

BTEC LEVEL 3 SUBSIDIARY DIPLOMA IN SPORT & EXERCISE SCIENCES

Year on year the sport sector out performs the rest of the UK economy; this has been the case since the economic recession of the late 1990s ended, and researchers predict this will be the case for years to come, long after the London summer Olympics and Paralympics of 2012 have been and gone.

The annual contribution of the sport sector to the UK economy is over £8 billion. This sector has over 36,000 employers creating work for over 600,000 full and part-time employees, and over five million volunteers.

In recent years, sport and exercise scientists have been a growing presence in the world of sport, and as we look to the future all the signs suggest their influence in sport will increase.

From the elite performers' reliance on a large support team, to the casual gym user's use of ergogenic aids, sport and exercise sciences' core elements - anatomy, physiology, psychology and biomechanics - are seen in almost every aspect of, and activity within, the sport sector.

The BTEC National Award in Sport and Exercise Sciences will give learners a solid and sound foundation in the sector, whilst also developing the essential skills required for employment, career progression, or progression to further qualifications and training.

There are THREE mandatory units and THREE optional units. The core units are described below:

Unit 1 Anatomy for Sport and Exercise

The human body is made up of many different systems that work together and allow us to take part in a huge variety of sport and exercise activities. The skeletal and muscular systems work together to allow our bodies to perform a vast range of different movements.

Our cardiovascular and respiratory systems act as a delivery service, working together to supply oxygen to the body which in turn is used to produce energy for muscular contraction. In order to appreciate how each of these systems operate, learners will study the structure of the skeletal, muscular, cardiovascular and respiratory systems.

The anatomy of these systems are all very different but are implicitly linked together. Most

careers in the sports industry require a good level of understanding of how the body operates. From the information studied in this unit, the function of each system can be examined and applied to sport and exercise activities.

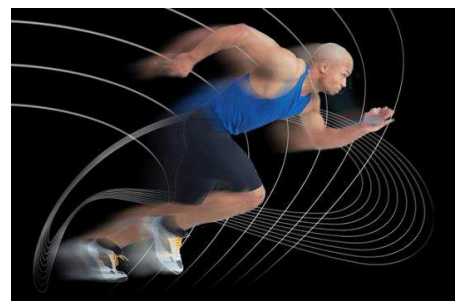


This unit explores the structure and function of the skeletal system, the muscular system, the cardiovascular system and the respiratory system. Nervous control of the muscular, cardiovascular and respiratory systems is also investigated.

Unit 2 Sport and Exercise Physiology

The human body allows us to take part in a huge variety of sport and exercise activities. For each activity we take part in, the body undergoes a series of changes, providing the performer with the ability and the energy to carry out these actions.

It is the interaction of the body's systems that makes this variety of sport and exercise activities possible. The responses of these systems will depend on the stage of the activity and the exercise history of the individual. Exercise cannot continue indefinitely; sooner or later a person will have to cease exercising and take time to recover.



Understanding these systems is imperative in the sport and exercise industries so we can appreciate how the body copes with the stress of exercise, why we cannot continue to exercise indefinitely, and how we can train these systems to improve our fitness.

This unit commences by exploring the responses of the cardiovascular, respiratory and energy systems to the anticipation and initial stress of exercise. Learners will then explore the response of the body when a steady state has been achieved.

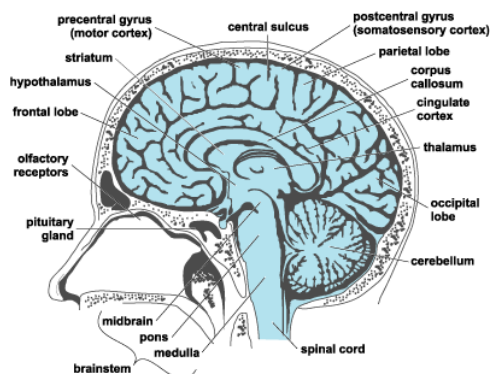
The mechanisms of fatigue are then examined, which includes waste products, depletion of energy stores and neuromuscular fatigue. Recovery from sports and exercise is then investigated.

To complete the unit, ways in which the body adapts to repeated bouts of exercise (chronic exercise), is studied; both the aerobic and anaerobic adaptations are covered.

Unit 3 Sport and Exercise Psychology

This unit applies a scientific approach to the study of people and their behaviour in sporting environments, and explores the application of knowledge gained through that study.

