Cambridge TECHNICALS

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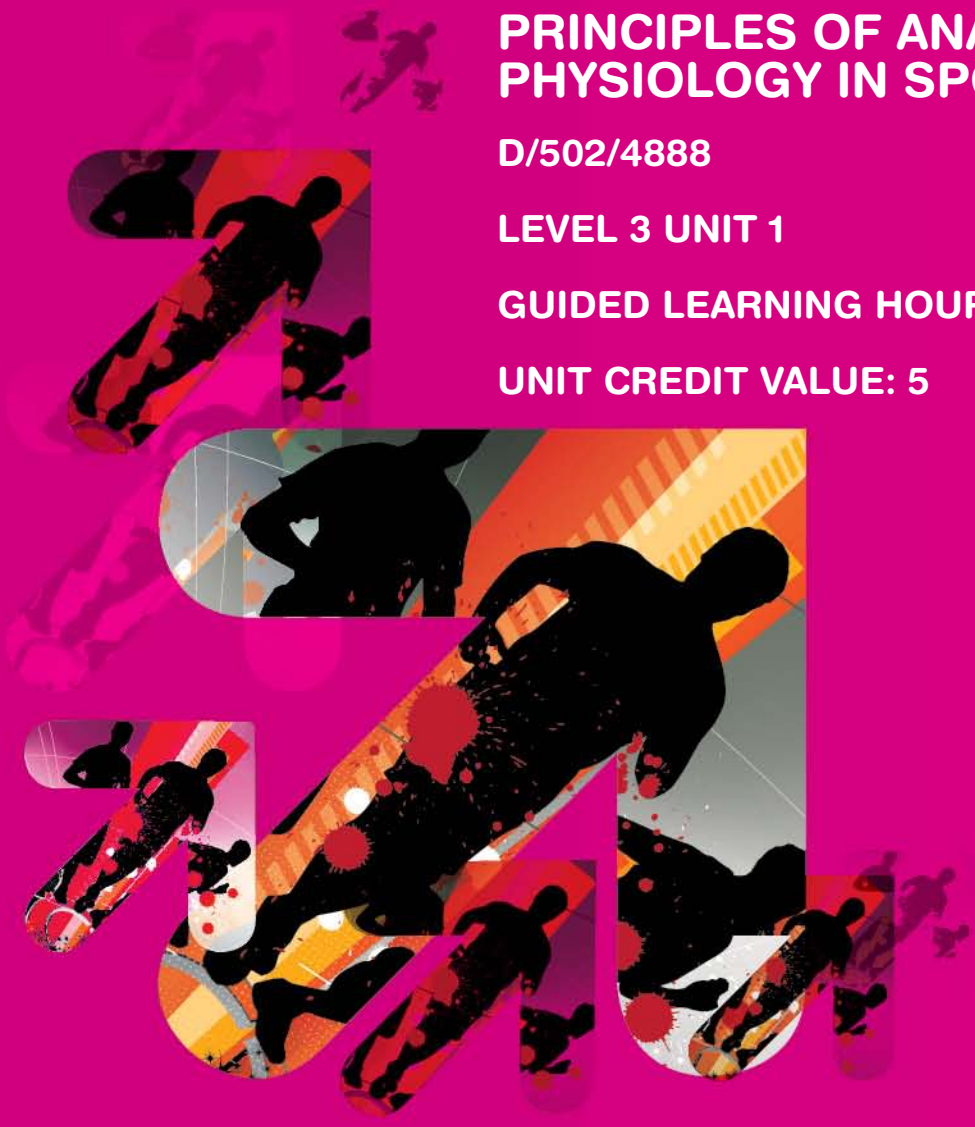
OCR LEVEL 3 CAMBRIDGE TECHNICAL

CERTIFICATE/DIPLOMA IN

SPORT



PRINCIPLES OF ANATOMY AND PHYSIOLOGY IN SPORT

D/502/4888

LEVEL 3 UNIT 1

GUIDED LEARNING HOURS: 30

UNIT CREDIT VALUE: 5

OCR

PRINCIPLES OF ANATOMY AND PHYSIOLOGY IN SPORT

D/502/4888

LEVEL 3

AIM OF THE UNIT

Human anatomy and physiology is one of the key underpinning themes for anyone aspiring to work within sport. Whether you are a coach, nutritionist, or leisure centre manager understanding the principles of anatomy and physiology will help you in ensuring that your participant or client will have the most successful and enjoyable experience. By understanding the human body and its bones, muscles and joints you will be better able to ensure that activities are properly focused and do not risk a clients health. Knowing how the body responds to exercise will also ensure that sessions or activities are able to improve and develop a client's potential gain in terms of health and well-being.

It is only through exploring how our bodies work and are changed by exercise, that we can start to identify methods to bring about changes in others.

PURPOSE OF THE UNIT

Understanding the major body systems related to exercise such as the skeletal, muscular, cardiovascular, respiratory and energy systems is a crucial step for anyone aspiring to work in the sports industry. This unit will enable learners to know the structure of each of these systems and understand the role and function they take on as the body starts to exercise.

The knowledge that learners' gain in this unit supports the understanding developed in other units such as e.g. The Physiology of Fitness or Fitness Training and Programming.

ASSESSMENT AND GRADING CRITERIA

Learning Outcome (LO) The learner will:	**Pass** The assessment criteria are the pass requirements for this unit. The learner can:	**Merit** To achieve a merit the evidence must show that, in addition to the pass criteria, the learner is able to:	**Distinction** To achieve a distinction the evidence must show that, in addition to the pass and merit criteria, the learner is able to:
1 Know the structure and function of the skeletal system	P1 describe the structure and function of the skeletal system	M1 locate the bones, joints, movement types and muscles used during a range of sporting activities	
	P2 describe the different classifications of joints		
2 Know the structure and function of the muscular system	P3 identify the location of the major muscles in the human body		
	P4 describe the function of the muscular system and the different fibre types		
3 Know the structure and function of the cardiovascular system	P5 describe the structure and function of the cardiovascular system	M2 describe the roles of the cardiovascular and respiratory systems during exercise	D1 outline the relationships between the cardiovascular, respiratory and energy systems before, during and after a sporting activity
4 Know the structure and function of the respiratory system	P6 describe the structure and function of the respiratory system		
5 Know the different types of energy systems	P7 describe the three different energy systems and their use in sport and exercise activities		

TEACHING CONTENT

The unit content describes what has to be taught to ensure that learners are able to access the highest grade.

Anything which follows an i.e. details what must be taught as part of that area of content.

Anything which follows an e.g. is illustrative, it should be noted that where e.g. is used, learners must know and be able to apply relevant examples to their work though these do not need to be the same ones specified in the unit content.

