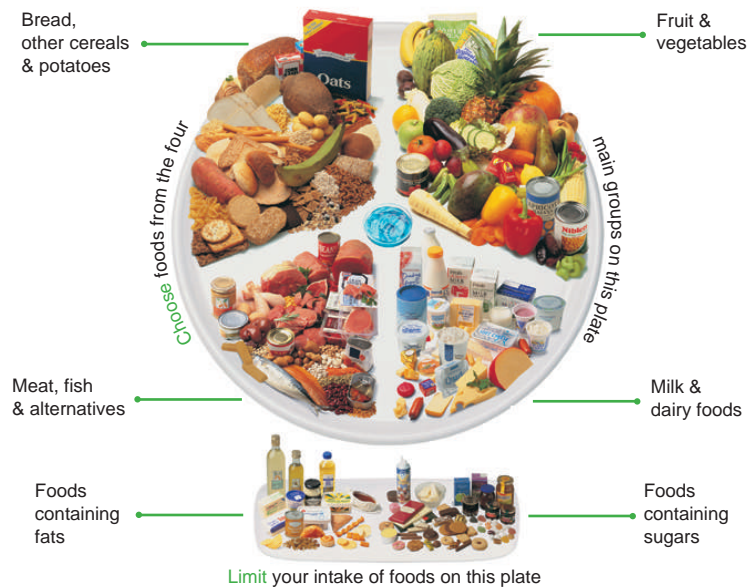


The Balanced Plate

Healthy eating is one important aspect of ensuring and maintaining good health in the individual. This edition of MVM aims to promote the message to students that healthy eating is important for health, fitness and positive self-esteem. The video stresses that it is not just about eating properly, but also about enjoying an all round healthy lifestyle and that includes physical activity.

MVM for students is divided into three main sections:

- a positive sporting role model who emphasises the importance of healthy eating in relation to physical activity
- the concept of a balanced diet
- the development of a new range of lower fat products



The Balanced Plate is a pictorial food selection guide, based on a food group approach.

The key message is: a balance of foods should be eaten to achieve a good healthy diet.

For children aged five years and over a healthy diet means broadly:

- a balanced diet with enough energy for growth and development
- plenty of fibre-rich starchy foods such as bread, rice, pasta, potatoes and yams
- plenty of fruit and vegetables
- not eating too many foods containing a lot of fat, especially saturated fat
- moderate amounts of dairy products
- moderate amounts of meat, fish or alternatives
- not having sugary foods and drinks too often

Student Activity

Ask students to keep a food diary for a day. Include all they eat and drink. Using a dietary analysis program, students can analyse the energy content of their diets. This will be given in the form of Kilojoules. Compare with their DRVs for energy.

Students can then swap their analysis with each other. Evaluate:

- their overall diet by referring to the balanced plate model.
- their energy requirements and how they have been provided.

Dietary Requirements

Diet is the total food and drink consumed by an individual. Some people may have to modify their diet for specific medical conditions, eg coeliac disease.

Remember, a good diet in childhood can also help to prevent ill health later in life. Unhealthy diets, which include too many fatty foods, too much salt and also not enough vegetables and fruit, are linked to the risk of heart disease, stroke and some cancers.

Foods

Foods are solids or liquids which when digested and absorbed supply the body with raw materials:

- from which the body can produce energy
- to support growth and repair of tissues
- to regulate body processes

Nutrients

Nutrients are substances found in foods which following digestion are absorbed then transported around the body for specific functions:

- carbohydrates - provide energy
- fats - provide energy
- proteins - growth and repair
- minerals - growth and repair/regulate body processes
- vitamins - regulate body processes

Most foods provide a variety of nutrients.

Note:

Dietary fibre (NSP) - is not a nutrient as it cannot be digested and absorbed by the body. However, it is an important component of the diet as it helps to maintain the digestive system.

Fluid/water - is not classified as a nutrient, but is essential to life. Current advice suggests drinking 8 cups of fluid per day.

Dietary Requirements

Everyone is different and therefore our energy and nutrient requirements vary according to our age, sex, body size and levels of activity.

Estimated requirements for energy and nutrients are provided in Dietary Reference Values for Food Energy and Nutrients for the United Kingdom (Committee on Medical Aspects of Food Policy, Department of Health 1991).

