to physical activity participation in specific populations, therefore enabling the design of more effective interventions.

The social-ecological model helps to identify opportunities to promote participation in physical activity by recognising the multiple factors that influence an individual’s behaviour. It is based on four core principles:

1. Multiple factors influence behaviours.

2. Environments are multidimensional and complex.

3. Human–environment interactions can be described at varying levels of organisation.

4. The interrelationships between people and their environment are dynamic.

Efforts to change behaviour are more likely to be successful when the multiple levels of influence are addressed at the same time. For the purposes of VCE Physical Education the SEM is made up of the following components: individual (personal factors that increase or decrease the likelihood of an individual being physically active), social environment (the relationships, the culture and the society with whom the individual interacts), physical environment (the natural environment and the built or man-made environment) and policy (legislation, regulatory or policy-making actions that have the potential to affect physical activity).



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| **Component of the SEM** | **Examples** |
| Individual | Knowledge, attitudes, behaviours, beliefs, perceived barriers, motivation, enjoyment, skills (including fundamental motor skills and sports specific skills), abilities, disabilities, injuries, age, sex, level of education, socioeconomic status, employment status and self-efficacy. |
| Social environment | Family, such as the influence of parental and sibling physical activity levels and family support, spouse, partner, peers, institutions, organisations, such as schools, workplaces and community organisations, access to social support networks versus social isolation, influence of health and other professionals such as doctors, teachers and coaches, community norms, cultural background and socioeconomic status of the community. |
| Physical environment | Natural factors such as weather and geography, availability and access to facilities such as parks, playgrounds, sporting grounds, gymnasiums, walking or cycling tracks, aesthetics or perceived qualities of facilities and the natural environment, safety such as crime rates and amount and speed of traffic, community design such as connectivity of streets, living in a cul-de-sac, density of housing and land use and public transport. |
| Policy | Urban planning policies, active transport policies, education policies such as mandating time for physical education classes, health policies, environmental policies, workplace policies and funding policies. |

Adapted from the VCAA’s Social-ecological model and physical activity document (2010), available at: .

The Youth Physical Activity Promotion (YPAP) model is a theoretical model that looks at the factors that influence the physical activity behaviour of children and youth. In the context of the YPAP model, ‘youth’ refers to all school-aged children (Foundation–12). The YPAP model is based on the developmental, psychological and behavioural characteristics of children and uses a social-ecological framework, recognising that children’s physical activity behaviour is influenced by the reciprocal relationships between personal, social and environmental factors. Specifically, the model outlines the factors that may predispose, enable and reinforce youth to be physically active. To be effective, physical activity promotion strategies need to address each link in the model.



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| **Factor** | **Examples** |
| Predisposing factors | Variables that collectively increase the likelihood of a person being physically active on a regular basis. This model uses two questions to determine a youth’s predisposition to an active lifestyle: 1. *Is it worth it?* (cognitive variables: attitudes, perceived benefits and beliefs about physical activity and affective variables: enjoyment and interest in physical activity) and 2. *Am I able?* (perceived competence, self-efficacy and physical self-worth). |
| Reinforcing factors | Variables that reinforce a youth’s physical activity behaviour and in the YPAP model influence a youth’s physical activity behaviour directly and indirectly.  |
| Enabling factors | Variables from both the environmental (for example, access to equipment, parks and programs) and biological (for example, physical skills, fitness and BMI) categories that allow youth to be physically active. |
| Personal demographics | Variables (age, gender, ethnicity/culture and SES) that influence how an individual will integrate various influences. The YPAP model shows how the demographic variables can influence each other major component. |

Welk, Gregory J. (1999). ‘The Youth Physical Activity Promotion Model: A Conceptual Bridge Between Theory and Practice’.
*Quest,* *51*(1), 5–23.

Reflective folio

A reflective folio is a compulsory part of the assessment task in Unit 2, Area of Study 1. The reflective folio demonstrates student participation in practical sessions related to the outcome statement. In Unit 2, Area of Study 1, the folio may take the form of a written or electronic diary, where students complete a brief reflection on adherence to the activity plan. Teachers may provide students with prompts about what should be included in their reflection, such as ‘what physical activity did you do today?’; ‘How did you feel before, during and after your activity session?’; ‘What barriers did you need to overcome to participate today?’

Issues analysis

In Unit 2, Area of Study 2, students have the opportunity to investigate a contemporary issue associated with physical activity and sport. While the intention of the study design is for students to select an issue of interest to investigate, teachers may select one issue for the whole class to focus on. Common elements of the issues analysis, such as participation in physical activities and sports relevant to the selected issue and the role of a social-ecological model, may be completed as whole class activities. Student research should be conducted mainly in class time to determine the sociocultural influences on participation in physical activity and sport; the local, national and global perspectives of the issue; and the historical, current and future implications of the issue. The assessment task also has scope for differentiation within the mode of reporting by students. Teachers may allow students to select the format of their report or stipulate a set format for the class.