LO1 Know the structure and function of the skeletal system

Structure of skeletal system: i.e. axial skeleton, appendicular skeleton, types of bone (e.g. long bones, short bones, flat bones, irregular bones, sesamoid bones), location of major bones (e.g. cranium, clavicle, ribs, sternum, humerus, radius, ulna, scapula, pelvis, carpals, metacarpals, phalanges, femur, patella, tibia, fibula, talus, tarsals, metatarsals, vertebral column)

*Function of skeletal system: i.*e. support, protection, movement, cell production, storage

Joints: i.e. fixed, slightly moveable, synovial/freely moveable (e.g. structure, similarities and differences), types of synovial joints (e.g. ball and socket, hinge, gliding) and movements capable (e.g. flexion, extension, abduction, adduction, circumduction, horizontal flexion, horizontal extension, rotation, plantar and dorsi flexion)

LO2 Know the structure and function of the muscular system

Muscular system: i.e. major muscles (e.g. bicep brachii, triceps brachii, deltoids, pectoralis major, rectus abdominis, rectus femoris, vastus lateralis, vastus medialis, vastus intermedius, semimembranosus, semitendinosus, bicep femoris, gastrocnemius, soleus, tibialis anterior, erector spinae, teres major, trapezius, latissimus dorsi, obliques, gluteus maximus), function, location

Function of the muscular system: i.e. movement (e.g. agonist, antagonist, fixator), types of contraction (e.g. isometric, concentric, eccentric)

Fibre types: (e.g. function of the structures in slow oxidative, fast oxidative glycolytic and fast glycolytic, how the mix might suit different activities).

LO3 Know the structure and function of the cardiovascular system

Structure of the cardiovascular system: i.e. heart (e.g. atria, ventricles, valves, vessels leading to and from the heart), stroke volume, cardiac output.

Structure of blood vessels: (e.g. arteries, arterioles, capillaries, veins, venules)

Function of the cardiovascular system: (e.g. changes in stroke volume and cardiac output, vascular shunt mechanism)

LO4 Know the structure and function of the respiratory system

Structure of the respiratory system: i.e. nasal cavity, epiglottis, pharynx, larynx, trachea, bronchus; bronchioles, alveoli

Function of the respiratory system: (e.g. gaseous exchange; mechanisms of breathing (inspiration and expiration); changes that occur prior, during and after exercise (e.g. increased depth and rate of respiration))

LO5 Know the different types of energy systems

Energy systems: i.e. alactic system, lactacid system, aerobic energy system, (e.g. what is ATP, how ATP is produced, how much ATP is produced, related to intensity and duration, continua), sporting examples; recovery (e.g. alactic and lactic components, restoration of glycogen and fat stores)

DELIVERY GUIDANCE

LO1 Learners could put together a simple poster or presentation that highlights the structure and function of the skeleton along with a classification of joints. Through guided learning from the tutor, learners can research the roles and functions of the skeletal system. Through practical exploration they can also seek to classify joints based on the movement they provide. For the merit criteria a range is more than two.

LO2 Learners work in pairs to identify the location of muscles on a partner and then describe the role and function of muscles. This again is an opportunity for learners to work practically, so that they are able to apply their knowledge in a vocational situation. There are also a number of internet based applications that allow learners to understand the location of deep muscles as well as superficial ones. For the merit criteria a range is more than two.

LO3 and **LO4** Learners produce a report that describes the structure and function of the cardiovascular and respiratory systems using practical examples. Through practical activity and simple classroom based exercise, learners can experience first hand the changes that occur in their body once they start to exercise. This can be expanded further by looking at the structures that enable this to happen.

LO5 Learners produce a presentation that describes how the energy systems produce ATP giving practical examples. This could be tackled in a number of ways but it is sometimes useful to get learners to work at different intensities and durations and then ask them to question how they feel and how long they felt they could go on for. The tutor could then relate this back to ATP and the way in which energy is produced. There are a number of applications that allow tutors and learners to explore this area further.

M1 As an extension to P3 and P4 learners are asked to locate bones, joints, muscles (role and function) and movements whilst involved in physical activity such as (e.g. sit-ups, press-ups, rowing, walking, etc).

M2 Learners observe a performer participating in physical activity and explain how the cardiovascular, respiratory and energy systems have changed.

D1 A learner identifies to a partner the role of the cardiovascular system, the respiratory system, and energy systems prior to exercise (e.g. on a treadmill), the changes that occur as the exercise progresses and then how the body returns to its resting state after the completion of exercise.

GUIDANCE ON ASSESSING THE SUGGESTED TASKS

The table below shows suggested scenarios that cover the pass, merit and distinction criteria in the assessment and grading grid.

You are starting your initial training as a sports rehabilitant, as part of this role you will be required to regularly apply you knowledge of anatomy and physiology to a number of sporting situations and identify to clients and mentor what you know, through posters, presentation and practical demonstrations.

Criteria	Assignment title	Scenario	Assessment
P1 and P2	The structure and function of the skeletal system and the different classifications of joints.	You have been asked to provide a poster for the waiting room that details the structure and function of the skeletal system and the different classifications of joints.	Poster details the structure and function of the skeletal system and enables learners to demonstrate their ability to classify joints.
P3 and P4	Identify the location of the major muscles in the human body and describe the function of the muscular system and different fibre types.	A crucial part of being a sports rehabilitator is being able to explain to the client what it is you are doing and how this relates to the body and muscles. You have therefore been asked by your mentor/teacher to identify to them, using a partner/peer, the location of the major muscles in the human body and describe the function of the muscular system and different fibre types.	Working with a partner the learner can practically apply their knowledge of muscle identification, through labelling. They are also able to explain different types of movement and how the muscle works.
P5 and P6	Describe the structure and function of the cardiovascular and respiratory systems.	To demonstrate your knowledge of internal body structures you have been asked to produce a report that describes the structure and function of the cardiovascular and respiratory systems.	A report that describes the structure and function of the cardiovascular and respiratory systems.
P7	Describe the different energy systems and their use in sporting activity.	A number of clients have asked whether lactic acid is bad for them when they exercise. To better inform clients you have been asked to provide a presentation that describes how energy is produced and how this relates to sporting activity.	A presentation that details the how energy is produced and how this relates to sporting activity.

M1	Locate bones, joints, movements and muscles used during sporting activity.	A statement regarding the relationship to sporting activity could be included to P1 and P2 so that students are able to reach the Merit criteria through one assessment process.	In extension to P3 and P4, learners may ask the performer (or third party) to participate in a sporting activity whilst they locate bones, joints, movements and muscles used.
M2	How do the cardiovascular, respiratory and energy systems change during sporting activity.	You have been asked to speak to a group of recently recruited, talented athletes about the way in which their bodies are structured and function. You have been asked, as they are similar in age and more likely to respond to what you say. You will need to identify to them, through the use of a volunteer, the role of the cardiovascular system, the respiratory system, and energy systems prior, during and after a sporting activity.	Graded through the learner response to the scenario, they are able to use a practical simulation to access both the M2 criteria and D1 criteria. Learners identify to the mentor/tutor how the body changes related to the cardiovascular system, the respiratory system, and energy systems prior, during and after sporting activity.
D1	Outline the relationships between the cardiovascular system, the respiratory system, and energy systems prior, during and after sporting activity.		

