



National Unit Specification: general information

UNIT Exercise and Fitness: Cardiovascular Training (SCQF level 6)

CODE F7JB 12

SUMMARY

This Unit is an optional Unit of the National Progression Award in Exercise and Fitness Leadership, but can also be taken as a free-standing Unit. The Unit is suitable for candidates with some previous experience in exercise and fitness training who wish to undertake regular exercise and fitness training or who wish to pursue a career in the fitness industry.

In this Unit candidates will be introduced to specific operational issues and rationale behind the use of Cardiovascular Training Equipment, and should develop safe and effective practical skills in cardiovascular (CV) training.

On successful completion of this Unit candidates will be able to identify safe and effective CV exercises, and describe their advantages and disadvantages. Candidates will be able to demonstrate and evaluate both the exercises and their own technical abilities, together with personal and facility equipment relating to the selected activities.

This Unit is designed to enhance candidates' interest in exercise and fitness training, improve personal performance, develop reflective learning, and aid progression to further study of the subject.

OUTCOMES

- 1 Outline basic physiological effects of Cardiovascular Training on the body.
- 2 Explain methods of individualising Cardiovascular Training for selected clients.
- 3 Identify the advantages and disadvantages of Cardiovascular Training methods, and give a rationale for the selection of exercises.
- 4 Demonstrate Cardiovascular Training exercises and evaluate personal performance.

Administrative Information

Superclass: MD

Publication date: August 2009

Source: Scottish Qualifications Authority

Version: 01

© Scottish Qualifications Authority 2009

This publication may be reproduced in whole or in part for educational purposes provided that no profit is derived from reproduction and that, if reproduced in part, the source is acknowledged.

Additional copies of this Unit Specification can be purchased from the Scottish Qualifications Authority. Please contact the Customer Contact Centre, telephone 0845 279 1000.

National Unit Specification: general information (cont)

UNIT Exercise and Fitness: Cardiovascular Training (SCQF level 6)

RECOMMENDED ENTRY

While access to this Unit is at the discretion of the centre, candidates would find it advantageous to have some competence in exercise and fitness training. This should include warm up and cool down, and general safety approaches for exercise. The following units would help develop this knowledge:

F40B 11 *Contemporary Exercise and Fitness Training Methods: An Introduction*
F40E 11 *Human Anatomy, Physiology, and Physical Activity*
F40J 11 *Sports Injuries: Identification, Prevention, and Treatment: An Introduction*
D681 12 *Human Physiology in the Development of Performance*

CREDIT VALUE

1 credit at SCQF level 6 (6 SCQF credit points at SCQF level 6*).

**SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.*

CORE SKILLS

There is no automatic certification of Core Skill components in this Unit.

Opportunities for developing aspects of Core Skills are highlighted in Learning and Teaching Approaches for this Unit.

National Unit Specification: statement of standards

UNIT Exercise and Fitness: Cardiovascular Training (SCQF level 6)

Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the Unit Specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

OUTCOME 1

Outline the main physiological effects of Cardiovascular Training on the body.

Performance Criteria

- (a) Identify the components of the cardio/respiratory systems and outline their functions.
- (b) State the main physiological effects on the cardiovascular system.
- (c) State the main physiological effects on the respiratory system.
- (d) State the main physiological effects on the muscular and skeletal systems.

OUTCOME 2

Explain methods of individualising Cardiovascular Training for selected clients.

- (a) Explain the concept of training zones related to Maximum Heart Rate.
- (b) Describe the use of the Karvonen formula for setting individual training zones.
- (c) Describe methods of monitoring level of exertion to maximise the effect of cardiovascular training.

OUTCOME 3

Identify advantages and disadvantages of Cardiovascular Training methods, and give a rationale for the selection of exercises.

Performance Criteria

- (a) Purpose and effects of different cardiovascular training methods are identified accurately. (Interval, Fartlek, Continuous,).
- (b) Effects of different cardiovascular machines are identified accurately.
- (c) Select exercises which meet the requirements of a specific client.

OUTCOME 4

Demonstrate Cardiovascular Training exercises and evaluate personal performance.

