

Unit 1: Fitness Testing and Training

Unit code: R/502/5410

QCF Level 2: BTEC First

Credit value: 5

Guided learning hours: 30

● Aim and purpose

This unit gives learners the opportunity to explore the essential fitness requirements and training methods used to achieve successful sports performance. The unit also explores lifestyle and psychological factors and the effects these can have on sports training and performance. Learners will investigate their personal fitness levels by participating in a series of fitness tests.

● Unit introduction

It is often said that 'failing to prepare equals preparing to fail'. It is essential, therefore, that those involved in, and studying, sport have a good understanding of concepts relating to effective preparation. In this unit, learners will have the opportunity to examine the basic factors of fitness, lifestyle, and psychology in sport.

Fitness is vital to achieving excellence in sport. To determine how fit an individual is, they can undertake a fitness assessment which will include a number of tests specific to each component of fitness. Fitness testing can play a valuable role in the development of physical fitness by helping to predict performance potential, identifying strengths and areas for improvement and providing feedback on the relative success of a training programme. Many individuals who take part in sport aim to improve their performance. Successful athletes develop and maintain high levels of physical fitness and take fitness training very seriously.

The first part of this unit will give learners an insight into the physical fitness requirements and training methods used to achieve excellence in a selected sport. Learners will also explore lifestyle factors which may affect sports performance. The second part of the unit will enable learners to participate in a series of fitness tests to assess their current fitness levels and performance. Learners can then compare their own level of fitness and potential with the demand of competing at their desired level. In the final part of the unit learners will examine psychological factors which may affect training and sports performance.

This unit is particularly relevant for those who would like to work in sports coaching, fitness instruction and elite sport.

● Learning outcomes

On completion of this unit a learner should:

- 1 Know the fitness and training requirements necessary to achieve excellence in a selected sport
- 2 Know the lifestyle factors that affect sports training and performance
- 3 Be able to assess their own level of fitness
- 4 Know the effects of psychological factors on sports training and performance.

Unit content

1 Know the fitness and training requirements necessary to achieve excellence in a selected sport

Components of fitness: physical fitness (aerobic endurance, muscular endurance, flexibility, speed, strength, body composition); skill-related fitness (agility, balance, coordination, power, reaction time)

Fitness training methods: eg flexibility training (static, active, passive, ballistic), strength and power training (resistance machines, circuit training, plyometrics, reps, sets and resistance), endurance training (continuous training, fartlek training, interval training, heart rate, training zones), speed and speed endurance (hollow sprints, acceleration sprints, interval training)

Excellence: eg typical fitness levels/requirements of regional, national, international and professional performers

2 Know the lifestyle factors that affect sports training and performance

Lifestyle factors: eg stress, alcohol, smoking, drugs, sleep, demands of work, medical history, level of activity, diet, weight, gender, culture, sports participation (training and competition)

3 Be able to assess their own level of fitness

Fitness tests: eg flexibility (sit and reach test, goniometers), strength (one-repetition maximum (1RM), grip dynamometer), aerobic endurance (multi-stage fitness test, Chester step test), speed (40 m sprint), power (vertical jump, Wingate test), muscular endurance (one-minute press-up, one-minute sit-up), body composition (skinfolds, bioelectrical impedance analysis, body mass index)

Administration of tests: pre-test procedures (informed consent, calibration of equipment); test protocols; reliability, validity and practicality of tests; recording test results

Interpretation of test results: compare personal fitness test results to normative data; compare personal fitness test results to levels required for excellence

4 Know the effects of psychological factors on sports training and performance

Factors: motivation; arousal and anxiety; personality; concentration

Effects: short term eg increased motivation, activate athletes towards targets and goals; long term eg maintenance of targets and goals, improved sports performance

Assessment and grading criteria

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria for a pass grade describe the level of achievement required to pass this unit.