RESOURCES

Books

Cross, N., Lyle, J. (1999) *The Coaching Process: Principles and Practice for Sport* (Paperback Butterworth-Heinemann Ltd

Foran, B. (2000) *High-Performance Sports Conditioning* Human Kinetics Europe Ltd

Galvin, B., Ledger, P. (2004) *A Guide to Planning Coaching Programmes* Sports coach UK

Noakes, T., Hawley, J., Burke, L (1998) *Peak Performance: Training and Nutritional Strategies for Sport* Allen & Unwin

DVDs/Videos

Pushing the Limits in Athletic Performance DVD (2002). Video Education Australiasia (available from Coachwise)

Recovery from Exercise DVD (2003). Video Education Australiasia (available from Coachwise)

Training Strategies DVD (2003). Video Education Australiasia (available from Coachwise)

Journals/magazines/booklets/brochures

sports coach UK. *coaching edge Magazine*
coaching edge is produced quarterly and includes top coaches outlining their innovative coaching methods, tried and tested theories to improve coaching, how sports science can really make a difference, well presented technical information with something for every coach or sports enthusiast no matter what their level of experience.

UK Sport. *Performance*
UK Sport's regular publication aimed at the elite sport community. The magazine includes news and features on the latest issues impacting on high-performance sport in the UK.

Websites

BBC Sport Academy. news.bbc.co.uk/sportacademy
Advice on technique for different sports.

English Institute of Sport. www.eis2win.co.uk
This website has information on applied physiology, biomechanics, medical consultation, medical screening, nutritional advice, performance analysis, psychology, podiatry, strength and conditioning coaching, sports massage and sports vision.

Peak Performance online. www.pponline.co.uk/
Peak Performance is a subscription-only newsletter for athletes and coaches, featuring the latest research from the sports science world.

scenta (science, engineering and technology).
www.scenta.co.uk/sport.cfm
This website has an excellent section on sports technology news and features.

Sports Coach. www.brianmac.demon.co.uk
Provides information on a range of topics related to developing athletic ability and coaching expertise.

sports coach UK. www.sportscoachuk.org
Links for coaching contact information/fact sheets and resources for coaches.

The Gatorade Sports Science Institute. www.gssiweb.com/
GSSI staff scientists study the effects of exercise, the environment and nutrition on the human body using the latest scientific technology and equipment.

Top End Sports. www.topendsports.com
Lots of information on a range of sports, fitness testing, fitness training, sports nutrition and sport science.

American College of Sports Medicine. www.acsm.org

Coachwise 1st4sport. www.1st4sport.com
Coachwise 1st4sport is a specialist publisher, mail order catalogue and e-commerce site of sports books, videos, training tools, coaching aids and sports-related software.

Sports Coach UK. www.sportscoachuk.org
Links for coaching contact information/fact sheets and resources for coaches

St. John Ambulance. www.sja.org.uk

YMCA Fitness Industry Training. www.ymcafit.org.uk

MAPPING WITHIN THE QUALIFICATION TO THE OTHER UNITS

Unit 4: The Physiology of Fitness

Unit 5: Sports Nutrition

Unit 12: Applied Sport and Exercise Physiology

Unit 15: Sports Injuries

Unit 18: Sport and Exercise Massage

Unit 23: Fitness Training and Programming

CONTACT US

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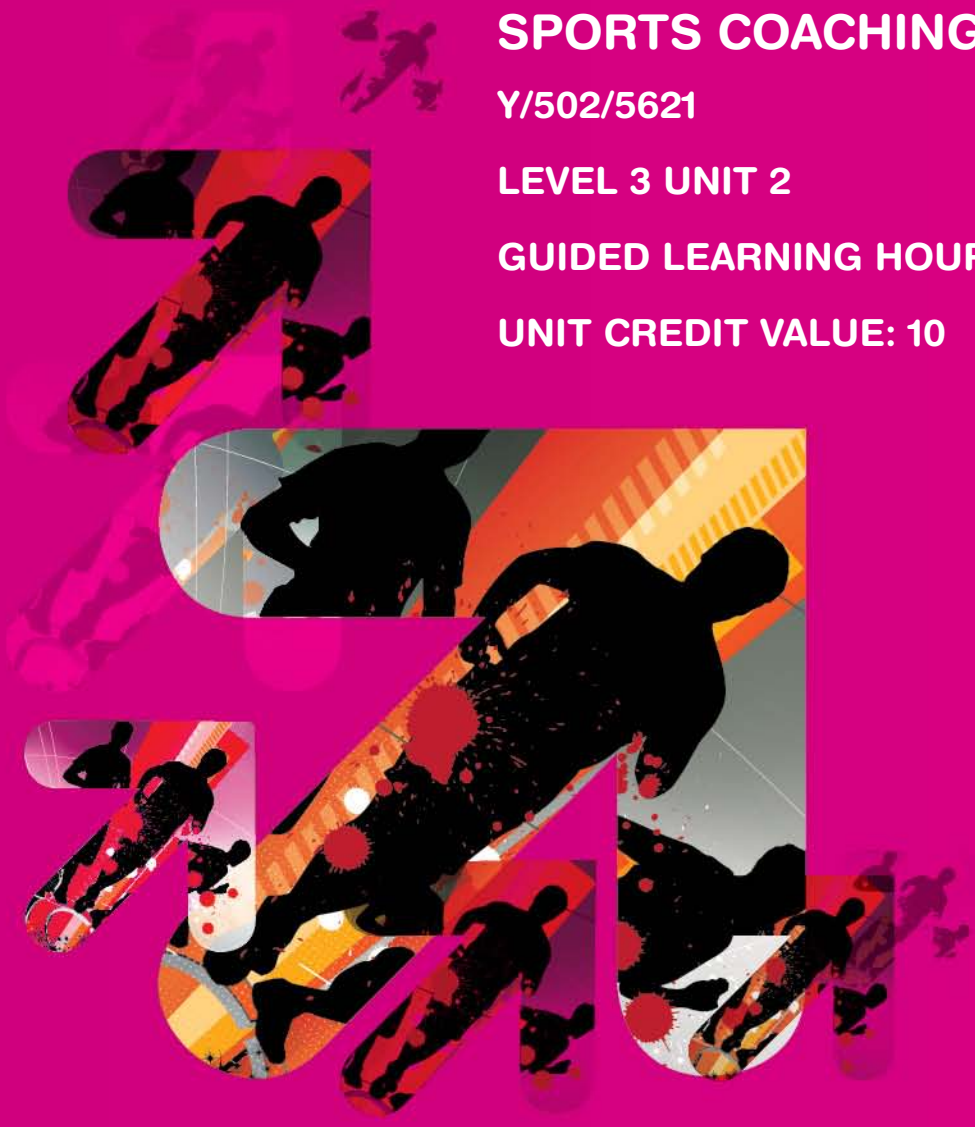

SPORTS COACHING

Y/502/5621

LEVEL 3 UNIT 2

GUIDED LEARNING HOURS: 60

UNIT CREDIT VALUE: 10

OCR

SPORTS COACHING

Y/502/5621

LEVEL 3

AIM OF THE UNIT

Behind every successful athlete or performer you will find at least one coach, sometimes a number of them, directing, supporting and guiding them to achieve. The role of the coach in sport is essential as they are the driving force behind the athlete, planning and personalising their training to suit them and work to the athlete's strength, usually having to do this for a number of different athletes and performers. The role of a coach is also a varied one, acting as expert, authoritarian, leader and sometimes even counsellor.

