

GCE PHYSICAL EDUCATION

PE2 UNIT GUIDE

Content Title: Lifestyle choices

Key points

- How obesity is contributing to a number of other diseases
- Factors that influence individual lifestyle choices
- The effects of diet and exercise on the health of an individual
- The effects of smoking, alcohol and drugs on health
- What sporting and health related provision is available in your locality?

Practical Application/Explanation

The type of lifestyle we choose to lead can have a dramatic effect on both current and future health. The main contributory factors, which can have a positive impact on our health, are DIET and EXERCISE, whilst ALCOHOL, SMOKING and DRUGS can have a negative effect.

Obesity and Associated Diseases

Obesity is a major problem in the UK and the western world. But it is not the actual obesity that is killing people, it's the associated illnesses that arise as a result of obesity e.g. heart disease, stroke and diabetes.

Obesity and How Associated Diseases Occur

Obesity eventually occurs as a result of a persistent POSITIVE ENERGY BALANCE that means an individual is consuming more calories than is being used. To lose weight and fat and achieve a NEGATIVE ENERGY BALANCE, more calories must be burnt than are consumed. Equal amounts of calories consumed and calories burned result in ENERGY BALANCE.

Generally, a person with a positive energy balance consumes far too many saturated fats and sugars, which in time can have a negative impact on an individual's health. Bad CHOLESTEROL or Low Density Lipoproteins (LDLs) are found in saturated fats. These form plaques, which gradually attach to artery and arteriole walls. Over time these plaques build up forming an ATHEROMA, which is a small blockage of an artery or arteriole, and this leads to the disease ATHEROSCLEROSIS. There can also be a hardening of the arteries, usually associated with lack of exercise, which means there is no vasodilatation and vasoconstriction of the arteries – this hardening is known as ARTERIOSCLEROSIS.

As the atheroma increases then there is an increase in blood pressure through the artery or arteriole (HYPERTENSION), if the artery or arteriole that is becoming blocked is one of the vessels supplying the heart tissue, then often an individual can suffer with ANGINA which is a chest pain felt, due to lack of blood is reaching the heart tissue. If one or more of the vessels becomes totally blocked, then this leads to a HEART ATTACK or MYOCARDIAL INFARCTION, as it is also clinically known. If the same sequence of blockages occurs to the brain, then a STROKE or CEREBRAL INFARCTION will occur as a part of the brain just like the heart is deprived of blood and therefore the vital oxygen supply.

Another common disease associated with obesity is DIABETES. This is when an individual is unable to control their blood sugar levels. This disease occurs because whenever we eat carbohydrate, our blood sugar levels become affected, the body controls this by secreting the hormone INSULIN from the pancreas. If however we consume a great deal of simple carbohydrate or sugars (e.g. sweets, fizzy drinks), these have a dramatic effect on our blood sugar levels. A great deal of insulin then has to be released to control this sugar. If the consumption of sugars persists, then more and more insulin gets secreted and in time, the body becomes tolerant of the insulin and it no longer has an effect.

Factors that Influence the Type of Lifestyle We Lead

The influences on the lifestyle that an individual leads will vary from one person to another. Nevertheless there are some common major influences on that can have both a positive and negative influence on the life we lead.

- Family – this is the main influence on our lifestyle choices. Parents influence the type of food children eat, and even the amount of physical activity a child does. There is a far greater probability that active, healthy parents lead to active healthy children, although this not always the case. Similarly, sedentary parents are more likely to have children who are also less active. The amount of money that family earns can also influence the opportunities that any children have. More money can mean more membership to clubs etc and access to better coaching which can also be expensive particularly for individual sports such as tennis. Similarly membership to health and fitness clubs can also be expensive.
- Friends/Peers – as with family, friends can have a major influence on both activity levels and even diet. An individual's diet can be particularly influenced by friends and peers particularly during school hours and holidays (using chip shops and fast food outlets). Friends often have similar interests and hobbies and hence if sport or physical activity is an interest then it more likely that the entire friendship group will participate.
- Education – often the type of physical education received at school can have an impact on an individual's levels of physical activity. A department that offers a variety of extracurricular opportunities can result in greater levels of physical activity from the pupils.
- Local facilities and Provision – the number of facilities in a locality can influence participation levels. A city or large town will obviously have a greater amount of sporting clubs, leisure centres and health and fitness facilities compared to more rural areas.