Assessment and grading criteria		
To achieve a pass grade the evidence must show that the learner is able to:	To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:	To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:
P1 describe the fitness requirements for achieving excellence in a selected sport	M1 explain the fitness requirements for achieving excellence in a selected sport	
P2 describe three different fitness training methods used to achieve excellence in a selected sport		
P3 describe four different lifestyle factors that can affect sports training and performance		
P4 carry out four different fitness tests for different components of fitness, recording the results accurately [IE I]		
P5 interpret their test results and personal level of fitness [IE4, RL I]	M2 explain their test results and personal level of fitness, identifying strengths and areas for improvement	D1 evaluate their test results and personal level of fitness, considering the level required to achieve excellence in a selected sport
P6 describe the effects of psychological factors on sports training and performance.	M3 explain the effects of psychological factors on sports training and performance.	D2 analyse the effects of psychological factors on sports training and performance.

PLTS: This summary references where applicable, in the square brackets, the elements of the personal, learning and thinking skills applicable in the pass criteria. It identifies opportunities for learners to demonstrate effective application of the referenced elements of the skills.

Key	IE – independent enquirers CT – creative thinkers	RL – reflective learners TW – team workers	SM – self-managers EP – effective participators
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Essential guidance for tutors

Delivery

This unit should be viewed as an introduction to fitness, lifestyle and sports psychology, giving a general overview rather than great depth. The aim should be to interest learners in, and create awareness of, these different areas.

Tutors should introduce the unit by identifying the components of physical fitness and the components of skill-related fitness. Learners need to understand the fitness requirements for achieving excellence in a selected sport. In order to do this they will draw on a wide range of information including books, journals, videos of matches, match observations, observation of training sessions and reports. This research can be individual or in groups. Case studies of high level performers can be used. Learners should look at the typical levels of fitness required for club level performers up to international level performers.

The unit has a large practical component and it is recommended that learners actively participate and experience a number of fitness training methods to gain a 'taster' of how these methods can be used to achieve excellence in sport.

The effect of lifestyle on performance lends itself to group discussion and personal reflection. There are a number of lifestyle analysis questionnaires available and learners should find it interesting to complete some of these.

Learners should be shown how to carry out a range of physical fitness tests and there should be opportunities for them to practise carrying out these tests on each other. Learners need to assess their own level of physical fitness by conducting four different fitness tests for different components of fitness. Before doing this they need to understand the theory behind fitness assessments including the range of tests available, the protocols for test administration and the practicality, reliability, and validity of tests. Learners should be encouraged to carry out fitness tests on their peers to practise test methodology. The importance of pre-test procedures, including completion of informed consent before commencing fitness testing, must be emphasised. Learners should be shown examples of suitable consent forms.

Learners need to be aware of normative data and data for elite performers. Assessment of their personal fitness levels can be achieved by interpreting their fitness test results against normative data and making comparisons with the levels required for elite sports performance.

Tutors could use examples of elite sports performers when exploring the effects of sports psychology on sports training and performance, including those that are relevant to outdoor education. An input from a sports psychologist would be beneficial when delivering this part of the unit.

Outline learning plan

The outline learning plan has been included in this unit as guidance and can be used in conjunction with the programme of suggested assignments.

The outline learning plan demonstrates one way in planning the delivery and assessment of this unit.