PURPOSE OF THE UNIT

The purpose of this unit is to show learners how varied the role and responsibilities of a coach can be and how they can impact on an athlete's performance and even their career. It will also show learners how a variety of methods and techniques need to be used by a coach in order to ensure that they are getting the best out of their athletes.

ASSESSMENT AND GRADING CRITERIA

Learning Outcome (LO) The learner will:	**Pass** The assessment criteria are the pass requirements for this unit. The learner can:	**Merit** To achieve a merit the evidence must show that, in addition to the pass criteria, the learner is able to:	**Distinction** To achieve a distinction the evidence must show that, in addition to the pass and merit criteria, the learner is able to:
1 Know the roles, responsibilities and skills of sports coaches	P1 describe four roles and four responsibilities of sports coaches, using examples of coaches from different sports	M1 describe how the roles and responsibilities of sports coaches can affect performance	
	P2 describe three skills common to successful sports coaches, using examples of coaches from different sports		
2 Know the techniques used by coaches to improve the performance of athletes	P3 describe three different techniques that are used by coaches, to improve the performance of athletes	M2 identify techniques being used by coaches to improve performance during a practical session	
3 Be able to plan a sports coaching session	P4 plan a sports coaching session	M3 plan a series of sports coaching sessions to improve performance in a selected sport over time	D1 continually review sports coaching sessions making amendments to the planning and delivery of upcoming sessions where needed
4 Be able to deliver and review a sports coaching session	P5 deliver a sports coaching session, with tutor support	M4 deliver a series of sports coaching sessions to improve performance in a selected sport over time	
	P6 carry out a review of the planning and delivery of a sports coaching session, identifying strengths and areas for improvement		

TEACHING CONTENT

The unit content describes what has to be taught to ensure that learners are able to access the highest grade.

Anything which follows an i.e. details what must be taught as part of that area of content.

Anything which follows an e.g. is illustrative, it should be noted that where e.g. is used, learners must know and be able to apply relevant examples to their work though these do not need to be the same ones specified in the unit content.

LO1 Know the roles, responsibilities and skills of sports coaches

The roles of the sports coach: (e.g. instructor/teacher, manager, friend, motivator, planner, leader)

The responsibilities of the sports coach: (e.g. updating own knowledge about recent changes in the sport, management and planning, skill development, safety and security)

Skills: (e.g. analysing, evaluating, communication, organisation, problem solving)

LO2 Know the techniques used by coaches to improve the performance of athletes

Techniques: (e.g. effective demonstration, analysis of strengths and weaknesses (e.g. skills, tactics, fitness), action planning, goal setting, simulation, technical instruction, adapting practices to meet individual needs, designing effective practice sessions)

LO3 Be able to plan a sports coaching session

Session objectives and aims: (e.g. improve dribbling skills, learn how to serve)

Consideration of participants: (e.g. age, ability, previous experience, number attending)

Content of session: (e.g. warm up, main content, cool down, organisation, resources, leadership approach)

Risk assessment: (e.g. emergency procedures, contingencies)

Over time: i.e. a series of sessions focusing on different activities to boost all round performance (e.g. serving, volleying, ground strokes)

LO4 Be able to deliver and review a sports coaching session

Delivering a session: (e.g. appropriate role for the group, management of the group, the environment, the session, communication and demonstrations, observation and correction of performance, health and safety, motivating participants)

Reviewing a session: i.e. reflect on session by considering (e.g. planning, organisation, content of the session, leadership style, coaching communication, demonstrations, observation and correction of performance), achievement of the session objectives

DELIVERY GUIDANCE

LO1 In this LO tutors could ask learners to relay their experiences of different coaches, what roles did they take on? What responsibilities and what skills did they have? etc. Through this discussion it might also be possible to look at some more high profile coaches and examine the roles they have within their sport. There should also be some opportunity to practically demonstrate some of the skills required through the tutor taking on the role of the coach or through simulation. A task requiring the learner to considering what type of coach they want to be should help them throughout the unit.

LO2 'What do coaches do to improve performance?' A discussion could take place about the various ways in which coaches could bring about improvements in performance followed by practical demonstrations or through observations of coaching DVDs or media outlets. Those learners looking to achieve the merit level could consider how they might include different techniques within their plans and sessions.

LO3 and **LO4** These LO's follow on logically from one another. The tutor could present the learner with a variety of different session plan templates and discuss with them what the most important aspects are. Learners could then use an existing template or devise one of their own. Although learners may coach each other within a group and try different techniques, it is important that they get the opportunity to work with a different age group; older primary children present the perfect opportunity for them to develop their skills.

The criteria asks for learners to undertake a series of sessions in order to access a higher grade. This allows the learner to gain experience and build upon it. For the merit criteria a series is more than two

Learners should be encouraged to reflect on their experiences and be a 'critical friend' to their peers, this will help them to ensure that they are able access the distinction level.

GUIDANCE ON ASSESSING THE SUGGESTED TASKS

The table below shows suggested scenarios that cover the pass, merit and distinction criteria in the assessment and grading grid.

The local authority are looking to develop a summer training programme for a number of different sports. Having already recruited a number of experienced coaches they are now looking for a number of people to provide assistance to the coaches during the programme and occasionally work with smaller groups on their own. The aim is to develop talent both in performance and coaching. You have decided to apply for one of the jobs and as such are required to complete a number of tasks.

