

IGCSE Physical Education (0413)

Unit 2: Health, Safety and Training

Recommended Prior Knowledge

It is likely that the five major topics, within this unit, will have been taught to a lower level during the early years at school. However, each of the topics covered are of central importance to an in-depth knowledge of Physical Education, hence the reason why they occupy an important part in the theoretical content of the Syllabus. Obviously any previous knowledge of the topics covered in this unit will be important to pupils' understanding of safety, injuries and their treatment, training and diet in the promotion of good health.

Context

An important aim of Physical Education, at any level, is that it sets out to promote good health. However, exercise alone will not achieve this. Other factors are equally important. These include what we eat and drink as well as ensuring that when we do take part in activities we understand the risks involved and take appropriate action to avoid serious injuries. In addition, understanding the value of exercise and training as a means of promoting a healthy lifestyle is equally important. Wherever possible, the teaching of the theoretic content of this unit of work should be promoted through pupils' involvement in practical activities. In this way pupils will see the connection between safe exercise and a healthy lifestyle.

To avoid over duplication of some of the topics covered within this unit, it is important that other departments within the school should be asked to indicate which of the topic have been taught and to what depth.

Outline

Students should understand the importance of exercise for the promotion of good health. For this reason, the unit begins with a definition of health from a physical well being, mental well being, social well being and fitness perspective. The importance of diet as an energy source in promoting growth and the repair of tissues is taught, followed by a consideration of the risks involved in games playing and how to take steps to ensure safe participation. When minor injuries occur it is essential that pupils recognise the nature of the injury and take steps to ensure that such injuries are treated. Finally, in order to maintain good health, and improve performance, it is essential that pupils have a clear understanding of different forms of exercise, what happens to the body when we exercise and the influence of different forms of training methods. This unit will seek to achieve all these.

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Health	<p>Define:</p> <p>(1) the World Health Organisation (WHO) definition of health and a simple version.</p> <p>(2) what health means in terms of:</p> <ul style="list-style-type: none">• Physical well being• Mental well being• Social well being• Fitness and health.	<p>Pupils should work in groups to discuss what health means to them and arrive at a simple definition. They can then compare this definition with the WHO definition of health – a state of complete physical, mental and social well-being.</p> <p>Ask pupils to take each of the well-being terms mentioned in (2) and explain in more detail what they think they mean.</p> <p>Pupils can produce a poster that illustrated the physical, mental and social benefits of promoting good health.</p> <p>Teachers should offer pupils the following explanations of:</p> <p>Physical well-being all body systems work well free from injuries and illnesses able to carry out everyday physical tasks.</p> <p>Mental well-being: able to cope with stress can control emotions feel good about yourself.</p> <p>Social well - being have essential human needs, i.e. food, clothing and shelter have friendship and support, have some value in society, able to mix with others.</p> <p>Health and fitness need for a healthy lifestyle, need to eat a balanced diet, need to take regular exercise, need to avoid drugs and pollution.</p>	<p>www.ou.edu/cas/hss</p> <p>Website of the Department of Health and Exercise Science, University of Oklahoma. It covers the sciences that relate to human health and the physiological response to exercise. Only suitable as background knowledge for teachers.</p> <p><u>GCSE PE for OCR by Frank Galligan and David White;</u> Heinemann Educational Publishers, Oxford ISBN 0 435 50629 3 Ideal student text book for all aspects of the IGCSE PE course</p> <p><u>OCR Sport Examined by Paul Beashel, Andy Sibson and John Taylor;</u> Nelson Thornes Ltd, ISBN 0 7487 7723 7 Very detailed student text book containing all the topics covered in the IGCSE PE course.</p> <p><u>GCSE PE for OCR Teacher's Resource File by Frank Galligan, Eric Singleton and David White;</u> Heinemann Educational Publishers, Oxford ISBN 0 435 506 30 7 Resource book containing numerous student worksheets covering all the IGCSE PE course.</p>