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| **Area of Study 1**: **What are the relationships between physical activity, sport, health and society?** |
| **Outcome 1**: | **Examples of learning activities** |
| Collect and analyse data related to individual and population levels of participation in physical activity and sedentary behaviour to create, undertake and evaluate an activity plan that meets the physical activity and sedentary behaviour guidelines for an individual or a specific group. | * participate in a range of physical activities such as playing in a playground, playing a game of tag, playing a game of soccer, walking to school, mowing the grass at home, cycling on the local bike paths and describe the characteristics of each activity
* debate the following statement: ‘It is possible to be sufficiently physically active for health and still be highly sedentary’
* use an online tool to construct a survey to determine the influences on participation in physical activity for a specific age group (e.g. children aged 5–12 years, young people 13–18 years, young adults 19–35 years, adults 36–60 years, older adults 60+ years); analyse the results, summarise the findings and compare to other age groups
* analyse secondary data to determine trends in physical activity patterns across the lifespan
* participate in a Tai-Chi class and record observations and reflections on the impact of the activity on physical, social, mental and emotional health
* collect individual data on physical activity, inactivity and sedentary behaviour for one week; analyse the data to determine if the physical activity and sedentary behaviour guidelines for the relevant age group are met
* wear a pedometer for the duration of Unit 1, Area of Study 1; during each class, plot the number of steps taken by each student since the last class; at the end of the unit, determine the virtual distance travelled by each student (e.g. Kate recorded 1,188,000 steps, the equivalent of ‘walking’ from Melbourne to Sydney)
* design, undertake and report on a practical laboratory that compares the use of a subjective and an objective method of assessing physical activity and sedentary behaviour
* construct a ‘Y’ chart to identify what barriers to physical activity ‘look like’, ‘feel like’ and ‘sound like’
* investigate a range of initiatives designed to increase physical activity and/or reduce sedentary behaviour; outline the modality of the initiative, and identify the target population and the setting in which it occurs
* apply the social-ecological model or the Youth Physical Activity Promotion (YPAP) model to critique an initiative designed to increase participation in physical activity within the school, community or workplace
* design and participate in a personal physical activity plan that correctly implements the principles of frequency, intensity, time and type (FITT) and supports adherence to the appropriate physical activity guidelines for the student’s age
* create, implement and evaluate a school-based initiative to reduce the sedentary behaviour of students during lunchtimes
* conduct a SWOT analysis to determine the strengths, weaknesses, opportunities and threats to the implementation of a physical activity initiative at lunchtime
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| [**Detailed example**](file://VCAAFS01/Curriculum%24/VCE/Implementation/2015/Detailed%20example) |
| **IMPLEMENTING THE PRINCIPLES OF FREQUENCY, INTENSITY, TIME AND TYPE****Task**Students design and participate in a personal physical activity plan that correctly implements the principles of frequency, intensity, time and type (FITT) and supports adherence to the appropriate physical activity guidelines for the student’s age.**Analysis of current physical activity and sedentary behaviour**In a diary or log, students individually record all physical activity and sedentary behaviour for 7 days. They then analyse the data to determine current levels of physical activity and sedentary behaviour. From the data recorded in the diary, students identify barriers to participation in physical activity.**Design a weekly activity plan**Students use a simple table format to design a personal physical activity plan that demonstrates correct implementation of the FITT principles and adherence to the physical activity and sedentary behaviour guidelines.**Participation in activity plan**For two weeks, students participate in the activity plan. They record any relevant data at the end of each day. For example, how they were feeling, if they managed to complete the required physical activity, the number of hours/minutes they were sedentary and/ or physically active, and any incidental physical activity etc.**Results**Students graph or tabulate the frequency and time data for physical activity and sedentary behaviour collected from the week prior to implementing the activity plan. They then tabulate the frequency and time data for physical activity and sedentary behaviour collected during participation in the activity plan.**Evaluation**Students evaluate the effectiveness of the activity plan in supporting adherence to the physical activity and sedentary behaviour guidelines. They identify enablers and barriers to participation in physical activity throughout the two weeks. Students draw a conclusion as to the success of the physical activity plan in meeting the physical activity and sedentary behaviour guidelines. **Discussion**Students report to the class on the sociocultural influences on participation in physical activity throughout the program. They discuss the enablers and suggest suitable strategies for overcoming any identified barriers. They comment on the sustainability of the program. Students consider the use of diaries for recording and tracking data and identify the advantages of a different form of measurement. They highlight the benefits of regular physical activity and reducing sedentary behaviour and suggest from the findings where initiatives need to target (settings) if physical activity and sedentary behaviour is to be changed in the long term for this population group. |

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| **Area of Study 2: What are the contemporary issues associated with physical activity and sport?** |
| **Outcome 2**: | **Examples of learning activities** |
| Apply a social-ecological framework to research, analyse and evaluate a contemporary issue associated with participation in physical activity and/or sport in a local, national or global setting. | * brainstorm contemporary issues associated with physical activity and sport
* conduct an audit of national newspapers for one week to categorise the articles related to physical activity and sport; identify major themes that emerge from the audit
* use a survey or direct observation to collect primary data on the number of students who use active transport to travel to and from school
* use a Venn diagram to compare and contrast the local, national and/or global perspectives of a selected issue
* participate in a range of physical activities associated with a contemporary issue in physical activity and sport such as:
* active transport: Melbourne bike share, bike paths and walking tracks
* people with disabilities: Goal ball, blind cricket or wheelchair basketball
* children and competitive sport: modified sports for children, e.g. Netta netball, MILO cricket, Auskick, t-ball
* cultural diversity and inclusion in physical activity: Tai-Chi at Federation Square
* Aboriginals and Torres Strait Islanders: Traditional games such as pirrha, kabi kabi buroinjin, keenta
* risk management and safety: gymnastics, field hockey, surfing
* the community and recreation: indoor rock climbing centres, aquatic centres, sports stadiums
* create a timeline to map out the key developments of a selected issue and predict possible implications for the future
* investigate government, community or individual based strategies designed to promote participation in physical activity and/or sport within the context of the selected issue; apply the social-ecological model or youth physical activity promotion model to evaluate the strategy
* produce a mind map to demonstrate an understanding of the range of sociocultural influences that affect the selected issue
* critique the #LikeaGirl ([www.youtube.com/watch?v=XjJQBjWYDTs](http://www.youtube.com/watch?v=XjJQBjWYDTs)), ‘This girl can’ ([www.thisgirlcan.co.uk/](http://www.thisgirlcan.co.uk/)) and ‘Girls make your move’ ([www.health.gov.au/internet/girlsmove/publishing.nsf/Content/home](http://www.health.gov.au/internet/girlsmove/publishing.nsf/Content/home)) campaigns to determine and analyse the issues depicted
* design a web page or poster or make a video clip to present the findings and conclusion from the investigation of a contemporary issue in physical activity and sport
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| [**Detailed example**](file://VCAAFS01/Curriculum%24/VCE/Implementation/2015/Detailed%20example) |
| **RUN LIKE A GIRL – THE INFLUENCE OF GENDER ON PHYSICAL ACTIVITY PARTICIPATION****Task**Students critique the #LikeaGirl, ‘This girl can’ and ‘Girls make your move’ campaigns to determine and analyse the issues depicted.**Instructions:**1. Students watch the videos of the three campaigns:#Likeagirl:[www.youtube.com/watch?v=XjJQBjWYDTs](http://www.youtube.com/watch?v=XjJQBjWYDTs)This girl can:[www.youtube.com/watch?v=toH4GcPQXpc](http://www.youtube.com/watch?v=toH4GcPQXpc)Girls make your move:[www.health.gov.au/internet/girlsmove/publishing.nsf/Content/home](http://www.health.gov.au/internet/girlsmove/publishing.nsf/Content/home)On the first viewing students watch and listen.2. On the second viewing students complete a ‘Y’ chart with the following question stems:* I think...
* I feel…
* I wonder…

3. Students watch the three videos again and this time consider the following:* What are the campaigns trying to do? What is their purpose?
* Do they succeed? Justify your answer.
* Are the issues portrayed similar for other groups in society?