DRVs are calculated based on a healthy population or a sub-group of a population. DRVs is a general term which covers:

- Reference Nutrient Intake (RNI)
- Estimated Average Requirement (EAR)
- Lower Reference Nutrient Intake (LRNI)

Reference Nutrient Intake (RNI)

The RNI is the amount of a nutrient sufficient for nearly everyone (about 97% of the population), even those with high needs. This level of intake is considered to be higher than most people need.

Estimated Average Requirements (EAR)

This is an estimate of the average need for food energy or a nutrient. The EAR is not the recommended intake for an individual but is the amount of a nutrient which is enough for 50% of the population. Some people will need more, some will need less.

Lower Reference Nutrient Intake (LRNI)

This amount of a nutrient is enough for only 3% of the population. These people have low needs.

(See appendix for EARs chart and distribution curve)

Rise in Obesity

Most people think they know what is 'good' and 'bad' for them but there is no such thing as good and bad foods. The answer lies in striking the right balance by choosing foods from the four main food groups, hence the pictorial selection guide, based on a total diet approach, providing simple realistic guidance for selecting a balanced diet.

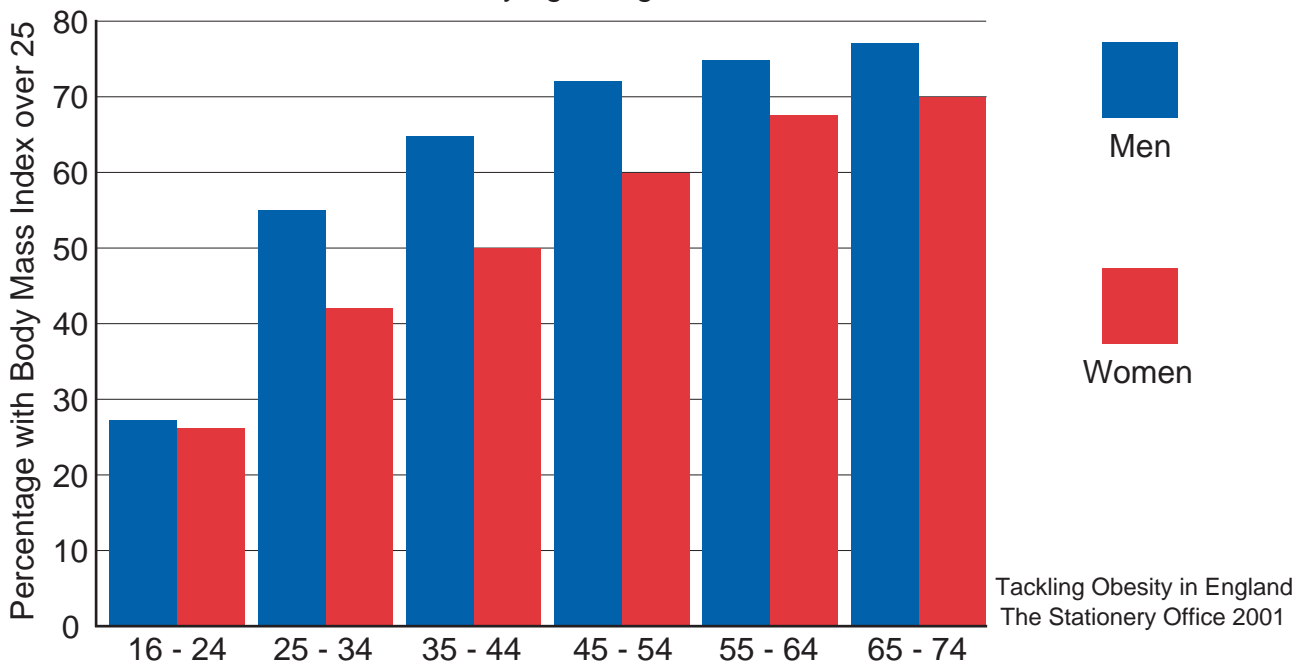
What about lifestyles?

We cannot look at diet alone. As referred to in the video, dietary intake and lifestyles need to be compatible for a healthy individual. As society evolves so do our lifestyles which in turn influence our general wellbeing and health:

- changing role of women
- influence of technology both within the home and in the work place
- use of convenience foods - providing more energy dense foods
- increase in snacking and grazing
- changing attitudes of people towards exercise and fitness
- smaller household size - in 1999, single households accounted for approximately a quarter of all households, two people 36%, three people 16% and four or more people 24%. The number of one person meal occasions has increased by 17% between 1996 and 1999.