Performance Criteria

- (a) Demonstrate the selected exercises effectively.
- (b) Evaluate the selected exercise demonstrations accurately.

National Unit Specification: statement of standards (cont)

UNIT Exercise and Fitness: Cardiovascular Training (SCQF level 6)

EVIDENCE REQUIREMENTS FOR THIS UNIT

Evidence that covers all the Outcomes and Performance Criteria is required.

- ◆ For Outcome 1 this should take the form of written and/or oral recorded evidence obtained under controlled, supervised conditions. The assessment should be closed book, restricted response, and should last no more than 60 minutes.
- ◆ For Outcome 2 this should take the form of written and/or oral recorded evidence obtained under controlled, supervised conditions. The assessment may be either:
 - closed book, restricted response, and should last no more than 60 minutes.
 - closed book, case study, and should last no more than 60 minutes.
- ◆ For Outcome 3, Performance Criteria (a) and (b), this should take the form of written and/or oral recorded evidence obtained under controlled, supervised conditions. Performance Criteria c should be assessed by the use of a case study of a specific client.
- ◆ For Outcome 4 this will take the form of performance evidence of practical application. This should be generated on at least two separate occasions to ensure consistency of performance. An assessor checklist should be generated and retained for the sessions assessed. This evidence may be supplemented by video recordings.

For the purposes of this Unit the following minimum evidence and definitions should be considered:

Cardiovascular Training methods including (but not confined to): Interval, Fartlek, Continuous,). Performance Criteria (a) should cover at least three different training methods.

Cardiovascular Training exercises including (but not confined to): Treadmills, Steppers, Cross-Trainers, Rowing Machines, Upright Cycles, Recumbent Cycles). Performance Criteria (b) should cover at least three different pieces of equipment (Only one type of cycle should be selected).

Clients used in Outcome 3 should be straightforward without special requirements or complications. It is suggested that the focus should be training for a specific activity or fitness target.

Health and Safety considerations including (but not confined to): health, posture; awareness of others; awareness of personal limitations.

National Unit Specification: support notes

UNIT Exercise and Fitness: Cardiovascular Training (SCQF level 6)

This part of the Unit Specification is offered as guidance. The support notes are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 40 hours.

GUIDANCE ON THE CONTENT AND CONTEXT FOR THIS UNIT

For the practical elements of the Unit an appropriate environment is required. There should be access to relevant equipment and facilities, and instruction should allow candidates to work at their own level whilst developing personal competence in line with SCQF level 6. It should be emphasised that the Unit is designed to develop individual technical proficiency in the use of cardiovascular training equipment so that candidates can effectively demonstrate safe use. It is *not* designed to allow candidates to use non routine practices, adapt techniques, or teach/instruct others.

Since candidates are likely to wish to progress to higher level study and/or a career in the exercise and fitness industry, the Unit also emphasises the importance of good health and safety awareness both in a personal and group context.

For **Outcome 1** the following may be considered:

- ◆ Anatomy of the cardio-respiratory system to include: heart; arteries; arterioles; capillaries; venules; veins; upper and lower respiratory tracts
- ◆ Effects on the cardiovascular system:
 - Short term — changes in cardiac output; redistribution of blood flow
 - Long term — increased VO₂ max; improved homeostasis; improved capacity for submaximal exercise; reduced risk of heart attack; reduced blood pressure; changes to blood composition
- ◆ Effects on the respiratory system: Improved endurance and oxidative capacity of respiratory muscles; increased resistance to fatigue; improved resistance to upper respiratory tract infections; reduced ventilatory response during submaximal training; improvements to lung volumes
- ◆ Effects on the muscular system: increased capillary density, mitochondria activity and lactate processing; improved strength and muscular endurance; improved slow twitch fibre response; improved ability to synthesise Adenosine Triphosphate (ATP)
- ◆ Effects on the skeletal system: improved bone density; improved joint stability and competence of connective tissue

It should be emphasised that this Outcome covers *basic* physiological effects, and assessors should bear in mind the requirements of SCQF level 6. Candidates are required to state rather than explain in detail.