4. There are a number of contemporary issues portrayed in the videos relating to physical activity and sport. For this section of the task, students discuss as a class those issues that were apparent to them. The issues students might identify include, but are not limited to, gender stereotypes in sport and physical activity, cultural norms, declining physical activity levels, media coverage of female sport, access to physical activity opportunities for women, girls and people with disabilities. From this discussion, students will need to select one of the issues for analysis.5. Students analyse the issue identified by:* identifying the barriers and enablers for participation in physical activity and sport in this context
* outlining the individual, social, policy and physical environmental factors that influence participation in physical activity and sport in this context
* evaluating the effectiveness of the campaigns in addressing the issue selected
* sourcing and describing another strategy or initiative designed to increase participation in physical activity and sport in this context.

6. Students summarise their findings and draw informed conclusions about the overall effectiveness of the campaigns in addressing the issues associated with physical activity and sport.**Further resources**[www.thisgirlcan.co.uk/](http://www.thisgirlcan.co.uk/)[www.telegraph.co.uk/sport/telegraphsportnews/12044946/This-Girl-Can-campaign-inspires-almost-150000-women-to-take-up-sport.html](http://www.telegraph.co.uk/sport/telegraphsportnews/12044946/This-Girl-Can-campaign-inspires-almost-150000-women-to-take-up-sport.html)The next phase of the #Like a girls campaign:[www.youtube.com/watch?v=VhB3l1gCz2E](http://www.youtube.com/watch?v=VhB3l1gCz2E)Girls make your move[www.health.gov.au/internet/girlsmove/publishing.nsf/Content/about](http://www.health.gov.au/internet/girlsmove/publishing.nsf/Content/about) |

Unit 3: Movement skills and energy for physical activity

In Unit 3, students use practical activities to learn in, through and about movement. Appropriate contexts for learning include self-analysis, peer teaching/coaching and the development of movement skills through the coaching of a junior sports team in the school setting. Observation and analysis of elite athletes may provide a reference for students to compare movement efficiency and performance outcomes, and to identity correct technique within a movement context. Students use a variety of tools and techniques to develop an understanding of the suitability of a method in a given context and to perform different aspects of the skill analysis. Students may collect numerical data to compare or identify patterns or trends; however, quantitative analyses, including calculations, are not required at this level of analysis.

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| **Area of Study 1: How are movement skills improved?** |
| **Outcome 1**: | **Examples of learning activities** |
| Collect and analyse information from, and participate in, a variety of physical activities to develop and refine movement skills from a coaching perspective, through the application of biomechanical and skill acquisition principles. | * participate in a range of fundamental movement skills (FMS): running, jumping, leaping, dodging, catching, throwing, kicking, bouncing and striking; select a sport and, using a visual/graphic organiser, demonstrate how FMS form the basis for the sport specific skills required in the sport selected
* participate in a game of basketball or netball; from the game, identify the movement skills required to play; classify each of the skills as discrete, serial or continuous; include annotations about each skill
* debate the following statement: ‘A tennis serve is a closed skill and, as such, professional players should be able to consistently serve at a very high percentage of first serves in’
* research and report on the current understanding of the effect of physical training on growth, development and maturation
* research sporting families within Australia and internationally and investigate ‘familial advantage’, whereby parents and siblings influence skill development; identify the factors that may contribute to sporting expertise within families ([www.ausport.gov.au/supporting/top\_10\_tips\_for\_parents#family\_support](http://www.ausport.gov.au/supporting/top_10_tips_for_parents#family_support))
* analyse secondary data on participation rates of both males and females in a range of different activities (<http://search.abs.gov.au/s/search.html?query=physical+activity&collection=abs&form=simple&profile=_default_preview>); suggest reasons for the difference in participation rates in physical activity for both males and females across the lifespan
* conduct an audit of the sports offered at your school for males and females; discuss the influences on skill development from a sociocultural perspective; consider family and peers and cultural norms and traditions
* appraise and evaluate both sides of the ‘sport specialisation’ argument; from the findings, deduce the impact of early exposure to multiple vs single sports on motor skill development
* investigate the relationship between force, mass and acceleration by hitting (use a tennis racquet or bat tennis bat) a tennis ball, table tennis ball and small nerf ball
* participate in and digitally record various athletics events (shot put, discus, high jump, long jump); use the video footage to perform a qualitative analysis of the release height, angle and speed for each of the projectiles
* determine the effectiveness of each of the three types of sprint starts: bullet or bunch start, medium start and elongated start; perform and record each start; contrast the three starts by identifying the differences in the height of the centre of gravity, the position of the line of gravity, the impulse generated and the acceleration of the individual; for more information, see: <http://richwoodstrack.com/rhs_team_area/sprints/tech_biomechanics_sprint_start.pdf>
* participate in a modified (small-sided) version of AFL, soccer or hockey; identify the task constraints that have been modified and provide a justification for the use of constraints-based coaching for junior athletes
* coach a junior sports team; determine the stages of learning of the members of the team; through correct application of both biomechanical and skill acquisition principles, develop the movement skills of the students in the team
* as a class, participate in and reflect on the strengths and limitations of different forms of practice for a single movement skill
* investigate the benefit of feedback through the development of a laboratory task that aims to investigate the hypothesis: ‘If the number of successful shots on goal (basketball, netball, football, soccer, hockey, lacrosse etc.) is affected by the amount of feedback, then the number of successful shots will increase when feedback is increased’
* perform a qualitative analysis of a selected movement skill to demonstrate an understanding of the biomechanical and skill acquisition principles that influence development of the skill from a coaching perspective
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| [**Detailed example**](file://VCAAFS01/Curriculum%24/VCE/Implementation/2015/Detailed%20example) |
| **IT’S A BIRD, IT’S A PLANE, IT’S A PROJECTILE! INVESTIGATING FACTORS AFFECTING PROJECTILE MOTION IN ATHLETICS****Task**Participate in and digitally record various athletics events (shot put, discus, high jump, long jump). Use the video footage to perform a qualitative analysis of the height, angle and speed of release for each of the projectiles.**Instructions***Data collection*To ensure that all students work through each activity, divide the class into four groups and give each group a recording device (smart phone, tablet, digital camera, video camera). Students participate in each of the four events, ensuring that at least one attempt in each event is recorded.The recoding of distances thrown and/or jumped is not specifically required for the analysis; however, this data might provide further information for students to use in their evaluation.*Analysis*Students should have access to their own footage so they can analyse their own performance. This analysis can be done with the assistance of an app or software such as Dartfish, Hudl Technique or Coaches eye, if available.For each activity, students use annotated diagrams to:* determine and show on the diagram the height of release for each event
* determine and show on the diagram the angle of release for each event
* track and draw on the diagram the flight path of the object (shot, discus, body)
* describe the speed of release for each of the four projectiles.