One result is rising levels of obesity.

Percentage of overweight and obese men and women in 1998 by age range



Student Activity

Students working in groups carry out a survey of 'healthier foods', eg lower fat meat products being sold by supermarkets, looking particularly at the nutrition labelling of products. Students present their findings as a display making use of ICT.

Students design a questionnaire to find out about attitudes to exercise and health within their year group. They present their findings in the form of a report with suggestions

Exercise, Food and Health

Regular physical activity is very important for good health. Professional sports people and those who take part in regular exercise need to eat healthily and choose their food carefully by following the Balanced Plate model.

Most people, including sports people, are advised and encouraged to eat plenty of starchy carbohydrate-rich foods such as rice, bread, cereals, pasta and potatoes. It is recommended that at least 50% of food energy in the diet should come from starchy, carbohydrate foods, with sports people having an even higher requirement.

Carbohydrate-rich foods help to build up glycogen in the muscles that is needed to release energy during long, energetic activity. Eating regularly ensures that glycogen stores are maintained. These glycogen stores must be replaced after exercise to prepare the muscles for future training.

Habitual consumption of high carbohydrate meals and snacks in preparation for exercise is recognised to improve performance. It helps protect against exercise fatigue and ensures that peak personal performance can be

attained. This ongoing process of refuelling can also help reduce the risk of some injuries.

Rehydrating is also vitally important as dehydration is potentially fatal. Exercising whilst dehydrated causes the body's temperature to rise quickly and this can lead to heat stroke. Children are particularly prone to overheating whilst exercising and should be encouraged to take regular drinks, even if not feeling thirsty.

The Benefits of Physical Activity

It makes you feel better inside and out.

- Improves general health and wellbeing
- Improves the circulation and enhances the component profile of blood
- Reduces the risk of some illnesses, eg coronary heart disease and stroke
- Improves the immune system
- Reduces risk of anxiety, stress and depression
- May bring about favourable psychological adjustments
- May improve cognitive functioning
- It can build character and team spirit
- Has a positive effect on self esteem

Student Activity

Students could keep an activity diary for 24 hours, accounting for the full 24 hours and using the following headings:

- Time
- Physical activity (eg swimming, walking, cycling)
- Passive activity (eg sleeping, computer games, TV, homework)
- Individual or team activity
- Continuous or interrupted activity
- Comments (eg how you felt before or after)

Ask students to compare their activity levels with those of Stephanie Cook, who exercises for 6 - 8 hours 5 days a week. Is any change in student activity levels called for?

Ask your students, **working in small groups**, to select a favourite sports person who is preparing for a national or world championship. Based on the information they have gained from the video and their own research, students are to plan an exemplar diet for 7 days for the sports person.

Meat and Iron in the Diet

Meat and iron

Iron is a vital mineral for red blood cell formation. A deficiency of iron in the diet is the most common nutritional deficiency in the UK.

Trends in average iron intake: 1968 - 1998

Year	Iron intake (mg)
1968	13.5
1978	11.2
1988	10.9
1998 - GB	9.8
1998 - Scotland	9.8
1998 - England	9.8
1998 - Wales	10.3

Sources: National Food Survey, MAFF 1969, 1979, 1989, 1999

In the latest National Diet and Nutrition Survey, a high proportion of young people aged 4 to 18 years were found to have iron intakes below the recommended amount (RNI), particularly in the older girls. Whilst intakes below the RNI do not indicate iron deficiency, they could mean that individuals may be entering their adult years at risk of anaemia.

Percentage of young people, aged 14 to 18 years, consuming less iron than the recommended amount.

Age	% below RNI for iron	
	Boys	Girls
4 - 6 years	14%	28%
7 - 10 years	29%	59%
11 - 14 years	60%	96%
15 - 18 years	43%	93%

Source: Gregory et al (2000) National Diet and Nutrition Survey: young people aged 4 to 18 years. Volume 1: Report of the diet and nutrition survey London: TSO RNI - Reference Nutrient Intake.

There are two types of iron:

Haem iron is found in red meats, offal, poultry and game, fish, bacon and ham and meat products.

Non-haem iron is found in bread, fortified breakfast cereals, dried fruit (eg apricots), dark green vegetables, peas, beans, lentils, chocolate, cocoa and eggs.

