

A healthy diet includes seven essential groups of substances

Our diet is the food we eat each day. The different substances that our body needs to maintain¹ its structure and functions belong to seven groups, as shown in Figure 2.



Figure 2 A typical breakfast

Comparative language note:

In English these seven groups of substances that are essential for life are called **nutrients**, whereas in the German language the word *Nährstoffe* is usually only used for carbohydrates, proteins and fats.

A balanced diet – eating the right kinds of foods in appropriate amounts – can also be easier than you think. In fact, you may already be eating most of the right things. In the previous section you learned about the different groups of substances in our food. The next step is to find out *how much* of these substances your body needs in order to stay healthy.

The five main groups of valuable foods

The picture shown in Figure 12, which was published by the British government's Food Standards Agency, gives you a good overview of the most important food groups and the proportion of your diet that each of these food groups should represent.

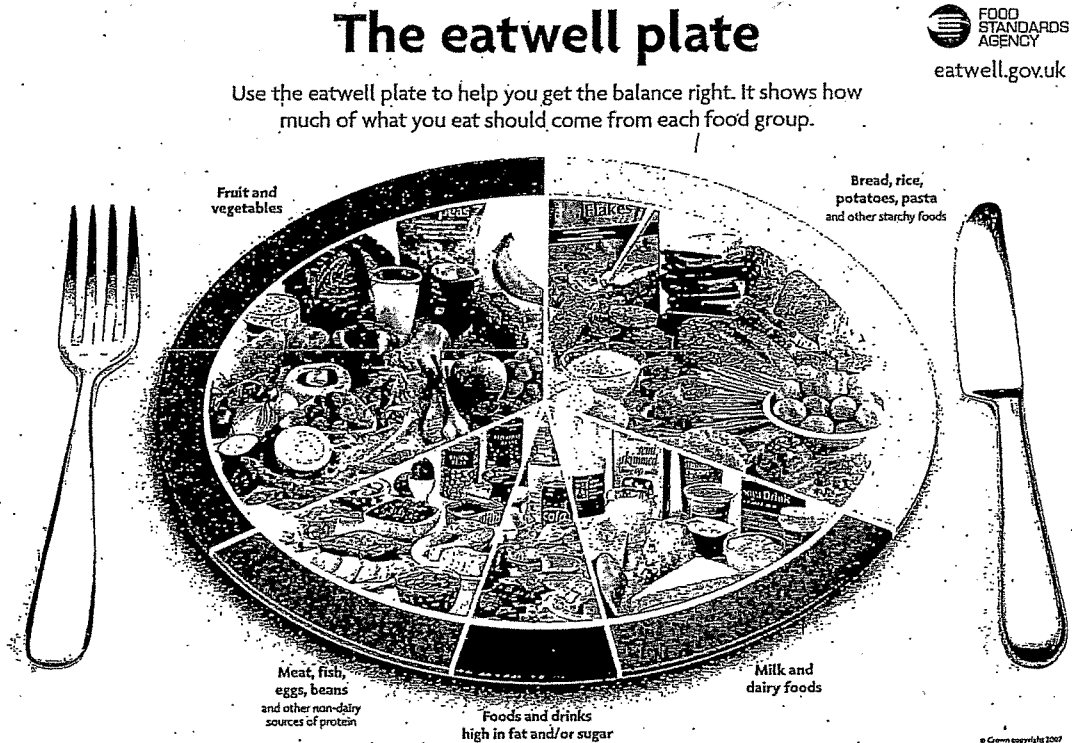


Figure 12 The five main food groups

Most of the foods you eat should come from the four food groups on the left and right of the 'eatwell plate'. The last group at the bottom of the plate, foods containing fat and sugar, should be a very small part of your diet and cannot replace¹ foods from the other groups.

The following is a more detailed outline of the individual food groups. The recommendations² for a balanced diet are based on the leaflet issued by the British Nutrition Foundation called *Healthy Eating – A Whole Diet Approach*.

A Fruit and vegetables: eat about five servings³ each day

This group contains all kinds of fruit and vegetables: fresh, frozen, dried and canned⁴. Pure fruit juice also counts, but only as one serving, no matter how much of it you drink. A serving is about 80g, e.g. a medium-sized apple. Try cutting up some fruit or vegetables and eating them as snacks during the day, instead of crisps or sweets. This food group is rich in fibre and vitamins.