- Media and Role Models – media coverage and role models within a variety of sports can influence participation levels. With the disproportionate coverage of male dominated sports on television compared to female sports then it is not surprising that activity levels within boys is greater than girls.

LIFESTYLE CHOICES THAT CAN IMPROVE OUR HEALTH AND PREVENT OBESITY

Diet (Also see nutrition section)

Having a **balanced diet** with the correct number of **calories** for your energy expenditure is essential for health and the prevention of obesity. The recommended amount of calories a person should consume per day varies depending on the individual, the type of work or exercise they do etc. The general figures for calorific intake recommended by the NHS are males 2500 calories and females 2000 calories per day.

A Balanced Diet

You must have carbohydrate, protein, fat, vitamins, minerals salts and fibre in the correct proportions within your diet. If there is not enough protein, you will not be able to grow properly and you will not be able to repair yourself i.e. wounds will not heal properly. If you do not have enough energy containing foods (carbohydrates and fats) you will feel very tired and lethargic and there will be a severe drop in performance in any sport or exercise related activity. However, if you have too much energy containing foods you will become overweight, which can lead to obesity.

A healthy balanced diet can help prevent obesity and other associated diseases.

- Reduced saturated fat intake means fewer calories consumed and less LDLs (bad cholesterol).
- Unsaturated fats have less calories and harmful effects than saturated fats and also fish oils and some plant oils contain Omega 3 and 6 fatty acids which are essential for normal metabolism.
- A balanced diet means correct levels of consumption of vitamins and minerals.
- Correct levels of protein help growth and repair of muscle and connective tissue and bone growth.
- Reducing intake of high G.I. carbohydrates prevents elevation of blood sugar levels and production of insulin (helps prevent diabetes).
- Correct ingestion of low G.I. foods means blood sugar levels will not be elevated as quickly and the individual will also be left feeling fuller after eating.

Exercise

Exercise is another key factor in potentially improving an individual's reducing the threat of obesity. Levels of activity and exercise are decreasing in the UK despite many initiatives to promote exercise in the population. Such schemes in the U.K. include 5x60 and Dragon sport in Wales and Sport Unlimited in England, all of which target increasing children's physical activity levels. Physical activity can prevent many major illnesses. Another scheme in England and Wales is free swimming children under 16 and adults over 60. Evidence shows that regular exercise can:

- Burn calories.
- In combination with a balanced diet, help to maintain a healthy weight and therefore energy balance.
- Increase basal metabolic rate.
- Keeps metabolic rate elevated for up to 5 hours after exercise depending on the intensity.
- Increase levels of HDL or "good" cholesterol, which is responsible for reducing the bad LDL cholesterol thus reducing the risk of developing coronary heart disease, stroke etc.
- Lowers the threat of high blood pressure (hypertension) by helping to achieve more elastic blood vessels (vasomotor control).
- Exercise helps control high blood sugar levels to prevent or control diabetes.
- Boosts the immune system.
- Boosts self-confidence and help prevent depression, exercise releases the hormones endorphins and the chemical serotonin in the brain which make yourself feel good about yourself.
- Promotes bone density to protect against osteoporosis.
- Also all the physiological benefits of cardiac hypertrophy, increased alveoli/capillaries, elasticity of arteries and arterioles, more red blood cells etc. All improve the efficiency of the cardiovascular system.

Quick revision

How obesity potentially leads to associated diseases:

Obesity → Increased LDL cholesterol → Atherosclerosis/arteriosclerosis → Angina/increased blood pressure → Total blockage can lead to heart attack and stroke.

Influences on the lifestyle we lead include:

- Family, friends/peers, education, local provision and facilities, media and role models.