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Diet	<p>Describe:</p> <ul style="list-style-type: none">(1) the body's dietary needs in terms of energy, growth and repair of cells. The essential nutrients – protein, carbohydrates, fats, vitamins, minerals. Also, water and fibre.(2) the different energy needs of: teenagers compared with young children, male manual workers and females, athletes and non-athletes, people with active lifestyles compared with people with sedentary lifestyles.	<p>Pupils should be taught the essential nutrients in a balanced diet. They might then devise a table or chart to explain which products supply these nutrients. An excerpt from the film 'supersize me' could be used to illustrate how eating one form of any food only, isn't healthy and that balance is required in a diet.</p> <p>Pupils should be required to explain the importance of each nutrient to a balance diet in promoting good health by asking such questions as – Why is fibre an essential part of any diet? Why do endurance athletes need extra quantities of carbohydrates before taking part in a long race?</p> <p>Pupils can draw the dietary balance (scales). The pan on one side represents energy input. The pan on the other side represents energy output (expenditure). When they balance body weight remains constant. When input, if food intake exceeds energy output the person puts on weight (when surplus energy is converted into fat) and the person may become obese.</p> <p>Pupils who have progressed ahead of others may wish to investigate diets in different parts of the world to examine if some are healthier than others. Examples might be the typical fast food served in the USA and western Europe and a Japanese diet that relies heavily on fish and carbohydrates in</p>	<p>Revise for PE GCSE OCR by Galligan, Eric Singleton and David White : Heinemann Educational Publishers, Oxford ISBN 0 435 10043 2</p> <p>Student resource text book for use when revising for the IGCSE PE theory examination.</p> <p>www.dietwatch.com/</p> <p>There are countless websites offering advice on diet. This is just one of many. It offers professional guidance, free interactive tools to manage healthy nutrition, diet and exercise schedules.</p>

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Games; Safe Practice	<p>Describe:</p> <ol style="list-style-type: none">(1) the importance of taking part in Physical Education within an environment that is safe and secure. Although all teachers have this responsibility to their pupils, pupils should also be aware of risks and check that the environment, facilities and equipment are safe to use.(2) Pupils should understand the terms “risk” and “hazard” and the relationship between them.(3) The safety arrangements, potential dangers, rules and regulations for at least one activity within each category of activities, irrespective of whether the	<p>the form of rice.</p> <p>A good way of realising the dietary needs of pupils and to discover if a diet is balanced or not is to ask pupils to keep a diary of what they eat each day over a period of two weeks. This should be planned in the weeks before the lesson and then later discussed.</p> <p>Some pupils who may wish to increase or decrease their weight may wish to adjust their diet and keep a daily record of their weight. This should only be done with the consent of their parents.</p> <p>Teachers have a responsibility to ensure that pupils are adequately prepared for whatever lesson is about to be taught, in the first instance in terms of warm up and cool down. Teachers should advise pupils on the most suitable dress, any need for protection (e.g. pads and gloves in cricket etc), any safety arrangements, or where support is needed, and adherence to any code of behaviour. All these points should be mentioned at the beginning of any practical lesson as a matter of course.</p> <p>Teachers can bring to the attention of pupils risks involved in participating in physical activities by asking pupils to list any injuries that have sustained whilst taking part in a physical activity and then ask them if they could have taken preventative measures.</p> <p>Teachers can set out certain situations that could be a risk (for example in a gymnasium where Badminton posts have been left out, or balls left where they might be tripped over) and then pupils are asked to identify these potential hazards. Similar situations can easily be arranged on the playing field or tennis courts. Pupils should understand the hierarchy for controlling</p>	<p>www.baalpe.org/publications.htm</p> <p>Click to Safe Practice in Physical Education. This is the definitive information, written for all PE teachers in the UK on safe practice in all physical activities taught in UK school.</p> <p>www.1st4sport.com</p> <p>It offers advice on safe practice in sports and numerous other sports topics under the title “Coachwise”.</p>

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	<p>activities are taught as part of the GCSE course or not.</p>	<p>risk – 1.remove the hazard 2. avoid the hazard 3. Introduce precautions (keep hazard and people apart/ have barriers/ keep exposure to a minimum/ safe systems (including rules)/ personal protective equipment).</p> <p>Teachers can ask pupils to inspect all sports facilities at school or at the local sports centre, or an outdoor pursuits centre/ Facilities, and list all the points that are considered to be potentially dangerous. They might then rate each facility using a code, such as Red for dangerous, Amber for caution, and Green for perfectly safe for use, to highlight dangers to all users.</p> <p>It is worth while walking round the facilities with pupils and pointing out things that often miss. For example, signs surrounding swimming pools warning user not to run, or the depth of water at part of the pool.</p>	
Injuries	<p>Describe the importance of the following means of avoiding injuries if they have not been taught in sufficient depth in the section Games: Safe Practice;</p> <p>(1) Warm up and cool down. Correct use of equipment. Know the rules and regulations.</p> <ul style="list-style-type: none">• Check if surface and facilities are safe to use.• Do not participate if tired.• Ensure that a teacher is always present. <p>(2) Different types of injuries and their treatment, including the RICE</p>	<p>Pupils should be instructed to devise a chart with four columns. The columns are labelled from the left as follows -m in the first column – Type of Injury, second column – Signs and symptoms, third column – Likely causes, and fourth column – Treatment. The teacher might suggest a type of injury e.g. concussion or the signs and symptoms of an injury for another injury and then the pupils fill in the necessary information in the other three columns. The information provided for 10 or more types of injuries provides useful material for a group discussion on the results.</p> <p>Pupils can be placed in scenario situations where an accident has happened and members of a group have to take on the role of the injured, the first aider, an assistant and a bystander. The instructions, describing the accident and possible injuries are then typed on a sheet of paper for the benefit of the injured person who has to play the injured person's role. The first aider then has to take charge of the situation and direct others to</p>	<p>www.bbc.co.uk/health/first_aid_action</p> <p>Fully interactive online first aid course from the BBC that informs, educates and entertains.</p>