Topic and suggested assignments/activities and/assessment
Introduction and overview of the unit
Assignment 1: Fitness and Training for Sporting Excellence (P1, M1, P2). Tutor introduces the assignment brief. Learners select a sport and explore the fitness requirements and training methods needed to achieve excellence
Learner research activity 1: explore a range of information sources (eg live training and competition, recorded training and competition, books, journals, reports) to select their sport
Interactive lecture on components of fitness and training methods – learners to apply to their chosen sport
Exploring training methods through practical participation
Learner research activity 2: explore a range of information sources (eg live training and competition, recorded training and competition, books, journals, reports) to apply components of fitness and training methods to their chosen sport
Assignment 2: Exploring Lifestyle Factors (P3). Tutor introduces the assignment brief. Learners select four different lifestyle factors and describe how these affect sports training and performance
Lifestyle factors – interactive lecture
Learners prepare their presentation: lifestyle factors
Presentations (group/individual): lifestyle factors
Assignment 3: Assessing Fitness Levels (P4, P5, M2, D1). Tutor introduces the assignment brief. Personal fitness levels assessed by participation in four different fitness tests for different components of fitness
Conducting fitness tests – Group practical exercises to administer tests and interpret results
Assignment 4: Exploring Psychological Factors (P6, M3, D2). Tutor introduces the assignment brief. Learners explore psychological factors and their effects on sports training and performance
Examining personality traits: administer personality questionnaire and interpret results
Concentration and the Sports Performer – DVD
Exploring motivation, arousal and anxiety: effects on sports training and performance – interactive lecture
Review of unit and assessment activities

Assessment

For P1, learners need to describe the fitness requirements for achieving excellence in a selected sport. They need to describe the components of physical fitness and the components of skill-related fitness. Learners also need to describe three different fitness training methods and how these are used to achieve excellence in a selected sport (P2). Evidence can be a written report and/or a presentation.

When exploring lifestyle factors (P3) tutors could ask learners to complete a case study or presentation describing four factors that could hinder performance and suggest ways of enhancing performance through lifestyle changes. This assessment could be based on their own experiences of sports training and performance or those of a selected sports performer.

Learners also need to be able to assess their own level of personal fitness. When completing the fitness testing of this unit (P4) the tutor should observe learners completing fitness tests covering a total of four different components of fitness. Tutors should complete a witness statement or observation record sheet. It is important that after each fitness test is completed, learners produce an accurate written record of the results. When interpreting their results (P5) learners should comment on the national benchmarks that most tests have, this will enable them to assess their personal fitness level against normative data.

To explore psychological factors (P6), learners could complete a case study and written report that describes the effects these factors can have on sports training and performance. Alternatively, a sports psychologist as a guest speaker would enable learners to interact and gather information, in order to describe the effects psychological factors can have on sports training and performance.

For M1, which links to P1, learners will need to explain the physical fitness and skill-related fitness requirements for achieving excellence in a sport of their choice. Learners need to provide details and give reasons/evidence to support their explanation.

For M2, learners need to build on evidence for P5 by explaining their fitness test results and personal levels of fitness, identifying strengths and areas which could be improved. For M3, learners need to explain the effects that psychological factors can have on sports training and performance. Learners should give reasons or evidence for the effects.

For D1, learners need to evaluate their fitness test results and comment on their performance and personal level of fitness, and make recommendations as to how they could improve areas of fitness considering the levels required by elite sports performers. For D2, which builds on M3, learners need to analyse the effects that psychological factors have on sports training and performance. Learners need to identify each psychological factor, state how they are related and how each factor can affect sports training and performance.

Programme of suggested assignments

The table below shows a programme of suggested assignments that cover the pass, merit and distinction criteria in the assessment and grading grid. This is for guidance and it is recommended that centres either write their own assignments or adapt any Edexcel assignments to meet local needs and resources.

Criteria covered	Assignment title	Scenario	Assessment method
P1, M1, P2	Fitness and Training for Sporting Excellence	You have gained a sports coaching work experience placement. You have been asked to prepare a presentation to give to the team which focuses on the fitness and training methods needed to achieve excellence in their sport. After this you will lead a team discussion on lifestyle factors and how these affect sports training and performance	Presentation and witness statement
P3	Exploring Lifestyle Factors		Case study or presentation
P4, P5, M2, D1	Assessing Fitness Levels	You have recently joined a local sports club, and the coach wants to assess your fitness levels in order to design a training programme. You have been asked to participate in four different fitness tests for different components of fitness	Practical observation and record of results
P6, M3, D2	Exploring Psychological Factors	You are assuming the role of a sports psychologist and conduct interviews/ group discussion with your peers to explore psychological factors and how these can affect sports training and performance	Written report of questions and findings