Criteria	Assignment title	Scenario	Assessment
P1 and P2	Roles, responsibilities and skills of sports coaches.	It is important that you understand the role of a coach and what makes a coach successful. It is to this end that you have been asked to provide a report on the roles and responsibilities of coaches and the skills that make them successful, giving examples from different sports.	Written report outlining roles and responsibilities of sports coaches, and skills common to them.
P3	Techniques used by coaches.	You have been asked to work with a primary school team to help improve their performance in a local school league. Prepare a plan using the techniques you have learnt to improve their performance.	A simplified coaching plan that outlines the strategies that could be employed to improve performance.
P4, P5 and P6	Sports coaching session.	A local primary school has asked you to work with a group of their students in a sport of your choice. In order to achieve a successful session you will need to plan the session, deliver the session and then review the session.	Learners might develop their own session plan or use one provided by the tutor to include a section that reviews the plan and delivery. A witness statement for delivery of the session (and also video evidence) and peer feedback are also useful to help learners to review their performance.
M1	Roles and responsibilities of sports coaches 2.	Consider what affect a poor knowledge of the roles and responsibilities of a coach might have on a team or individual.	An extension to the task should enable leaner to consider what affect it might have.
M2	Techniques being used by coaches to improve performance.	Include the techniques you have considered using into your session plan for the primary school.	Witness statement and session plan.

M3	Plan a series of sports coaching sessions.	Plan a series of sessions for a group of primary children so that they develop their skills.	Written session plans.
M4	Deliver a series of sports coaching sessions.	Deliver the sessions planned.	A witness statement for delivery of the session (and also video evidence), peer observations are also useful to help learners to review their performance.
D1	Continually review sports coaching sessions.	You have completed your first session with the primary group, you now need to go back and review your plan for future sessions, draw on the techniques you have learnt and amend them in line with the outcomes of the first session, adjusting goals, activities etc as necessary. You may need to do this after each session.	Learners might develop their own session plans or use some provided by the tutor to include a section that reviews the plan and delivery. A witness statement for delivery of the sessions (and also video evidence), peer observations are also useful to help learners to review their performance. The tutor should consider whether the sessions progress from the first one.

RESOURCES

Soccer Strategies (Defensive and Attacking tactics) - Jones and Tranter (Amazon books 2012) ISBN 7861987439365

4-4-2 versus 4-3-3 – Tossani (First Stone Publishing 2012) ISBN 9780736067543

Getting Started in Track and Field Athletics: Advice and Ideas for Children, Parents and Teachers – Barber G (Trafford Publishing, 2005) ISBN 9781412065573

Coaching Basketball: Technical and Tactical Skills – Mgee K(Human Kinetics Europe, 2007) ISBN 9780736047050

Canon of Judo: Classic Teachings on Principles and Techniques – Mifune K (Kodansha International Ltd, 2004) ISBN 9784770029799

Tennis: A Complete Guide to Tactics and Training – Sporting Skills- Parkhurst A (First Stone Publishing, 2005) ISBN 9781904439479

Coaching for Long-term Athlete Development – Stafford I et al (Sports Coach UK, 2005) ISBN 9781987439236

Journals

4-4-2

Academy Soccer Coach

Websites

The British Olympic Association www.olympics.org.uk

Amateur Swimming Association www.britishswimming.orG.UK

Badminton Association of England www.badmintonengland.co.uk

British Cycling www.britishcycling.org.uk

British Gymnastics www.british-gymnastics.org

Coachwise www.coachwise.co.uk

The Lawn Tennis Association www.lta.org.uk

Prozone www.pzfootball.co.uk

www.safesport.co.uk

www.sportscoachuk.org

www.sportscoachuk.org/coaches/resource-bank

http://www.1st4sport.com

http://www.coachwise.ltd.uk

MAPPING WITHIN THE QUALIFICATION TO THE OTHER UNITS

Unit 7: Practical Team Sports

Unit 11: Practical Individual Sports

Unit 13: Leadership in Sport

Unit 20: Technical and Tactical Skills in Sport

Unit 22: Assessing Risk in Sport

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OCR LEVEL 3 CAMBRIDGE TECHNICAL

CERTIFICATE/DIPLOMA IN

SPORT

CURRENT ISSUES IN SPORT

H/502/5721

LEVEL 3 UNIT 3

GUIDED LEARNING HOURS: 60

UNIT CREDIT VALUE: 10

OCR

CURRENT ISSUES IN SPORT

H/502/5721

LEVEL 3

AIM OF THE UNIT

Sport dominates many people's lives, in terms of employment, spectating and participating. This unit will allow learners the opportunity to obtain an insight into the influences of how sport has evolved from an uncodified and often violent beginning to a multi-million pound worldwide industry. Learners will also consider a range of media influences and contemporary issues which shape how we view and participate in sport.

PURPOSE OF THE UNIT

Sport plays a huge part in the lives of millions of people, whether we are supporting our favourite team, watching our favourite sport or gaining full or part time employment from it. Everyone at some time has been involved in sport from an early age. Around the UK there are the inevitable daily discussions and debates around sporting issues. There are specialist mediums set up for just this purpose. This unit analyses the growth and development in sport, from an often brutal and violent beginning, to the civilising processes of the Victorians and Muscular Christianity, to the multi technological developments seen in today's sporting arenas. Learners can appreciate their favourite sports and how it has developed from often humble beginnings with no rules or structure to a complex global multi million pound industry.

The relationship between the mass media and modern sport is also investigated, which looks in particular at how TV and newspapers influence and shape sport today. The growth of satellite sports channels, 3D TV coverage, and football club owned channels, Talk sport radio station, specialist sports magazines and the huge amount of coverage given to sports in our daily newspapers.

Deviance within sport also provides huge topical debate and here we will be examining the wider implications of cheating and violence within sport. Plus, the investigation of how various organisations, including the Government, use sport as a catalyst to address social issues in the UK such as anti-social behaviour, disadvantaged groups, obesity and health, gender issues and racism.

This unit will also examine the various factors which either influence or hinder sports participation. Determinants such as ethnicity, gender and socio-economic groupings are also identified as barriers to sports participation.

ASSESSMENT AND GRADING CRITERIA

Learning Outcome (LO) The learner will:	**Pass** The assessment criteria are the pass requirements for this unit. The learner can:	**Merit** To achieve a merit the evidence must show that, in addition to the pass criteria, the learner is able to:	**Distinction** To achieve a distinction the evidence must show that, in addition to the pass and merit criteria, the learner is able to:
1 Know how sport has developed in the UK	P1 describe the development and organisation of a selected sport in the UK		
2 Know how media and technology influence modern sport	P2 describe the influence of the media on a selected sport in the UK	M1 give examples of the influence that the media has had on a selected sport	D1 identify opportunities to improve modern sport through the use of technology and media
	P3 describe the effect that technology has on a selected sport	M2 give examples of the effect that technology has had on a selected sport	
3 Know how contemporary issues affect sport	P4 describe the effects of four contemporary issues on a selected sport	M3 give examples of sports which have been affected by contemporary issues	D2 summarise potential future ways in which contemporary issues will affect modern sport
4 Understand the cultural influences and barriers that affect participation in sports activities	P5 explain the barriers to sports participation		
	P6 explain three cultural influences on sports participation		
	P7 describe three strategies or initiatives which relate to sports participation		

TEACHING CONTENT

The unit content describes what has to be taught to ensure that learners are able to access the highest grade.