Major Effects of a balanced diet and exercise on obesity and associated diseases:

- Reduces/burn calories aiding energy balance.
- Increases the proportion of HDL (good cholesterol) to that of LDL (bad cholesterol), reducing the threat of atherosclerosis and arteriosclerosis.
- Balanced diet reduces trans and saturated fat intake also reducing the threat of LDL cholesterol.
- Exercise increases basal metabolic rate and keeps exercise metabolic rate elevated up to 5 hours after exercise.
- Unsaturated fats contain essential Omega 3 and 6 fatty acids.
- Reducing high G.I. carbohydrates reduce the threat of diabetes.
- Exercise has numerous physiological adaptations that help health and reduce obesity e.g. cardiac hypertrophy, increased alveoli and capillary density.
- Exercise increases bone density reducing the threat of osteoporosis.

- Exercise releases serotonin and endorphins which reduce stress, threat of depression and increase self confidence.

Smoking

As well as diet and exercise, smoking, alcohol and drugs can also pose a serious health threat both in the short and long term.

Cigarette smoking is the greatest single cause of illness and premature death in the UK. About 106,000 people in the UK die each year due to smoking. Smoking-related deaths are mainly due to cancers, COPD (chronic obstructive pulmonary disease) and heart disease.

About half of all smokers die from smoking-related diseases. If you are a long-term smoker, on average, your life expectancy is about 10 years less than a non-smoker, in the UK about 8 in 10 non-smokers live past the age of 70, but only about half of long-term smokers live past 70. The younger you are when you start smoking, the more likely you are to smoke for longer and to die early from smoking.

Many smoking-related deaths are not 'quick deaths'. For example, if you develop COPD you can expect several years of illness and distressing symptoms before you die. Smoking increases the risk of developing a number of other diseases (listed below). Many of these may not be fatal, but they can cause years of unpleasant symptoms.

Which diseases are caused or made worse by smoking?

- **Lung cancer** – About 30,000 people in the UK die from lung cancer each year. More than 8 in 10 cases are directly related to smoking.
- **Chronic obstructive pulmonary disease (COPD)** – About 25,000 people in the UK die each year from this serious lung disease. More than 8 in 10 of these deaths are directly linked to smoking. People who die of COPD are usually quite unwell for several years before they die.
- **Heart disease** – is the biggest killer illness in the UK. About 120,000 people in the UK die each year from heart disease. About 1 in 7 of these deaths is due to smoking.
- **Other cancers** – of the mouth, nose, throat, larynx, gullet (oesophagus), pancreas, bladder, cervix, blood (leukaemia), and kidney are all more common in smokers.
- **Circulation** – The chemicals in tobacco can damage the lining of the blood vessels and affect the level of lipids (fats) in the bloodstream. This increases the risk of atheroma forming (sometimes called 'hardening' of the arteries). Atheroma is the main cause of heart disease. It is also the main cause of strokes, peripheral vascular disease (poor circulation of the legs), and aneurysms (swollen arteries which can burst causing internal bleeding). All of these atheroma-related diseases are more common in smokers.
- **Other conditions where smoking often causes worse symptoms include:** asthma, colds, flu, chest infections, tuberculosis, chronic rhinitis, diabetic retinopathy, hyperthyroidism, multiple sclerosis, optic neuritis, and Crohn's disease.

What are the problems of drinking too much alcohol?

Your liver and body can usually cope with drinking a small amount of alcohol. Indeed, drinking a small amount of alcohol (1-2 units per day) may help to prevent heart disease and stroke.

However, drinking over the recommended limits (detailed below) can be harmful. If you drink heavily you have an increased risk of developing:

- Serious liver problems (alcoholic liver disease)
- Some stomach disorders
- Pancreatitis (severe inflammation of the pancreas)
- Mental health problems including depression and anxiety
- Sexual difficulties such as impotence
- Muscle and heart muscle disease
- High blood pressure
- Damage to nervous tissue
- Accidents - drinking alcohol is associated with a much-increased risk of accidents. In particular, injury and death from fire and car crashes. Drinking alcohol causes about 1 in 7 road deaths
- Some cancers (mouth, gullet, liver, colon and breast)
- Obesity (alcohol has many calories)
- Damage to an unborn baby in pregnant women.

In the UK deaths due to alcohol related diseases (particularly liver disease) have risen considerably over the last 20 years or so. This is because both heavy and binge drinking have become more common in both the younger and older population.