Links to National Occupational Standards, other BTEC units, other BTEC qualifications and other relevant units and qualifications

This unit forms part of the BTEC Sport sector suite. This unit has particular links with the following unit titles in the BTEC Sport suite and the BTEC Sport and Exercise Sciences suite:

Level 2 Sport	Level 3 Sport	Level 3 Sport and Exercise Sciences
Anatomy and Physiology for Sport	Principles of Anatomy and Physiology in Sport	Anatomy for Sport and Exercise
Effects of Exercise on the Body Systems	Fitness Testing for Sport and Exercise	Fitness Testing for Sport and Exercise
Development of Personal Fitness	Exercise, Health and Lifestyle	Exercise, Health and Lifestyle
Psychology for Sports Performance	Fitness Training and Programming	Fitness Training and Programming
Lifestyle and the Sports Performer	Psychology for Sports Performance	Sport and Exercise Psychology
	Sports Nutrition	Sports Nutrition
	The Physiology of Fitness	Sport and Exercise Physiology
		Applied Sport and Exercise Physiology

This unit links with the National Occupational Standards (NOS) for:

- Coaching, Teaching and Instructing at Level 2
- Instructing Exercise and Fitness at Level 2
- Achieving Excellence in Sports Performance at Level 3.

Essential resources

Learners will need access to the appropriate fitness testing equipment and an appropriate area to undertake the practical elements of the unit, such as a sports hall or gym. Learners will also need access to examples of informed consent forms and to normative data for interpreting fitness test results.

Employer engagement and vocational contexts

Organisations within the fitness industry, including health and fitness centres and centres of excellence, will have their own methods for conducting fitness tests. Visits to these organisations would prove useful as a base of reference. Centres could also invite independent health and fitness experts as guest speakers, for example a personal trainer.

Indicative reading for learners

Textbooks

Adams M, Beashel P, Hancock J, Harris B, Phillippo P, Sergison A and Taylor I – *BTEC Level 2 First Sport Student Book* (Pearson, January 2010) ISBN 9781846906220

Adams M, Beashel P, Harris B, Johnson S, Phillippo P and Sergison A – *BTEC Level 2 First Sport Teaching Resource Pack* (Pearson, April 2010) ISBN 9781846907173

Adams G M – *Exercise Physiology Laboratory Manual: Health and Human Performance* (McGraw Hill Higher Education, 2001) ISBN 9780072489125

Allen M B – *Sports Exercise and Fitness: A Guide to Reference and Information Sources* (Libraries Unlimited Inc, 2005) ISBN 9781563088193

Buckley J, Holmes J, Mapp G – *Exercise on Prescription: Cardiovascular Activity for Health* (Butterworth-Heinemann, 1999) ISBN 9780750632881

Commons R, Rizzo G, Swales M – *Level 2 BTEC Firsts in Sport Student's Book* (Folens, May 2010) ISBN 9781850085157

Commons R, Rizzo G, Swales M – *Level 2 BTEC Firsts in Sport Teacher's Guide* (Folens, May 2010) ISBN 9781850085164

Dalglish J, Dollery S – *The Health and Fitness Handbook* (Longman, 2001) ISBN 9780582418790

Davis J – *Fitness for Games Players* (NCF, 1996) ISBN 9780947850104

Franks B D, Howley E T – *Fitness Leader's Handbook* (Human Kinetics Europe, 1998) ISBN 9780880116541

Fulcher K, Fox P – *Your Personal Trainer: The Ultimate Guide to Getting Fit for any Sport* (Metro Books, 2002) ISBN 9781843580027