Athletes are continually seeking to improve their performance on all fronts. It is important to get training and nutritional strategies correct; however, athletes must also appreciate the importance of having the correct psychological state and mental preparation to increase their chances of success, and develop an advantage over other competitors.



This unit gives learners a sound theoretical base which will enable them to understand how personality and motivational factors influence athlete's chances of success and of reaching their potential. Learners will also develop an awareness of the impact of stress, arousal and anxiety on the behaviour of athletes and related positive and negative effects on performance. People in sports environments are also explored along with the effect that the environment can have on an individual. The unit broadens out to look at people in exercise environments, such as gyms, and the factors which will affect whether they achieve their goals and desired outcomes.

The OPTIONAL units are:

Unit 8 Fitness testing for Sport and Exercise

In today's society, we can easily fall into the trap of developing a sedentary lifestyle; we use

the car rather than walk to the local shops, we take the lift rather than the stairs, and our hectic lifestyle doesn't seem to allow us the time to engage in regular physical activity. Establishing and maintaining a desirable level of fitness is more important than ever; it's paramount to the future health of the nation.

The overall relationship between fitness and health affects performance in our everyday lives, whether it be sport- or work-related. Fitness is vital to achieving success in sport, and fitness testing plays a valuable role in the development of personal fitness levels. Sports performers regularly participate in fitness tests to determine their baseline measures. Fitness testing results are then used to identify strengths and areas for improvement.

Fitness testing results are also used to predict future performance and provide feedback on the effectiveness of a training programme. The first part of the unit looks at a range of laboratory and field-based fitness tests. Learners will explore the different tests available and the benefits and drawbacks of laboratory and field-based fitness tests. Learners will also be introduced to the practice of health screening and how to carry out health monitoring tests.

The second part of the unit will develop the skills and knowledge to be able to follow fitness test protocol, taking into account test validity and reliability. Learners will develop skills to be able to administer fitness tests in a safe and effective manner, interpreting results against recommended values, providing feedback to an individual regarding how fitness levels can be improved.

Unit 9 Fitness training and programming

Fitness is vital to achieving success in sport and individuals who are serious about their sports performance will carry out a fitness training programme. Elite athletes develop and maintain high levels of fitness and take fitness training very seriously. Many elite athletes have a designated fitness coach. In addition, a large number of individuals want to improve their fitness in order to participate in community sports activities and competitions. Fitness is also important for active leisure pursuits such as outdoor activities. It is therefore important for individuals working in the sports sector to have an understanding of how to plan fitness training sessions and how to design fitness training programmes. This unit is particularly relevant for those who aspire to

working in sports coaching, fitness instructing or elite sport. The first part of the unit involves learners examining different methods of fitness training. These include methods of training to improve flexibility, strength, muscular endurance, power, aerobic endurance and speed. Learners will develop the ability to prescribe appropriate exercise intensities, work/rest ratios, resistance, repetitions, sets, number of exercises, order of exercises, speed of movement and systems of training depending on the nature of the session and client needs.

The second part of the unit involves learners planning a fitness training programme for a selected individual. Learners will examine the principles of training and the concept of periodisation. Learners are required to set goals for a fitness training programme and plan the training year. They are also required to monitor and evaluate a fitness training programme. This involves using a training diary and/or feedback and reviews then evaluating the extent to which the programme is achieving goals set.

Unit 15 Sports Injuries

Injuries are often a common occurrence for those participating in sport. It is therefore important that those involved in sport gain an appreciation of the main factors that can cause injuries, as well as those that can play a part in preventing them, and how effective treatment and rehabilitation can reduce the amount of

time spent out of normal participation. Some risk factors are integral to participation and cannot be removed, so learners need to appreciate both the physiological and psychological mechanisms of injury, in terms of its occurrence, treatment and subsequent rehabilitation. Whilst this unit is not designed to make learners into accomplished therapists, it does provide a basic understanding of how injury occurs, and what can be done to help promote recovery. The first part of this unit concentrates on the importance of injury prevention, and looks at the main factors that can lead to injuries occurring, or to a performer being predisposed to suffering an injury. Having identified these risk factors, learners will then look at the different methods used to minimise risk. Learners who enter the sports industry will undoubtedly encounter the issue of sports injuries in some capacity, from maintaining safety within a sporting environment to suffering some form of injury themselves. The second part of this unit will help provide learners with a greater understanding of the problems associated with injury prevention, and build on existing knowledge of how to recognise the onset of injury.

If you take BTEC Sports & Exercise Science, you will need to take the course for two years before you gain the National Award. It is the equivalent of an A2 level.
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For further information contact Mr Mitchell