*Evaluation*From the data, students complete the following:* How does the angle of release differ between each event? Explain why, for optimal performance, the angle of release is different for each of the events performed.
* Discuss how a coach could use the information from the analysis to improve the performance of young athletes in athletics.
* Describe how the principle of impulse and Newton’s second law of motion are applied to maximise release velocity. In the answer, make reference to the glide technique in shot put and the one and three-quarter turn discus throw technique.
* Explain how the height of release and the landing height affect the optimal angle of release.
* Discuss the following statement: ‘Release velocity is the most important determinant of flight distance of a projectile’.

*Conclusion*Students watch the video footage of their performance in each event again. From their analysis and evaluation, and based on the principles investigated, they provide written feedback on how the movement skill can be refined or improved.For example: ‘From the analysis of the long jump, it is evident that the angle of release was too great, resulting in excess vertical speed and not enough horizontal speed, therefore decreasing the overall distance jumped. To improve long jump performance, the angle of release must be much lower than 45 degrees.’ |

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| **Area of Study 2: How does the body produce energy** |
| **Outcome 2**: | **Examples of learning activities** |
| Data collected in practical activities to analyse how the major body and energy systems work together to enable movements to occur, and explain the factors causing fatigue and suitable recovery strategies. | * individually create a poster to show the characteristics of one of the fuels required for ATP; students working on the same fuel source share what they have learnt and update their posters; these are the expert groups; create groups with one ‘expert’ on each of the fuel sources and share what they have learnt with the rest of the group; place the posters around the room for future reference
* use lego/duplo/contruction blocks to demonstrate the breakdown of ATP to release energy and the resynthesis of ADP and Pi
* create a flow chart using SmartArt, Inspiration, MindManager or similar to depict the process of aerobic and anaerobic glycolysis
* perform a phosphate recovery test to investigate the fatigue/limiting factors of the anaerobic energy systems
* participate in a team sport; record information about the activity’s duration and intensity, the rest periods and the types of movement skills performed; use the information collected and examples from the data to discuss energy system interplay
* participate in an active recovery and a passive recovery post exercise; determine the most appropriate form of recovery based on energy system usage
* wear a heart rate monitor while participating in a continuous activity, such as running, swimming or cycling, for a minimum of 20 minutes; graph the heart rate data collected to analyse the changes in exercise intensity and heart rate; use this data to investigate changes in oxygen uptake from rest and during exercise and recovery, and the relative contribution from the energy systems
* collect data on acute responses to exercise: after lying down for five minutes, record resting heart rate, respiratory rate, blood pressure (if available) and temperature; perform one minute of continuous star jumps and repeat each of the measurements and observe any muscular changes; rest for five minutes and then perform a wall sit (squat) for one minute; record heart rate, respiratory rate, blood pressure, temperature and muscular changes; refer to the three energy systems to explain why these changes occur
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| [**Detailed example**](file://VCAAFS01/Curriculum%24/VCE/Implementation/2015/Detailed%20example) |
| **BREATHE IN, BREATHE OUT, REPEAT! OXYGEN UPTAKE: AT REST, DURING PHYSICAL ACTIVITY AND DURING RECOVERY****Task – laboratory activity** Students investigate changes in oxygen uptake from rest, and during exercise and recovery, and the relative contribution from the energy systems at each of these stages.**Instructions***Data collection** Students wear a heart rate monitor while participating in a continuous, sub-maximal activity such as running, swimming or cycling, for a minimum of 20 minutes.
* Heart rate data is collected at one-minute intervals while at rest (5 minutes sitting), during the activity (20 minutes continuous) and during recovery (five minutes active recovery followed by five minutes passive recovery).
* Tabulate data or download file from device.
* From five other people in your class, collect the time taken to reach steady state and the time taken for heart rate to return to resting levels.

*Analysis*Students analyse their own heart rate data, if available. If the student is unable to participate in the activity, data analysis can be performed using another student’s data. To analyse the data, students:* Graph heart rate versus time.
* Shade the periods of rest, exercise and recovery.
* Label periods of oxygen deficit, steady state and excess post-exercise oxygen consumption (EPOC).
* Determine resting heart rate, steady state heart rate and the percentage of HR max at which this occurred.

*Evaluation*From the data, students complete the following:* Discuss the acute physiological responses to exercise.
* Define the terms ‘oxygen deficit’, ‘steady state’ and ‘EPOC’.
* Compare the production of ATP during oxygen deficit and during steady state.
* Explain the role of the aerobic energy system during recovery.
* Explain the relationship between oxygen availability and relative contribution from each of the energy systems.
* Establish whether the time to reach steady state and for heart rate to return to resting levels differed between students. Suggest possible reasons for any differences between students.

*Conclusion*Students summarise and succinctly present the key findings of the investigation. |

Sample approach to developing an
assessment task

In designing an assessment task, teachers should identify Unit 3 key knowledge and key skills in the *VCE Physical Education Study Design*, pages 17–19. When preparing tasks and questions to assess the key knowledge and key skills, a number of factors need to be considered:

* A particular assessment task may cover one or more elements of an outcome but the assessment tasks as a whole should cover all elements of an outcome.
* The key skills do not have to be assessed independently of the key knowledge; they are integral to the design of the tasks.