B Bread, cereals and potatoes: they should make up a third of your daily diet

Besides breakfast cereals and potatoes, this group consists of pasta, rice and maize products. You should try to include at least one type of food from this group in each meal, because these foods give you a lot of energy without using much fat. Also, if available, choose wholegrain cereals and noodles, which will give you an additional amount of fibre.

1 replace sth. etwas ersetzen
 2 recommendation Empfehlung
 3 serving Portion
 4 canned aus der Dose

C Milk and dairy products¹: try to eat 2–3 servings a day

All products that contain milk, such as cheese or yoghurt, and of course milk itself, belong in this group. Butter and cream are not in this category because they are high in fat (see group E). A serving in this group consists of, for example, 200 ml milk, 150 g yoghurt, or 30 g cheese. If available, use low-fat versions. These foods give you a lot of minerals and proteins.

D Meat, fish and alternatives: eat moderate² amounts

This group includes meat, poultry³, fish, eggs and alternatives (see 'Further facts' below). Since some meat products are high in fat, make sure to remove⁴ visible⁵ fat and/or choose low-fat versions where possible. Also, it is a good idea to eat fish twice a week as it is low in fat but contains a lot of protein, minerals and essential omega-3 fatty acids. These foods provide you with protein, iron and magnesium as well as B and D vitamins.

E Foods containing fat and sugar: eat less of these

Butter, all kinds of oils, cream, fried foods and chocolate all belong in this group because they contain fat. You can find sugar in soft drinks, sweets, jam, cakes and ice cream. In fact, most of the foods that we eat for snacks and treats⁶ are high in sugar or fat (or both). A small amount of fat is essential for a healthy diet, as some vitamins can only be absorbed into our cells when fat is present as a solvent⁷. It is important, however, not to eat too many foods with fat as they contain more energy than the body can use. Choose low-fat versions whenever possible, and choose products which are rich in unsaturated fats instead of those with high amounts of saturated fats.

Further facts**What about vegetarians and vegans?**

Vegetarians do not eat meat and fish, while vegans go further, excluding all animal products including eggs, dairy products and honey from their diet. So they need to get the nutrients found in animal products from other sources. For example, nuts are high in fat, tofu is high in protein, and beans have a lot of iron. However, unlike meat and fish, these foods do not provide much zinc or vitamin B12, so vegetarians and vegans have to make especially sure that they get enough of these nutrients. Sometimes a nutrient is added to a food product which would normally be a poor source of it. Some fortified⁸ breakfast cereals, for example, have a lot of vitamin B12.

1 dairy product *Milchprodukt, Molkereiprodukt*

2 moderate *mäßig*

3 poultry *Geflügel*

4 remove sth. *etwas entfernen*

5 visible *sichtbar*

6 treat *Leckerbissen*

7 solvent *Lösungsmittel*

8 fortified *angereichert*

- 1 Which of the food groups should make up the largest proportion of your diet? Explain why.
- 2 Make a 'food diary' by writing down everything you eat during a normal day. Then check how balanced your diet is by using the 'eatwell plate'. Make notes about what was healthy or unhealthy in your intake for the day.
- 3 Working with a partner, list the reasons why you think most people like to eat sweet and fatty foods. Then list the reasons why you should not eat too much of these types of foods. Compare your lists with those of your classmates.
- 4 Make a list of snacks that do not belong in group E. Share your ideas with the class and make a poster advertising 'healthy snacks'.
- 5 Why is fish particularly suitable for a healthy balanced diet?
- 6 Teenage girls who choose to be vegetarians need to pay extra attention to what they eat and to make sure that they have enough iron in their diet. Why?

4.4 How much energy do you need?

How much energy you need depends a lot on your job, your age and your lifestyle. An athlete needs more energy than a bank clerk¹, while a teenager needs more energy than a baby. Table 1 shows how much energy you need on average at different ages.

Energy is measured in joules or kilojoules (kJ), where 'kilo' means 1000. One joule is the energy it takes to lift one kilogram one metre high. For your diet this means in simple terms: if you take in more energy than you need through the food you eat, you will gain weight; if you take in less, you will lose weight.