Anything which follows an i.e. details what must be taught as part of that area of content.

Anything which follows an e.g. is illustrative, it should be noted that where e.g. is used, learners must know and be able to apply relevant examples to their work though these do not need to be the same ones specified in the unit content.

LO1 Know how sport has developed in the UK

Historical development of British sport: (e.g. from early pre-industrial sports, to modern sport, (Thomas Arnold, Muscular Christianity, industrialisation, the Victorians, rational recreation and the codification and civilising of sport). The influence of industry and better transport and communication aiding and spreading sports development.)

Organisations: (e.g. National Governing Bodies (e.g. British Olympic Association (BOA)), Sport England, Sport Scotland, Sports Council for Wales, the Sports Council for Northern Ireland, UK Sport, Department for Media and Sport (DCMS), Sports Coach UK, British Sports Trust, English Institute of Sport (EIS), Youth Sports Trust), Central Council for Physical Recreation (CCPR).)

LO2 Know how media and technology influence modern sport

The influence of the mass media on sport: (e.g., newspapers, books, magazines, radio, internet, mobile communications, Twitter, TV, satellite and cable, third officials, replays, rule changes, video technology)

Technology: (e.g. clothing and equipment development, sports facilities and stadium development, video and computer games,ethics and reliance on technology, performance analysis, drug testing, optimising performance, officiating)

LO3 Know how contemporary issues affect sport

Gender issues: (e.g. re-defining masculinity, re-defining femininity, institutional sexism, homophobia, portrayal of gender issues by the media)

Culture and sport: (e.g. religion, racism, stacking, stereotyping, blocked opportunities, self-fulfilling prophecy, initiatives to address racism in sport)

Deviance in sport: (e.g. drug taking, diving in football, violence in sports and initiatives to combat these issues (e.g. 100%ME, the RESPECT campaign, Clubmark or charter standard status).)

LO4 Understand the cultural influences and barriers that affect participation in sports activities

Socio-economic factors: (e.g. time, money, access, location, transport)

Barriers to participation: (e.g. ethnicity, age, well being, medical issues, lifestyle)

Sports development: (e.g. targeted sports)

Sporting initiatives: (e.g. Sportsmark, TASS, Inclusive Fitness Initiative, School Games, Places, People Play strategy)

DELIVERY GUIDANCE

LO1 Tutors can outline the various types of pre-industrial sports and the influence that the Public School's had on sport, particularly Thomas Arnold and Muscular Christianity and rational recreation. Victorian influence on sport and the development of better transport and communication links helped to spread sport throughout the UK. The development of newly formed National Governing Bodies can also be discussed and their links in the civilising and codifying of sports. An excellent DVD History of Football – The Beautiful Game, highlights this perfectly. The organisation of UK sport can be complicated to the learner with many organisations appearing to be overlapping at times. It is essential that tutors can emphasise the structure and functions of governing bodies and national organisations involved in the development of sport. Learners then have a choice of which selected sport to describe in terms of development and organisation. Although, ideally, a learner should be able and be encouraged to follow their chosen selected sport, tutors might at times have to advise learners in terms of adequate information and research.

LO2 Media and technology continues to push the boundaries of sport and it is important that tutors can embrace the continuing changes, 3D TV coverage, as an example. The learners need to know how the media influences sport in terms of the benefits that it brings and consequently the benefits that sport can bring to the media. Types of media coverage can easily be analysed by surveying newspapers in terms of sport coverage and why football dominates the headlines and coverage to the detriment of other sports. This can also be emphasised by looking at TV coverage of football, particularly on satellite channels in relation to other sports. Tutors can discuss why footballers and even WAG's help to sell newspapers and magazines and the insatiable appetite that the public and media seem to have on football stories. The growth of sporting computer gaming can be discussed. Clothing and equipment advances can be linked to the ethics and reliance on technology in sport. Learners, by selecting a specific sport, can focus on the influence of the media and technology that has helped highlight that sport. There will be a tendency for most learners to select football, as there is much information and topical debate. However tutors should try to encourage other sports as well, as there is often just as much evidence.

LO3 Tutors can fully explore the many different types of contemporary issues within sports. Gender issues can be underpinned by gender socialisation and then the notion of re-defining masculinity/ femininity and institutional sexism, tutors can look at homophobia in sport and why gay sportsmen find it difficult to 'come out'. A good DVD is Million Dollar Baby, looking at the male attitude towards a female boxer. Culture and sport is often very heavily American sport bias, in terms of examples of stacking, especially examples from American football, baseball and basketball. An excellent DVD which encapsulates all this is Remember the Titans. However tutors can look at British sport and look at how many black football managers there are and the blocked opportunities in certain white middle class sports. Deviance in sport can be very topical in terms of cheating in sport, particularly diving in football. If tutors discuss the current issues of drug misuse in sport, they can historically look at older cases, but they should emphasise to learners that current examples of drug taking should be used in their selected sport. By producing a selected case study, learners can look at gender issues, cheating, drugs, and violence all within the same sport and then how that sports NGB is addressing the situation if any.

LO4 To present ideas on how cultural influences and barriers that affect participation to sport, learners could visit a leisure or sports centre or interview a sports development team on how they try and encourage participation. Learners could then design their own leisure centre or local sports development initiative justifying which activities or sports they are targeting/running and why? Who is their target market and why? What are their various strategies to attract different types of customers or participants. The strategies will be linked to government or NGB sporting initiatives.

GUIDANCE ON ASSESSING THE SUGGESTED TASKS

The table below shows suggested scenarios that cover the pass, merit and distinction criteria in the assessment and grading grid.

Criteria	Assignment title	Scenario	Assessment
P1	Development and Organisation of Sport in the UK.	A holistic case study on a selected sport from its historical evolution, to how it's organised and explaining how the media, technology and contemporary issues have affected its development.	An illustrated report, case study or timeline that describes the historical and organisational development on a selected sport.
P2, P3, M1, M2, D1	Media and Technology.		A scrapbook or mood board which explains the influence that media and technology has had on the selected sport.
P4, M3, D2	Contemporary Issues in Sport.		A presentation on four contemporary issues on the selected sport.
P5, P6, P7	Influences and Barriers .	The learner researches either a local area or national barriers which inhibit sports participation and then they develop strategies or initiatives to increase participation, either locally or nationally.	A written report or guidance leaflets that explain the barriers to sports participation and list initiatives or strategies aimed at combating the issues.