Hazeldine R – *Fitness for Sport* (The Crowood Press, 2000) ISBN 9781861263360

Moran G T, McGlynn G – *Cross Training for Sports: Programmes for 26 Sports* (Human Kinetics, 1997) ISBN 9780880114936

Scott A – *GCSE PE for Edexcel* (Heinemann, 2001) ISBN 9780435506360

Sharkey B J and Gaskill S E – *Fitness and Health* (Human Kinetics, 2006) ISBN 9780736056144

Watson A W S – *Physical Fitness and Athletic Performance: A Guide for Students, Athletes and Coaches* (Longman, 1996) ISBN 9780582091108

Journals

American College of Sport Medicine's Health and Fitness Journal

British Journal of Sports Medicine

Exercise and Sport Sciences Reviews

International Journal of Sports Science and Coaching

Medicine and Science in Sports and Exercise

Research Quarterly for Exercise and Sport

Websites

American College of Sports Medicine	www.acsm.org
British Association of Sport and Exercise Sciences	www.bases.org.uk
Human Kinetics	www.humankinetics.com
Sport Science	www.sportsci.org
Sports Coach UK	www.sportscoachuk.org
Top End Sports	www.topendsports.com

Delivery of personal, learning and thinking skills (PLTS)

The table below identifies the opportunities for personal, learning and thinking skills (PLTS) that have been included within the pass assessment criteria of this unit.

Skill	When learners are ...
Independent enquirers	carrying out four different fitness tests for different components of fitness, recording the results accurately interpreting their test results and personal level of fitness
Reflective learners	interpreting their test results and personal level of fitness

Although PLTS are identified within this unit as an inherent part of the assessment criteria, there are further opportunities to develop a range of PLTS through various approaches to teaching and learning.

Skill	When learners are ...
Reflective learners	practising fitness testing procedures with their peers
Team workers	practising fitness testing procedures with their peers
Self-managers	administering fitness tests following standard protocol

● Functional Skills – Level 2

Skill	When learners are ...
ICT – Use ICT systems	
Select, interact with and use ICT systems independently for a complex task to meet a variety of needs	researching fitness requirements and training methods for achieving excellence in a sport
Manage information storage to enable efficient retrieval	recording fitness test data
Follow and understand the need for safety and security practices	recording fitness test data
ICT – Find and select information	
Select and use a variety of sources of information independently for a complex task	researching lifestyle factors and psychological factors
Access, search for, select and use ICT-based information and evaluate its fitness for purpose	preparing fitness test interpretation data
ICT – Develop, present and communicate information	
Enter, develop and format information independently to suit its meaning and purpose including: <ul style="list-style-type: none"> • text and tables • images • numbers • records. 	preparing an informed consent form recording fitness test results
Bring together information to suit content and purpose	interpreting own fitness test data
Present information in ways that are fit for purpose and audience	researching and interpreting fitness test results
Mathematics	
Understand routine and non-routine problems in a wide range of familiar and unfamiliar contexts and situations	interpreting fitness test data
Identify the situation or problem and the mathematical methods needed to tackle it	interpreting fitness test data results
Select and apply a range of skills to find solutions	interpreting fitness test results
Interpret and communicate solutions to practical problems in familiar and unfamiliar routine contexts and situations	interpreting fitness test data results
Draw conclusions and provide mathematical justifications	interpreting fitness test results and personal level of fitness

Skill	When learners are ...
English	
Speaking and listening – make a range of contributions to discussions and make effective presentations in a wide range of contexts	<p>presenting fitness and training requirements to achieve excellence in a selected sport</p> <p>describing lifestyle factors and how these affect sports performance</p> <p>contributing to an interview with a sports psychologist</p>
Reading – compare, select, read and understand texts and use them to gather information, ideas, arguments and opinions	interpreting fitness test results
Writing – write documents, including extended writing pieces, communicating information, ideas and opinions, effectively and persuasively	describing psychological factors and how they affect sports performance