Haem iron is much more easily absorbed by the body than non-haem iron. About 45 - 60% of the iron in red meat is in the haem form and about 15 - 35% of this is absorbed. In contrast the absorption of non-haem iron is much less predictable and depends on the presence of other substances. Foods containing vitamin C enhance the absorption of non-haem iron (eg fruit juice with fortified breakfast cereal).

A good balanced diet including red meat may help to prevent iron deficiency.

Student Activity

Ask students to go back to their food diaries and identify the iron-rich foods. Students can estimate their daily intake and compare it with the EAR for their age group.

Ask students to carry out research into:

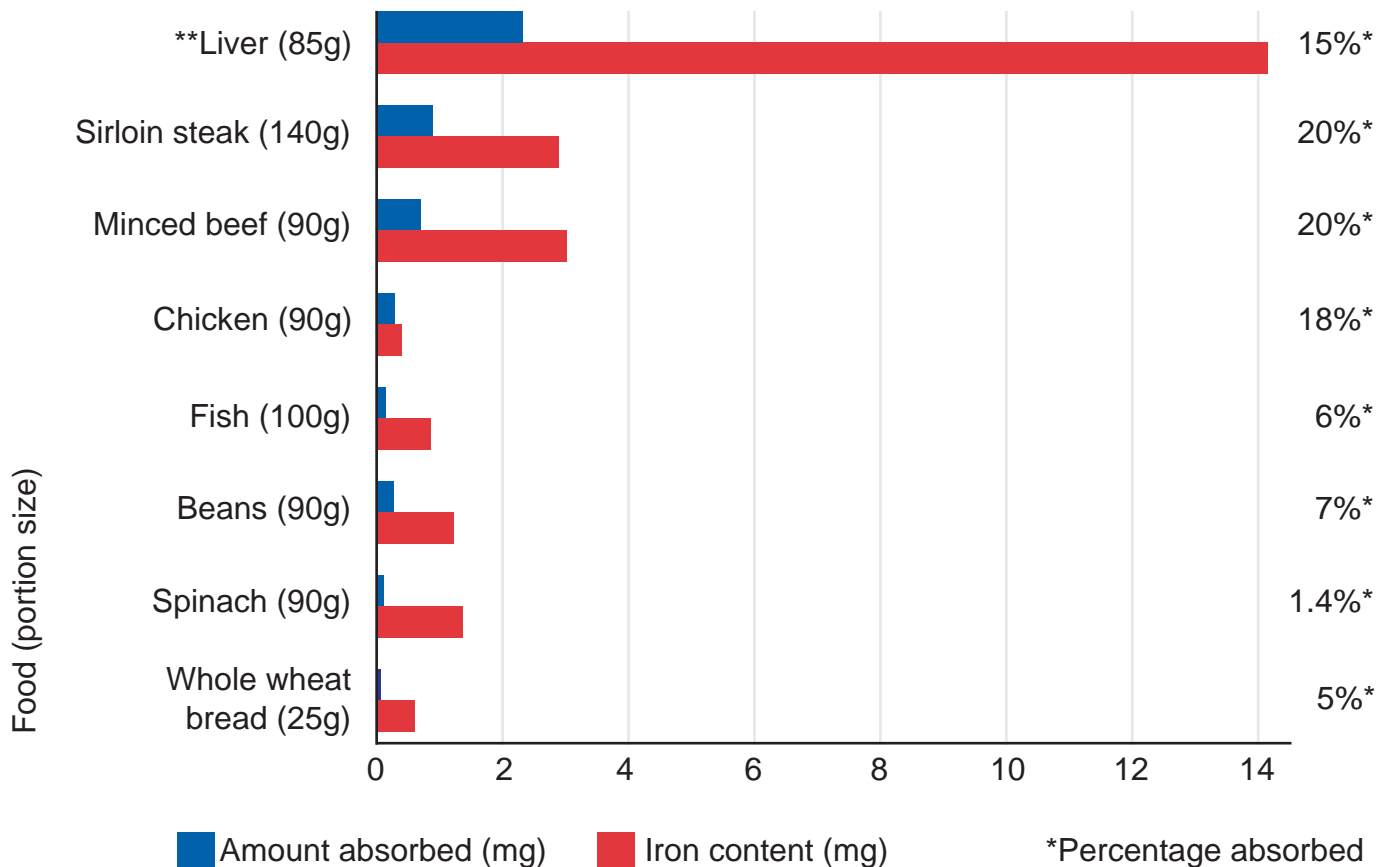
- Foods which are fortified with iron.
- Foods which are fortified with iron by law.
- Examples of foods which are fortified with other nutrients.