RESOURCES

Sport England:
www.sportengland.org/funding/active_women/barriers_to_participation.aspx

Sport and Development:
www.sportanddev.org/

Sports Coach UK:
www.sportscoachuk.org/site-tools/about-us/who-we-work/national-governing-bodies

Olympics – The International Olympic Committee:
www.olympic.org/ioc

Bioethics Education Project:
www.beep.ac.uk/content/665.0.html

Commission for a sustainable London:
www.cslondon.org/sustainable-games/sustainable-legacy/

Political, Social and Economic aspects of the Olympic Games:
http://olympics.pthimon.co.uk/londonadv.htm

Rugby Network:
www.rugbynetwork.net/main/s101/st65567.htm

World Anti-Doping Agency:
www.wada-ama.org/

England Athletics:
www.englandathletics.org/

English Federation of Disability Sport:
www.efds.co.uk

Department for Culture, Media and Sport:
www.culture.gov.uk

Sport Scotland:
www.sportscotland.org.uk

Sport Wales:
www.sportwales.org.uk

Sport Northern Ireland:
www.sportni.net

Skills and Techniques:
www.slideshare.net/PEEDC/skills-and-techniques

Talk Football – Football Tactics:
www.talkfootball.co.uk/guides/football_tactics.html

Sports Training Adviser:
www.sports-training-adviser.com

Teach PE:
www.teachpe.com/netball/index.php#shooting

Mastersport:
www.mastersport.co.uk/soccerskills.htm

Badminton Information:
www.badminton-information.com/rules-of-badminton.html

BBC Sport – Basketball:
http://news.bbc.co.uk/sport1/hi/other_sports/basketball/4282648.stm

Sports Coach UK:
www.sportscoachuk.org/site-tools/about-us/who-we-work/national-governing-bodies

Athlete Assessments:
www.athleteassessments.com/articles/improve_athlete_decision_making_skills.html

Sports Officials UK:
www.sportsofficialsuk.com/resources/general/mentalpreparation.htm

Coachwise 1st4sport:
www.1st4sport.com

English Federation of Disability Sport:
www.efds.co.uk

Sports Leaders UK:
www.sportsleaders.org

Youth Sport Trust:
www.youthsporttrust.org

MAPPING WITHIN THE QUALIFICATION TO THE OTHER UNITS

Unit 8: Sport as a Business

Unit 9: Exercise for Specific Groups

Unit 16: Analysis of Sports Performance

Unit 17: Talent Identification and Development in Sport

Unit 20: Technical and Tactical Skills in Sport

Unit 21: The Athlete's Lifestyle

Unit 24: Sports Development

CONTACT US

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OCR LEVEL 3 CAMBRIDGE TECHNICAL

CERTIFICATE/DIPLOMA IN

SPORT

THE PHYSIOLOGY OF FITNESS

R/502/5486

LEVEL 3 UNIT 4

GUIDED LEARNING HOURS: 30

UNIT CREDIT VALUE: 5

OCR

THE PHYSIOLOGY OF FITNESS

R/502/5486

LEVEL 3

AIM OF THE UNIT

Understanding how the body is affected by exercise both in the short term and through long term physical activity, is vital in a number of sport related vocations. This unit builds on the knowledge developed in Unit 1 Anatomy and Physiology, and extends it further to look at the changes that occur in the body as a consequence of long term physical activity. Learners will have the opportunity to not only consider the theory about the effects of exercise on the body, but have the opportunity to conduct tests that measure levels of fitness in different areas and compare the ratings to different population groups. Being able to undertake these tasks is particularly crucial as a gym instructor, coach or teacher.

PURPOSE OF THE UNIT

The purpose of this unit is for learners to further become familiar with the anatomy and physiology of the human body and learn the effects of exercise on the various body systems both in the long term and short term as well as being able to scientifically test and prove the adaptations. Learners could also look at how exercise routines differ as the body adapts over time and how an elite performers exercise routine and body adaptations are significantly different to that of the average learner/performer.

ASSESSMENT AND GRADING CRITERIA

Learning Outcome (LO) The learner will:	**Pass** The assessment criteria are the pass requirements for this unit. The learner can:	**Merit** To achieve a merit the evidence must show that, in addition to the pass criteria, the learner is able to:	**Distinction** To achieve a distinction the evidence must show that, in addition to the pass and merit criteria, the learner is able to:
1 Know the body's response to acute exercise	P1 describe the musculoskeletal and energy systems response to acute exercise		
	P2 describe the cardiovascular and respiratory systems responses to acute exercise		
2 Know the long-term effects of exercise on the body systems	P3 describe the long-term effects of exercise on the musculoskeletal system and energy systems	M1 outline the adaptations to cardiovascular, respiratory, musculoskeletal and energy systems, brought about by regular exercise	D1 compare the effects of exercise on the musculoskeletal, cardiovascular, respiratory and energy systems for a selected performer against an elite performer
	P4 describe the long-term effects of exercise on the cardiovascular and respiratory systems		
3 Be able to investigate the physiological effects of exercise on the body systems	P5 collect physiological data to investigate the effects of exercise on the musculoskeletal, cardiovascular, respiratory and energy systems, with tutor support	M2 explain the effects of exercise on the musculoskeletal, cardiovascular, respiratory and energy systems for a selected performer	
	P6 review physiological data collected, describing the effects of exercise on the musculoskeletal, cardiovascular, respiratory and energy systems		

TEACHING CONTENT

The unit content describes what has to be taught to ensure that learners are able to access the highest grade.

Anything which follows an i.e. details what must be taught as part of that area of content.

Anything which follows an e.g. is illustrative, it should be noted that where e.g. is used, learners must know and be able to apply relevant examples to their work though these do not need to be the same ones specified in the unit content.

LO1 Know the body's response to acute exercise

Musculoskeletal response: (e.g. increase in muscle pliability, increased range of movement)

Energy systems: i.e. phosphocreatine, lactic acid, aerobic, energy continuum, energy requirements of different sport and exercise activities

Cardiovascular response: (e.g. heart rate anticipatory response, activity response, blood pressure changes, vascular shunt mechanism, stroke volume and cardiac output increase)

Respiratory: (e.g. increase in breathing rate and frequency)

LO2 Know the long-term effects of exercise on the body systems

Muscular system: (e.g. hypertrophy and or hyperplasia, increase in tendon strength, increase in myoglobin stores, increased number of mitochondria, increased muscle strength, increased tolerance to lactic acid)

Cardiovascular system: (e.g. cardiac hypertrophy, the link between stroke volume, maximum cardiac output and heart rate, capillarisation, increase in blood volume)

Respiratory system: (e.g. increase in minute ventilation through increased strength of respiratory muscles, increase in oxygen diffusion rate through capillarisation around alveoli)

Energy systems: i.e. changes to energy systems (e.g. threshold changes, enzyme changes, fuel used)

LO3 Be able to investigate the physiological effects of exercise on the body systems

Methods of investigation: i.e. tests that measure physiological levels (e.g. Cooper 12 minute run, one repetition max, goniometer, Illinois agility test), comparison of pre-exercise, exercise and post exercise readings (e.g. heart rate, respiration rate, perceived exertion)

Review: i.e. Usefulness of tests and comparison (e.g. reliability, validity, advantages and disadvantages of tests selected), areas for improvement

DELIVERY GUIDANCE

LO1 This learning outcome should ideally be completed after Unit 1 as the structure and function content contained within and some of the details relating to the effects of exercise are closely related. Learners should consider the effects of exercise in relation to different intensities and durations. A leaflet provides an ideal way in which to give details on fixed changes in body systems and how they relate to exercise. In learning about the effects of exercise practical situations where learners record how their bodies are affected might develop knowledge more readily, this could provide practical examples for them to relay.