For **Outcome 2** the concept of training zones should reflect current thinking and standard methods of determining Maximum Heart Rate (MHR); Karvonen Formula should be utilised theoretically and applied practically; Heart Rate Monitoring must be understood and applied; Other methods may include Talk Test and Rating of Perceived Exertion.

National Unit Specification: support notes (cont)

UNIT Exercise and Fitness: Cardiovascular Training (SCQF level 6)

For **Outcome 3** clients should be straightforward without special requirements or complications. It is suggested that throughout the Unit the requirements of a variety of different exercisers are used as case studies. Differences in effects of upper and lower body training should be identified. The focus should be on training requirements for a specific activity or event.

For **Outcome 4** candidate performance should be in accordance with current best practice, and evaluation should consider technical aspects of exercise technique, posture, and awareness of personal limitations. Where appropriate the candidate may consider recommendations for performance improvement.

GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

The candidate should be encouraged to record his/her personal experience as well as details of his/her contribution to the design of an exercise and fitness training programme. Emphasis should be given to the correct performance and evaluation of each exercise, and a balanced programme of exercises should be carried out during each practical session.

Underpinning knowledge may be developed by the use of handouts, diagrams, videos and practical demonstration.

Centres should ensure that theoretical input covers the theoretical principles specified in all Outcomes, and that these are continually reinforced during delivery of the practical elements. It is important that candidates are aware of the importance of regular fitness based activity: current ACSM guidelines may be used here.

Candidates should maintain a logbook covering practical activities undertaken. This should include a section for personal evaluation and reflection which will aid in the assessment of Outcome 4 (b).

OPPORTUNITIES FOR CORE SKILL DEVELOPMENT

The Unit requires some elements of feedback, review and reflection, there may be opportunities to develop both Oral/Written Communication skills and *Problem Solving*.

Throughout the Unit, candidates are required to research and analyse material both individually and in groups. There may be opportunities to use the Internet and other information sources, leading to skill development in *Information and Communication Technology (ICT)* and *Communication*.

Outcome 2 may require the use of basic numeracy skills to apply the formula.

National Unit Specification: support notes (cont)

UNIT Exercise and Fitness: Cardiovascular Training (SCQF level 6)

GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

Evidence that covers all the Outcomes and Performance Criteria is required.

- ◆ For Outcome 1 this should take the form of written and/or oral recorded evidence obtained under controlled, supervised conditions. The assessment should be closed book, restricted response, and should last no more than 60 minutes.
- ◆ For Outcome 2 this should take the form of written and/or oral recorded evidence obtained under controlled, supervised conditions. The assessment may be either:
 - closed book, restricted response, and should last no more than 60 minutes.
 - closed book, case study, and should last no more than 60 minutes.
- ◆ For Outcome 3, Performance Criteria (a) and (b), this should take the form of written and/or oral recorded evidence obtained under controlled, supervised conditions. Performance Criteria c should be assessed by the use of a case study of a specific client.
- ◆ For Outcome 4(a) this will take the form of performance evidence of practical application. This should be generated on at least two separate occasions to ensure consistency of performance. An assessor checklist should be generated and retained for the sessions assessed. This evidence may be supplemented by video recordings. For Outcome Performance Criteria 4(b) the candidate should assess his/her personal performance, outlining particular strengths and/or areas for improvement. This may then be discussed with the assessor in the format of a professional discussion, which should be recorded and retained. This Outcome is designed to aid reflective learning, and should be referred to and developed throughout the Course.

Opportunities for the use of e-assessment

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by information and communications technology (ICT), such as e-testing or the use of e-portfolios or e-checklists. Centres which wish to use e-assessment must ensure that the national standard is applied to all candidate evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. Further advice is available in *SQA Guidelines on Online Assessment for Further Education (AA1641, March 2003)*, *SQA Guidelines on e-assessment for Schools (BD2625, June 2005)*.

DISABLED CANDIDATES AND/OR THOSE WITH ADDITIONAL SUPPORT NEEDS

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering whether any reasonable adjustments may be required. Further advice can be found on our website www.sqa.org.uk/assessmentarrangements