Meat and Iron in the Diet continued

Sources of iron, enhancers and inhibitors

Sources of iron which are easily absorbed by the body	Beef, Lamb, Pork, Chicken, Turkey, Game, Liver, Kidney, Oily Fish, Bacon and Ham, Meat products	Absorption is not usually reduced by other dietary factors
Sources of iron which are less easily absorbed by the body	Bread, Fortified breakfast cereals, Dried fruit (eg apricots), Eggs, Dark green vegetables, Peas, Beans, Lentils, Chocolate, Cocoa	Absorption is increased by including foods containing vitamin C (eg oranges, tomatoes and fruit juice) or by the protein in meat and fish when eaten at the same time. Absorption is reduced by tea, coffee, or the 'phytates' in wholegrain cereals when consumed at the same time.

Absorption of iron from different foods



Adapted from Scrimshaw, Scientific American (1991).

**As a precautionary measure, pregnant women are advised not to eat liver due to its high vitamin A content.

Food Labelling

Consumers are now demanding products to meet their need for:

- healthy foods which are lower in fat and sugar
- convenience foods which take little or no time to prepare and cook.

Food retailers have responded to this demand. Sainsbury's, for example, launched their Be Good To Yourself range in 1999. This lower fat range contains over 200 lower fat foods across a wide variety of categories, eg fresh, frozen and bakery.

Key ingredients have been substituted with lower fat alternatives and are prepared using different cooking techniques. (Visit www.sainsburys.co.uk for more information).

Many people would benefit from reducing the total fat content of their diet as high intakes may increase the risk of heart disease. Supermarkets such as Sainsbury's are simplifying their nutrition information to help the consumer understand more easily claims being made on packaging.

Legal requirements

The labels below indicate the minimum legal labelling requirements for prepacked foods.



Nutrition Labelling and Claims

All claims made for food are subject to the Food Safety Act 1990. There are also specific provisions in the Food Labelling Regulations 1996, which implement the EC Food Labelling Directive. These cover, for example, claims for foods for particular nutritional uses, for 'reduced' and 'low' energy foods, for protein, vitamins and minerals and for cholesterol free foods.

Is nutrition labelling compulsory?

Nutrition labelling is only compulsory if a nutrition claim is made, eg 'low fat' or 'high fibre', and on foods for particular nutritional uses. Otherwise it is voluntary.

All stated and implied nutrition claims made in food labelling and advertising, other than those made in generic advertising, and all stated and implied claims that a food is suitable for particular nutritional uses, (such as lower fat and weight control products) trigger compulsory nutrition labelling.

What nutrients should be declared?

The minimum declaration permitted is a 'Group 1' declaration (also known as the 'Big 4'):

energy	kJ and kcal
protein	g
carbohydrate	g
fat	g

'Group 2' (also known as 'Big 4 + little 4' declaration):

energy	kJ and kcal
protein	g
carbohydrate	g
of which:	
- sugars	g
fat	
of which:	
-saturates	g
fibre	g
sodium	g

The Government encourages use of Group 2 information on all foods on a voluntary basis, as this gives consumers information on the key health-related nutrients.

Copies of the MAFF Guidance Notes on Nutrition Labelling and Nutrition Claims are available from the Food Standards Agency:

Food Standards Agency helpline
Aviation House
125 Kingsway
London, WC2B 6NH
Tel: 0845 000 0048
e-mail: helpline@foodstandards.gsi.gov.uk

Student Activity

Students collect labels from products which make nutrition claims, eg lower fat, low sugar. They then compare the nutrition information with that from similar 'ordinary' products.

What are the main differences?

Students present their findings as written pieces of work, including the labels and also the cost of the products.

Practical activity

Students design a dish which is a good source of iron. They then develop the packaging and labelling, which should include all the legal requirements together with accurate nutrition information.

Appendix

Estimated Average Requirements (EARs) for teenage boys and girls

	Energy MJ/d (kcal/d)	Calcium mg/d	Iron mg/d	Protein g/d
Males				
11-14 years	9.27 (2,220)	1,000	11.3	42.1
15-18 years	11.51 (2,755)	1,000	11.3	55.2
Female				
11-14 years	7.92 (1,845)	800	14.8	41.2
15-18 years	8.83 (2,110)	800	14.8	45.0

Distribution curve showing the frequency distribution of individual requirements