Prior to designing the assessment task, teachers should use the performance descriptors for each outcome to identify the expected level of a student response. Performance descriptors identify the qualities and characteristics that should be present in a student response and assist in the design of the task, assessment criteria and marking scheme. For example, in Outcome 1 students are expected to draw on primary data; therefore, students should be given the opportunity to collect the data prior to assessment. Students are also required to analyse a movement skill using biomechanical and skill acquisition principles. The assessment task must therefore include opportunities for analysis and application of principles. Students will have participated in a range of movement experiences and the assessment task must draw on at least one of these experiences. It is not appropriate in this task to provide students with previously unseen data or a novel example to be analysed. The data may be collected individually or as a class, and it is appropriate for the assessment task to refer specifically to either form of data collected. To achieve the outcome students will need to:

* collect primary data on a range of movement skills through participation in a range of practical activities
* analyse data on movement skills from a skill acquisition and biomechanical perspective
* develop and refine movement skills from a coaching perspective.

The key skills for this outcome require students to analyse movement skills and apply skill acquisition and biomechanical principles. In this context the structured questions must:

* Allow multiple access points for students to demonstrate the highest level of knowledge and skill and be balanced overall in terms of cognitive demand.
* Blend key skills with questions that explore key knowledge so that the key skill is assessed in a particular context.
* Clearly indicate what is required of the student. The outcome asks students to collect, analyse and apply.
* Direct the student towards the relevant subject matter for developing their response. The question must be clear about what knowledge is being assessed. For example, identify three biomechanical principles evident in shot put.
* Allow for higher-order thinking through increases in cognitive demand. The use of a taxonomy (such as Bloom’s or the SOLO taxonomy) enables students to demonstrate higher-order thinking skills and allows for the assessment task to effectively discriminate between students’ performances.

[Assessment Rubrics/performance descriptors](#PerfDescript) provide a guide to the levels of performance typically demonstrated within each range on the assessment tasks. The performance descriptors for each outcome identify the qualities or characteristics expected in a student response.

Unit 4: Training to improve performance

Assessment of fitness

In Unit 4, Area of Study 1 students are required to know the protocols of at least two standardised and recognised tests for aerobic power, agility, anaerobic capacity, body composition, flexibility, muscular endurance, strength and power and speed. The table below lists a number of suitable tests (both laboratory and field based) for each of the listed fitness components.

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| **Fitness component** | **Test** |
| Aerobic power | 20m multi-stage test or 20m shuttle run testYo-Yo intermittent recovery testCooper 12-minute run test2.4km run testRockport 1.6km walking testVO2 max. Astrand-Rhyming cycle ergometer testVO2 max. treadmill testHarvard step-test |
| Agility | Illinois agility testSemo agility test5-0-5 agility test |
| Anaerobic capacity | Phosphate recovery test30-second Wingate testRepco peak power test |
| Body composition | Body Mass IndexWaist circumferenceSkinfold measurementsHydrodensitometry (underwater) weighingBioelectrical impedance DEXA and TOBEC scans |
| Flexibility | Trunk flexion (sit-and-reach) testTrunk rotation testGroin flexibility testShoulder and wrist elevation testTrunk and neck extension testAnkle extension/dorsiflexion testShoulder rotation test |

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| **Muscular** |
| Endurance | 60-second push-up test30-second sit-up testCurl-up (crunch) testPull-up/modified pull-up testFlexed arm hang test |
| Power | Seated basketball throwVertical JumpStanding long jumpMargaria-Kalamen stair sprint test |
| Strength | 1-RM (bench press, back squat, leg press)Grip strength dynamometerPush-pull dynamometerSeven-stage abdominal strength test |
| Speed | 20-metre sprint test35-metre sprint test50-meter sprint test |

Participation in a variety of these tests is paramount to student understanding of the protocols and requirements of the tests as well as some understanding of normative data. Students must also understand the sociocultural and ethical considerations of testing and be able to justify why a test is appropriate or not appropriate for a certain individual or group within the population.

Area of Study 2 allows students to experience a variety of training methods. Through participation in at least five of the methods listed in the study design, students are required to implement appropriate training principles in each of the sessions undertaken. Students consider and use appropriate tools for recording and monitoring training and identify the types (physiological, psychological and sociological) of data recorded. Students contextualise their understanding of the foundations of an effective training program, training principles and methods through the design of a six-week training program. In evaluating the effects of training on physiological performance, students focus on the chronic adaptations to the cardiovascular, respiratory and muscular systems. Students are also expected to focus on the nutritional, hydration and psychological strategies that may enhance performance.

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| **Area of Study 1: What are the foundations of an effective training program?** |
| **Outcome 1**: | **Examples of learning activities** |
| Analyse data from an activity analysis and fitness tests to determine and assess the fitness components and energy system requirements of the activity. | * as a class participate in a game of netball; three players (e.g. centre, goal shooter and wing defence) wear heart rate monitors; record the game using a video and/or digital device; conduct an activity analysis of the activity to collect data on movement patterns; in conjunction with the heart rate data, determine the work to rest ratio for each of the players
* use GPS units or observation of a game to determine movement patterns of a selected player/s in a game of soccer; analyse the data to determine the relative contributions of the energy systems
* perform a data analysis on secondary skill frequency data collected from a sport played at the elite level (e.g. elite Australian rules football, tennis and cricket) to identify the required fitness components of the activity
* make a series of flash cards that demonstrate an understanding of each of the fitness components; include a definition, a suitable form of assessment and an image of an activity in which the fitness component is dominant
* use a Venn diagram to compare and contrast muscular strength, endurance and power
* discuss the suitability of fitness testing for various populations, e.g. children and youth, club level and elite athletes and older adults; identify reasons why fitness might be assessed, e.g. health screening, elite athlete evaluation, talent identification
* design and implement a fitness assessment protocol that ensures that the testing procedure is ethically sound, valid and reliable
* perform a series of fitness tests across genders and a range of ages; determine relative levels of fitness in each of the fitness components; compare the results of the testing to standardised norms for the particular age and gender
* visit a research facility that analyses fitness and experience the use of high technology and laboratory-based fitness testing equipment; compare the protocols, techniques and outcomes of the laboratory-based testing to the protocols, techniques and outcomes of field tests conducted at school
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| [**Detailed example**](file://VCAAFS01/Curriculum%24/VCE/Implementation/2015/Detailed%20example) |
| **GAME ON! FITNESS REQUIREMENTS AT THE ELITE LEVEL****Task – written report analysing data**Perform a data analysis on secondary skill frequency data collected from a sport played at the elite level (e.g. elite Australian rules football, tennis and cricket) to identify the required fitness components of the activity.**Instructions**Students access and analyse secondary data to determine fitness components required for the selected sport. The types of data will vary depending on the sport selected. Students may access only skill frequency data or a combination of movement patterns, skill frequencies, heart rates etc., depending on the availability of the data. The analysis can then be structured according to the information available. **Data***Example of secondary data:*Match statistics – Novak Djokovic Men’s singles final, Australian Open 2016Total match time, 2 hours and 53 minutes (6–1, 7–5, 7–6)