Drugs

There are two aspects of the dangers of drug abuse, the risk of addiction and the adverse health and behavioural consequences. Both differ greatly from one drug to another. There is *no* illegal drug that does not have serious adverse consequences.

Drug dependence can develop through either psychological or physical processes.

- Psychological dependence is characterised by emotional and mental preoccupation with the drug's pleasurable effects. One craves more to regain the stimulation, elation, sense of well-being or other psychological pleasures from the drug. Psychological dependence also occurs when one develops a lifestyle that depends upon drug use.
- Physical dependence occurs when the body adjusts to the presence of a drug, so that physical symptoms usually involving discomfort and pain occur when the drug is withdrawn. The addict craves more drugs in order to avoid or alleviate the pain.

The development of psychological or physical dependency depends, in part, on frequency of use. Increasing the frequency or dosage over time suggests tolerance and physical dependence.

Quick revision

- Smoking reduces life expectancy by up to 10 years.
- Half of all smokers die of smoking related diseases.
- Common diseases associated with smoking include mouth, throat and lung cancer.
- Also various cardiovascular and respiratory diseases as well as increased chance of asthma, flu etc.

Alcohol consumption is increasing, particularly within teenagers. There is also the added problem of binge drinking. Increased alcohol consumption is also associated with numerous diseases including:

- Liver conditions - fatty liver, hepatitis, and cirrhosis.
- Pancreatitis (severe inflammation of the pancreas).
- High blood pressure.
- Damage to nervous tissue.

Misuse of drugs is also a problem within the UK. Common diseases associated with drug use include:

- Psychological problems of addiction, paranoia, and anxiety.
- Physical problems of memory loss, links to cancers and heart disease.

Provision for Health, Fitness and Sport in your local area

Inevitably the provision for health, fitness and sport will vary between different localities. There will be greater provision in areas where greater numbers of people live e.g. cities and towns compared to more rural areas. Also provision will vary between countries e.g. Dragon Sport and 5 x 60 in Wales and The School Games initiative in England. It is important that various local and national initiatives are understood in terms of aims, target population etc.

Provision for Health, Fitness and Well Being

Provision for Health, Fitness and Well being is usually split between privately owned gyms and suites e.g. David Lloyd and local leisure centres run by the county councils. While both attempt to make money from the provision it is usually the privately owned gyms that are of greater quality but with a far higher cost of membership. Provision will vary greatly between areas and again it is important to understand what is available in your local area.

Provision for Sport

Many sports are available in most localities e.g. football, netball, rugby, hockey, tennis etc. Again as with health, fitness and well being there will be a great deal of variation in provision between areas. Many clubs will have provision for juniors through to adults often offering coaching in order to develop performance. National governing bodies (NGBs) also have specific players or sporting development pathways from grass roots level through to elite level. As individuals progress through the various stages towards elite level they become more exposed to higher levels of competition, increased time training as well as more specific coaching. It is important that development pathways for your sporting activity are understood.

Top Tips:

Having knowledge and understanding of how obesity leads to other associated diseases is important, as is the impact of diet and exercise on health and well being.



Exam Style Questions

1. Explain how various local, national and local authority schemes are being used in schools and the wider communities to improve the health of the population. [4]
 2. (a) How can knowledge of the Glycaemic Index be beneficial when:
 - (i) Developing a nutrition programme for a sportsperson.
 - (ii) Developing a nutrition programme for weight loss? [5]

(b) 'Dehydration can become a problem during prolonged physical activity.'

Explain the physiological effects of dehydration. Suggest strategies that can be used to maintain hydration. [5]
- The consumption of fats and proteins by the younger population in the UK is increasing.*
3. (a) Explain why a diet high in fats could be detrimental to an individual's health and sporting performance. [6]
 - (b) Despite the warnings associated with diets high in saturated fats, why do many young people continue to consume high levels of fats in their diets? [4]
4. 'Heart disease has steadily increased in the UK over the past 25 years.'
 - (a) Explain how a prolonged positive energy balance could increase the potential for heart disease. [5]
 - (b) Explain how regular exercise could reduce the potential threat of heart disease. [5]