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	<p>treatment, for the following:</p> <ul style="list-style-type: none">• Winding• Simple cut or graze• Blisters• Bruises• Muscle, tendon and ligament injuries. <p>(3) Likely causes of common injuries.</p>	<p>assist him/her in providing first aid.</p> <p>Teachers should ensure that pupils realise that if they participate in physical activities long enough they will almost inevitably sustain an injury. It is therefore useful for pupils to be able to recognise the nature and severity of certain injuries and then apply simple First Aid treatment to assist recovery and minimise further complications. Most injuries will hopefully be minor in nature. Although it is not a requirement of the Syllabus that pupils should be able to actually dress injuries, pupils respond well to practicing injury situations when a member of a group has to provide First Aid treatment. This might amount to placing an arm in a sling for a suspected fracture of the forearm, or elevating an arm or leg for a serious bleeding wound as part of the RICE treatment or treating a simple cut to the hand.</p>	
Exercise and Training	<p>Describe</p> <p>(1) The physiological responses for movement to take place. The fact that muscles need to contract. They are able to do so because of energy, in the form of glucose, is stored in the muscles and glycogen stored in the liver.</p> <p>(2) What happens during aerobic respiration and what form of exercise would demand this type of respiration (sustain exercise e.g. 800m or longer running).</p> <p>(3) What happens during anaerobic respiration and what form of exercise would demand this type of</p>	<p>Teachers can explain what is happening in muscles for movement to take place by asking a student to do a simple exercise, such as step ups on a bench or squat lifts with weights. Whilst the exercise is being demonstrated the teacher can explain that nervous signals are transmitted from the brain via the central nervous system to the particular muscles required for movement. Cells within the muscle trigger the muscle fibres to shorten. In order to shorten glucose combines with oxygen in the process of respiration to release energy.</p> <p>In aerobic respiration (with oxygen) the process can be expressed as follows:</p> <p>Glucose + Oxygen → Energy + Carbon Dioxide + Water</p> <p>When aerobic respiration takes place muscles contract and some energy is used. Heat is produced in the muscles and carbon dioxide is breathed out.</p> <p>This process can be experienced by pupils in a practical way by</p>	<p>www.netfit.co.uk</p> <p>Training programmes and exercises for chosen sports.</p> <p>Very useful website.</p>

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	<p>respiration (short period of exercise e.g. weight lifting or sprinting over a short distance).</p> <p>(4) Training – the procedure and programme used to improve performance using the following principles: - Specificity, overload, progression and reversibility and what happens when a person over-trains. The different methods of training including: Circuit training, Weight training (isotonic and isometric), Pliometrics, Fartlek training, Continuous training, Resistance training, Interval training.</p>	<p>asking them to run over a distance of 800m and then note their body responses in terms of feeling and breathing during and after the run.</p> <p>In anaerobic respiration exercise draws on the supplies on glucose in the muscles without the use of Oxygen. This process can be expressed as follows:</p> <p>Glucose → Energy + Lactic Acid.</p> <p>Pupils can be asked to sprint over 200 metres and then record their feelings during and after the sprint. The difficulty they experience in running towards the end of the sprint is caused by the build up of lactic acid in the legs.</p> <p>Each method of training needs to be experienced by the pupils, at least once during the course. Pupils should be asked to write a brief description of the exercises involved and the advantages and disadvantages of each method. They should also note if any method of training is particularly useful for improving performance in a specific physical activity.</p> <p>The teaching of the theory of respiration, both aerobic and anaerobic, should be related to practical situations. In this way pupils are more likely to see the connection between both and have a better understanding of the whole process.</p> <p>It is suggested that one method of training, Interval training, should be used in more than one of the practical activities offered by pupils. This might be Athletics and Netball, for example. The principle of fast work, followed by a recovery period or rest can be applied to either activity. The effects on the heart, circulatory and respiratory systems can be noted in order to give pupils a better understanding of what training means and how it affects an individual's performance. By monitoring period of exercise, recovery periods and number of repetitions it should</p>	

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		be possible to assess improvements in performance over time and the effects on the major organs and systems of the body, especially the heart, circulatory and respiratory systems.	