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| Aces | 7 |
| Double faults | 3 |
| 1st serves in | 73 of 111 (66%) |
| Fastest serve | 199 km/h |
| Average 1st serve speed | 185 km/h |
| Net points won | 11 of 14 (79%) |
| Break points won | 2 of 12 (42%) |
| Winners | 31 |
| Unforced errors | 41 |
| Total points won | 123 |
| Total distance covered | 3315.4m |
| Distance covered per point | 14.9 m |

Source: [www.ausopen.com/en\_AU/scores/stats/day19/1701ms.html](http://www.ausopen.com/en_AU/scores/stats/day19/1701ms.html)**Analysis*** Consider the muscles and muscle groups required to perform the key skills and movement patterns.
* Consider the distances covered in each point and overall.
* Consider the total time taken to complete the match.
* Consider the physiological requirements needed to generate the recorded service speeds.

**Evaluation**From the analysis of the data, students determine the fitness components that are required to perform successfully in tennis at the elite level and make informed decisions about the fitness requirements for tennis. Students will need to justify the decisions made, based on the information available. Students will need to acknowledge the limitations of the analysis. For example, in this data set, skill frequencies are not recorded. After determining the fitness components required, students select appropriate tests to assess each of the identified fitness components and suggest a suitable order for conducting the tests. **Conclusion**Students complete a written report that includes a summary of the results of the analysis and an appropriate battery of fitness tests for the sport. Students should also include suggestions for additional data which would complement their evaluation of the fitness requirements of the sport. **Extension/further activity**Students may perform an activity analysis of tennis to collect primary data. An analysis of this data will allow students to make comparisons between the requirements of tennis at the elite level and at the recreational level. Similarities and differences can then be discussed. |

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| **Area of Study 2: How is training implemented effectively to improve fitness?** |
| **Outcome 2**: | **Examples of learning activities** |
| Participate in a variety of training methods and design and evaluate training programs to enhance specific fitness components. | * compare and contrast a variety of personal activity tracking devices (e.g. wearable technologies, smart phone apps, computer-based software); in the comparison, consider the ease of use and identify the type of information that is collected, cost and data output
* design a template for a training diary (digital or manual); the template will need to have spaces for the date and time of training, the activity undertaken, intensity, sets, reps, weights and W:R; it will also need to record physiological (e.g. heart rate, RPE, weight, blood pressure), psychological (e.g. emotional state, anxiety levels, concentration levels, motivation levels) and sociocultural data (e.g. peer pressure, competing demands for time, economic factors, access to resources and facilities)
* individually or in pairs, design and lead the class in an appropriate warm up for a selected sport or activity; identify the nature and repetitions and/or time for the activities in the warm up and provide a verbal justification of why it is an appropriate warm up for the sport or activity selected
* define the terms frequency, intensity, time, type, progression, specificity, individuality, diminishing returns, variety, maintenance, overtraining and detraining; make a series of flash cards with the term on one side and the definition on the other
* participate in an interval training session and record the variables: distance, repetitions, sets, intensity and rest periods; discuss how the variables can be manipulated to change the focus of the training session
* research the benefits of high intensity interval training (HIIT) (see <https://theconversation.com/search?q=VIDEO%3A+The+benefits+of+high-intensity+workouts> ) and outline one exercise protocol that could be used in this type of training; conduct, participate in and reflect on the session outlined
* participate in a variety of training sessions; document the structure of each session, the method of training undertaken, the application of the relevant training principles and the desired outcome of the session
* design a six-week training program that demonstrates the correct application of frequency, intensity, time, type , specificity and progression
* plan, conduct and report on a practical laboratory task investigating the psychological factors that affect performance; include the application of at least one psychological strategy designed to enhance the performance of the individual
* role-play a scenario whereby the coach is trying to motivate players in a team sport to reach an optimal arousal level; discuss the strategies used and the different approaches a coach may take, based on the age, experience and skill level of the players
* investigate different nutritional strategies used by athletes to determine the perceived benefits of the strategy and the physiological response to ingestion of carbohydrate after exercise
* compare personal fitness testing results with elite level or norm referenced fitness test data; explain the physiological adaptations that need to occur for improvements to be made
* make a visual display of the chronic adaptations that occur in the cardiovascular, respiratory and muscular systems as a result of aerobic, anaerobic and resistance training
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| [**Detailed example**](file://VCAAFS01/Curriculum%24/VCE/Implementation/2015/Detailed%20example) |
| **JUST DO IT! METHODS OF TRAINING FOR IMPROVED FITNESS****Task – Reflective folio**Students participate in a variety of training sessions and complete a reflective folio to document the structure of each session, the method of training undertaken, the application of the relevant training principles and the desired outcome of the session.**Instructions**Students participate in a minimum of five training sessions that focus on the training methods listed:* interval training
* short
* medium
* long
* high intensity
* continuous training
* fartlek training
* circuit training
* weight/resistance training
* plyometrics

Each session should include an appropriate warm up, conditioning phase and cool down.**Data collection**At the completion of each session, students are required to complete a one-page summary of the activity. A training diary template can be used to record the relevant physiological, psychological and sociocultural data. **Analysis*** Identify the method of training undertaken.
* Demonstrate using examples from the data how the relevant training principles were implemented.
* Determine the fitness components developed through the training method.
* Determine the contribution from each of the energy systems in the session.
* Explain the required frequency, intensity and time required for improvements to be made through this type of training.

**Conclusion**Students write a personal reflection on their participation in the session, for example how they felt, what they enjoyed and what was difficult.Teachers should conduct the training session and then have students complete the training diary at the end of the session and hand in their reflection before leaving class. The reflection from each session can then be added to the student’s reflective folio for assessment at the completion of the five sessions. |

Sample approach to developing an
assessment task

Throughout Unit 4, students will have participated in a number of practical activities and learning tasks, including performing an activity analysis, assessing fitness levels, and a variety of training sessions that illustrated the correct application of training principles to each training method.

The assessment task for Outcome 1 may be broken in to two components:

* Analyse data to determine the major fitness components and energy system requirements of a sport or physical activity.
* Justify the selection of tests in a battery of fitness tests based on the information gained from the analysis.