LO2 This learning outcome extends on the knowledge developed in LO1. Learners are now looking at how regular exercise impacts on the body. Learners should be clear on the difference between acute or short-term changes and chronic or long-term changes. There are a considerable number of books and DVDs that identify how the body changes. Learners might also be able to share their experiences of the effects of regular exercise. Ideally a period of exercise might be undertaken so that learners could see for themselves what might happen.

LO3 Ideally this learning outcome needs to be as practical as possible and learners should experience as many tests possible through a range of fitness components. The use of the internet, and books has broadened the access to a number of tests. A trip to a local HE institute where more complex tests with specialist equipment are available (such as isokinetic dynamometer, bod pod and Direct VO2 Max test) can demonstrate the huge range of tests available. Learners should also consider the value of the tests within the context they are conducted and how valid and reliable the results might be not only through how well the are conducted but their relevance to the individual. The most capable learners will be able to contrast their results against those of another individual.

GUIDANCE ON ASSESSING THE SUGGESTED TASKS

The table below shows suggested scenarios that cover the pass, merit and distinction criteria in the assessment and grading grid.

As an assistant fitness instructor it is important that you are able to apply the anatomy and physiology knowledge you have developed into practical situations when working with a client. You should not only know about how exercise effects the body and explain this to your client, you should also be ready to measure their fitness through appropriate tests and understand what this means for the individual.

Criteria	Assignment title	Scenario	Assessment
P1 and P2	Short term effects of exercise.	You have been asked to provide a description of the effects of exercise in the form of a leaflet so that clients new to the gym can know how their body is affected by exercise.	A leaflet that describes the way in which exercise affects each of the body systems (muscular, cardiovascular, respiratory and energy) on a short term basis.
P3 and P4	Long term effects of exercise.	Provide a report that demonstrates to your mentor that you have knowledge of the way body systems are affected long term by exercise.	Provide a report on the long term effects of exercise on the body systems (muscular, cardiovascular, respiratory and energy).
P5 and P6	Effects of exercise on the musculoskeletal, cardiovascular, respiratory and energy systems.	In your role as an assistant fitness instructor you will be required to select and take clients through a range of tests in order to know how fit they are. You will also need to review the data you have collected.	Simulation of the role between assistant fitness instructor and client. Selecting appropriate tests and reviewing the outcomes.
M1	Adaptations to cardiovascular, respiratory, musculoskeletal and energy systems.	Your mentor has requested that you tell them about the benefits of undertaking exercise for a period of time.	As part of report.
M2	Effects of exercise on the musculoskeletal, cardiovascular, respiratory and energy systems.	Using the information you have obtained for P5 and P6 explain the results of the test and how this relates to how their body has or might change, through adaptations to exercise.	As part of simulation.
D1	Compare the effects of exercise on the musculoskeletal, cardiovascular, respiratory and energy systems.	Give feedback to a client about the results of their test in comparison to an elite performer in a selected sport.	Could be done as either a simulation or feedback report.

RESOURCES

Books

Foran, B. (2000) *High-Performance Sports Conditioning* Human Kinetics Europe Ltd

Noakes, T., Hawley, J., Burke, L (1998) *Peak Performance: Training and Nutritional Strategies for Sport* Allen & Unwin

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

Davis J – *Fitness for Games Players* (NCF, 1996) I SBN 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

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

Wansworth A – *The Complete Practical Encyclopedia of Fitness Training: Everything You Need to Know About Strength and Fitness Training in the Gym and at Home, from Planning Workouts to Improving Technique* (Lorenz Books, 2010) ISBN-10: 0754818810

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

DVDs/Videos

Pushing the Limits in Athletic Performance DVD (2002). Video Education Australiasia (available from Coachwise)

Recovery from Exercise DVD (2003). Video Education Australiasia (available from Coachwise)

Journals/magazines/booklets/brochures

sports coach UK. *coaching edge Magazine*

coaching edge is produced quarterly and includes top coaches outlining their innovative coaching methods, tried and tested theories to improve coaching, how sports science can really make a difference, well presented technical information with something for every coach or sports enthusiast no matter what their level of experience.

UK Sport. *Performance*

UK Sport's regular publication aimed at the elite sport community. The magazine includes news and features on the latest issues impacting on high-performance sport in the UK.

Websites

BBC Sport Academy. news.bbc.co.uk/sportacademy
Advice on technique for different sports.

English Institute of Sport. www.eis2win.co.uk
This website has information on applied physiology, biomechanics, medical consultation, medical screening, nutritional advice, performance analysis, psychology, podiatry, strength and conditioning coaching, sports massage and sports vision.

Peak Performance online. www.pponline.co.uk/
Peak Performance is a subscription-only newsletter for athletes and coaches, featuring the latest research from the sports science world.

scenta (science, engineering and technology).
www.scenta.co.uk/sport.cfm
This website has an excellent section on sports technology news and features.

Sports Coach. www.brianmac.demon.co.uk
Provides information on a range of topics related to developing athletic ability and coaching expertise.

sports coach UK. www.sportscoachuk.org
Links for coaching contact information/fact sheets and resources for coaches..

The Gatorade Sports Science Institute.
www.gssiweb.com/
GSSI staff scientists study the effects of exercise, the environment and nutrition on the human body using the latest scientific technology and equipment.

Top End Sports. www.topendsports.com
Lots of information on a range of sports, fitness testing, fitness training, sports nutrition and sport science.

American College of Sports Medicine.
www.acsm.org

Sports Coach UK. www.sportscoachuk.org
Links for coaching contact information/fact sheets and resources for coaches

St. John Ambulance. www.sja.org.uk

YMCA Fitness Industry Training. www.ymcafit.org.uk

Fitness.com www.fitness.com

Fit for sport www.fitforsport.co.uk

Human Kinetics www.humankinetics.com

Livestrong www.livestrong.com

Teach Pe www.teachpe.com

MAPPING WITHIN THE QUALIFICATION TO OTHER UNITS

Unit 1: Principles of Anatomy and Physiology in Sport

Unit 5: Sports Nutrition

Unit 9: Exercise for Specific Groups

Unit 14: Instructing Physical Activity and Exercise

Unit 15: Sports Injuries

Unit 16: Analysis of Sports Performance

Unit 18: Sport and Exercise Massage

Unit 23: Fitness Training and Programming

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