The data for analysis may be primary data collected by the students or secondary data from another source. It is important that the data source used has adequate information to enable students through analysis to determine relevant fitness components and energy system requirements. For example, providing students with skill frequency data may not provide enough information for students to achieve the outcome.

Outcome 2 is assessed through three separate tasks:

1. A reflective folio

2. A written report

3. One of: a case study analysis, a data analysis or structured questions.

The reflective folio, as outlined in the detailed example, is intended to be a summary of the practical activities experienced by students. The format of the reflection may be determined by the teacher or students but needs to include components of a training session, the training method undertaken, specific task-based examples of how the training principles were implemented and the intention or desired outcome of the type of training.

In designing a six-week training program, students are expected to draw on the experiences reflected in the folio. Teachers may provide students with a template to use in the design of their training program and design the parameters in which the students must confine their program. An example of an appropriate context for the design of a training program is provided in the following case study:

Emily is a 17-year-old student who has played netball for a number of years but would like to take part in a 5km fun run. Emily recently completed an assessment of fitness and her results are shown in the table.

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| --- | --- | --- | --- |
| Fitness component | Test | Score | Ranking |
| Aerobic power | 20-metre shuttle run | 5.4 | Fair |
| Anaerobic capacity | Phosphate recovery test | 26% | Average |
| Muscular strength | 1RM bench press | 0.70 | Good |
| Muscular endurance | Timed sit ups | 22 | Below base standard |
| Muscular power | Vertical jump | 46.5cm | Good |
| Agility | Illinois agility test | 17.2 seconds | Above average |
| Flexibility | Sit-and-reach test | 24cm | Excellent |

The final assessment task in Unit 4 enables students to demonstrate an understanding of the impact of training on the cardiovascular, respiratory and muscular systems. A case study may include information related to changes recorded in a training diary, a data analysis may include pre- and post-test data from an assessment of fitness, and structured questions may include a variety of types of questions (multiple choice, short answer, extended answer).

[Assessment Rubrics](file://VCAAFS01/Curriculum%24/VCE/Implementation/2015/Assessment%20Rubric)[/performance descriptors](file://VCAAFS01/%20performance%20descriptors) provide a guide to the levels of performance typically demonstrated within each range on the assessment tasks. The performance descriptors for each outcome identify the qualities or characteristics expected in a student response.

Performance Descriptors

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| **PHYSICAL EDUCATION****SCHOOL-ASSESSED COURSEWORK** |
| **Performance Descriptors** |
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| ***Unit 3******Outcome 1*** **Collect and analyse information from, and participate in, a variety of practical activities to develop and refine movement skills from a coaching perspective, through the application of biomechanical and skill acquisition principles.** | **DESCRIPTOR: typical performance in each range** |
| **Very low** | **Low** | **Medium** | **High** | **Very high** |
| Limited understanding of the factors and influences on the development of movement skills. | Some understanding of the factors and influences on the development of movement skills. | Satisfactory understanding of the factors and influences on the development of movement skills. | Sound understanding of the factors and influences on the development of movement skills. | Comprehensive understanding of the factors and influences on the development of movement skills. |
| Limited knowledge of biomechanical and skill acquisition principles. | Some knowledge and understanding of biomechanical and skill acquisition principles. | Sound knowledge and understanding of biomechanical and skill acquisition principles. | Thorough knowledge and understanding of biomechanical and skill acquisition principles. | Sophisticated knowledge and understanding of biomechanical and skill acquisition principles. |
| Limited ability to apply biomechanical and skill acquisition principles to refine movement skills in a coaching context. | Some ability to apply biomechanical and skill acquisition principles to refine movement skills in a coaching context. | Ability to apply biomechanical and skill acquisition principles to refine movement skills in a coaching context. | Proficient ability to apply biomechanical and skill acquisition principles to refine movement skills in a coaching context. | Extensive ability to critically apply biomechanical and skill acquisition principles to refine movement skills in a coaching context. |
| Little reference to or use of primary data. | Some reference to or use of primary data. | Adequate analysis of primary data to support findings. | Detailed analysis of primary data to demonstrate understanding. | Comprehensive and detailed analysis of primary data to inform insightful conclusions. |

KEY to marking scale based on the Outcome contributing 50 marks

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Very Low 1–10 | Low 11–20 | Medium 21–30 | High 31–40 | Very high 41–50 |

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| **PHYSICAL EDUCATION****SCHOOL-ASSESSED COURSEWORK** |
| **Performance Descriptors** |
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| ***Unit 3******Outcome 2*****Use data collected in practical activities to analyse how the major body and energy systems work together to enable movements to occur, and explain the factors causing fatigue and suitable recovery strategies.** | **DESCRIPTOR: typical performance in each range** |
| **Very low** | **Low** | **Medium** | **High** | **Very high** |
| Identifies some characteristics of the energy systems.  | Limited explanation of the relationship between energy systems, physical activity and associated fatigue factors in relation to duration, intensity and type of activity.  | Some analysis of the primary data to explain the relationship between energy systems, physical activity and associated fatigue factors in relation to duration, intensity and type of activity.  | Detailed and accurate analysis of the primary data to explain the relationship between energy systems, physical activity and associated fatigue factors in relation to duration, intensity and type of activity.  | Comprehensive and accurate analysis of the primary data to explain the relationship between energy systems, physical activity and associated fatigue factors in relation to duration, intensity and type of activity.  |
| Limited description of energy system interplay.  | Few explanations of the interplay of the energy systems, using simple terminology.  | Sound explanations of the energy system interplay, using some correct terminology. | Accurate and detailed explanations of energy system interplay using correct terminology. | Consistent use of accurate, thorough and comprehensive explanations of energy system interplay using correct terminology. |
| Some acute responses to one or more of the cardiovascular, respiratory and muscular systems of the body are listed. | Acute responses to exercise of the cardiovascular, respiratory and muscular systems of the body are listed. | Some analysis of the acute physiological responses to exercise of the cardiovascular, respiratory and muscular systems of the body.  | Detailed analysis of the acute physiological responses to exercise of the cardiovascular, respiratory and muscular systems of the body. | Thorough and insightful analysis of the acute physiological responses to exercise of the cardiovascular, respiratory and muscular systems of the body. |
| Identification of some active and passive recovery strategies.  | Active and passive recovery strategies are outlined. | Explanation of the appropriate use of active and passive recovery strategies.  | Detailed explanation and justification of appropriate use of active and passive recovery strategies. | Thorough explanation and extensive justification of the appropriate use of active and passive recovery strategies. |
| Little reference to or use of primary data.  | Some reference to primary data. | Some analysis of primary data to support findings. | Detailed analysis of primary data to inform conclusions. | Comprehensive and detailed analysis of primary data to inform insightful conclusions. |

KEY to marking scale based on the Outcome contributing 50 marks based on the completion of two assessment tasks:

* Task 1: Laboratory report, 25 marks
* Task 2: Choice of task types (see Study Design page 20), 25 marks

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| --- | --- | --- | --- | --- |
| Very low 1–10 | Low 11–20 | Medium 21–30 | High 31–40 | Very high 41–50 |

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| **PHYSICAL EDUCATION****SCHOOL-ASSESSED COURSEWORK** |
| **Performance Descriptors** |
|  |
| ***Unit 4******Outcome 1*****Analyse data from an activity analysis and fitness tests to determine and assess the fitness components and energy system requirements of the activity.** | **DESCRIPTOR: typical performance in each range** |
| **Very low** | **Low** | **Medium** | **High** | **Very high** |
| Limited use of activity analysis data to select fitness tests. | Some use of information gained through an activity analysis to select fitness tests. | Sound use of information gained through activity analysis to justify the selection of fitness tests. | Detailed understanding of the information gained through an activity analysis to justify the selection of appropriate fitness tests. | Comprehensive understanding of the information gained through activity analysis to accurately justify the selection of appropriate fitness tests for a given population. |
| Limited understanding of the purpose, protocols and methods of fitness assessment. | Some understanding of the purpose, protocols and methods of fitness assessment. | Sound understanding of the purpose, protocols and methods of fitness assessment. | Thorough understanding of the purpose, protocols and methods of fitness assessment. | Extensive understanding of the purpose, protocols and methods of fitness assessment. |
| Limited ability to identify fitness components and/or energy system requirements of an activity based on data. | Some ability to identify some fitness components and energy system requirements of an activity based on data. | Adequate ability to identify most fitness components and energy system requirements of an activity based on data. | Strong ability to identify most relevant fitness components and energy system requirements of an activity based on data. | Sophisticated ability to identify all relevant fitness components and energy system requirements of an activity based on data. |
| Little reference to or use of data.  | Some reference to data. | Some analysis of data to support findings. | Detailed analysis of data to inform conclusions. | Comprehensive and detailed analysis of data to inform insightful conclusions. |

KEY to marking scale based on the Outcome contributing 30 marks

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| --- | --- | --- | --- | --- |
| Very low 1–6 | Low 7–12 | Medium 13–18 | High 19–24 | Very high 25–30 |

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| **PHYSICAL EDUCATION****SCHOOL-ASSESSED COURSEWORK** |
| **Performance Descriptors** |
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| ***Unit 4******Outcome 2*** **Participate in a variety of training methods, and design and evaluate training programs to enhance specific fitness components.** | **DESCRIPTOR: typical performance in each range** |
| **Very low** | **Low** | **Medium** | **High** | **Very high** |
| Incomplete record of participation in some training sessions.  | Limited record of participation in at least five training sessions.  | Accurate record of participation in at least five training sessions.  | Detailed and thoughtful reflection on participation in at least five training sessions. | Very detailed and critical reflection on participation in at least five training sessions. |
| Training program design demonstrates limited application of training principles. | Some inclusion and application of relevant training principles in the design of a training program. | Satisfactory demonstration of the correct application of some training principles in the design of a training program. | Well developed and correct application of all relevant training principles in the design of a training program. | Comprehensive and correct application of all relevant training principles in the design of a training program. |
| Very few personal experiences reflected in the training program design. | Some examples drawn from personal experiences reflected in training program design. | Clear examples drawn from personal experiences reflected in training program design. | Training program design based mainly on data obtained through personal experiences in training sessions. | Training program design based on detailed data obtained through personal experiences in training sessions. |
| Limited description of the link between training methods and chronic adaptations. | Identification of chronic adaptations with little reference to training methods or the cardiovascular, respiratory and muscular systems.  | Some explanation of the chronic adaptations to the cardiovascular, respiratory and muscular systems resulting from training and linked to improved performance.  | Detailed explanation of chronic adaptations to the cardiovascular, respiratory and muscular systems and evaluation of training to improved performance.  | Comprehensive and detailed explanation of chronic adaptations of the cardiovascular, respiratory and muscular systems and critical evaluation of training and improved performance.  |

KEY to marking scale based on the Outcome contributing 70 marks based on the completion of three assessment tasks:

* Task 1: Reflective folio, 25 marks
* Task 2: Written report, 25 marks
* Task 3: Choice of task types (see Study Design page 24), 20 marks

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| Very low 1–15 | Low 16–29 | Medium 30–45 | High 46–60 | Very high 61–70 |

Appendix: Employability skills

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| **Assessment task** | **Employability skills selected facets** |
| **A folio of annotated texts** | **Communication** (sharing information; writing to the needs of the audience)**Self-management** (evaluating and monitoring own performance)**Learning** (managing own learning; having enthusiasm for ongoing learning) |
| **An essay** | **Communication** (reading independently; writing to the needs of the audience) **Planning and organising** (collecting, analysing and organising information)**Initiative and enterprise** (generating a range of options; initiating innovative solutions; being creative)**Learning** (managing own learning; having enthusiasm for ongoing learning)**Self-management** (evaluating and monitoring own performance) |
| **An investigative report** | **Communication** (sharing information; writing to the needs of the audience; using numeracy)**Planning and organising** (collecting, analysing and organising information)**Technology** (using IT to organise data) |
| **An analytical commentary** | **Communication** (sharing information; writing to the needs of the audience; using numeracy)**Planning and organising** (collecting, analysing and organising information)**Technology** (using IT to organise data) |
| **Short-answer questions** | **Communication** (writing to the needs of the audience)**Planning and organising** (collecting, analysing and organising information)**Learning** (managing own learning) |

The employability skills are derived from the Employability Skills Framework (*Employability Skills for the Future*, 2002), developed by the Australian Chamber of Commerce and Industry and the Business Council of Australia, and published
by the (former) Commonwealth Department of Education, Science and Training.