Figure 13 a/b A baby and a teenage athlete have different energy needs

Age	Males (kJ)	Females (kJ)
0-3 months	2280	2160
4-6 months	2890	2690
7-9 months	3440	3200
10-12 months	3850	3610
1-3 years	5150	4860
4-6 years	7160	6460
7-10 years	8240	7280
11-14 years	9270	7720
15-18 years	11,510	8830
19-50 years	10,600	8100
51-59 years	10,600	8000
60-64 years	9930	7990
65-74 years	9710	7960
75+ years	8770	7610

¹ bank clerk *Bankangestellte/r*

Table 1 Estimated average energy requirements per day

Exercises: The table shows the energy value of some products.

Complete the table to show the energy value of each product in kJ/100g (take care- some energy values are given for 25 g; others are for whole bars or packets).

Draw a bar chart showing the products in descending order of energy value (the one with the highest energy value on the left).

For a 50 g portion which product would be a) the least fattening and b) the most fattening?

A Mars bar weighs 65 g. What is its energy value in joules?

While playing football the same boy uses, on average, 1000 J per minute. How long would it take him to use up the energy obtained from the Mars bar?

Name of product	Energy value (kJ/25g, unless otherwise stated)	Energy value (kJ/100g)
Bounty, 60g	490	
Maltesers	504	
Mars	454	
Milky Way	490	
Minstrels, 49 g	870	
Snickers	504	
Treets, 42 g	1040	
Twix	504	

4.5 Eating habits¹ can go wrong

We have seen how to choose a healthy diet and learned that we need regular exercise in order to maintain a healthy body weight. Although these guidelines may seem simple, it is not always easy for us to follow them. Many people have trouble managing their eating habits and some develop diseases, fatigue² and depression as a result.

While it is perfectly normal for people the same age to differ in size and weight, there is a way of measuring whether or not their body weight can be considered healthy. This is called the **body mass index (BMI)**. You can calculate your BMI using the following formula:

$$\text{BMI} = \frac{\text{body weight (kg)}}{\text{height (m)}^2}$$

formula:

In general, BMIs for adults are classified in four categories, as shown in Table 2. Note that these values only apply to adults aged 20 and over, not to teenagers. A teenager's body changes rapidly, so this simple BMI classification cannot adequately⁴ describe healthy ranges for young people. If an adult's BMI is outside the healthy range⁵, they need to start paying attention to their eating habits, as being underweight or overweight can have serious consequences for your health. Normally your body knows when you are hungry and when you have to stop eating, so listening to your body's signals is important. Sometimes, however, the body develops bad eating habits, which can lead to **obesity** or **eating disorders**.

Eating and health problems

The three most common health problems associated with eating are obesity and the eating disorders **bulimia** and **anorexia nervosa**.

Obesity

In the Western world many people eat much more than their bodies require, which causes them to gain a lot of weight. A study in Germany in 2007 showed:

- 53 per cent of adult men and 35.6 per cent of adult women are overweight (i.e. they have a BMI between 25 and 30)
- 22.5 per cent of men and 23.3 per cent of women are obese (their BMI is 30 or more). Being overweight or obese increases the risk

Key terms

Body weight and eating habits

- anorexia nervosa *Magersucht*
- anorexic *magersüchtig*
- binge eating attack *Essattacke*
- body mass index (BMI) *Körpermassezahl*
- bulimia *Bulimie, Esssucht*
- eating disorder *Essstörung*
- obese *fettleibig*
- obesity *Fettleibigkeit*
- underweight *Untergewicht*

Less than 20	Underweight
20 to 25	Desirable ³ weight
25 to 30	Overweight
30 and over	Obese

Table 2 BMI categories for adults

From: World Health Organization, 2003



Figure 15 Obesity affects a lot of adults in the Western world

1 habit *Gewohnheit*

2 fatigue *Schwäche, Müdigkeit*

3 desirable *wünschenswert*

4 adequately *angemessen*

5 range *Spannbreite*

of developing heart disease and diabetes, causes difficulties during pregnancy and makes wounds heal more slowly. Obesity can also increase the danger of getting cancer.

Bulimia

Some teenagers who have a perfectly normal BMI sometimes have **binge eating attacks**. This means that they eat lots of food in a very short period of time, but feel bad afterwards and make themselves vomit¹. Besides the emotional pressure which these people feel (having to hide their condition from their family and friends), the frequent vomiting can damage their vocal-cords and teeth, and the lack of nutrients can lead to all kinds of deficiencies² in their bodies. Most people with bulimia need a doctor to help them break this habit.

Anorexia nervosa

Other teenagers do not eat enough food to supply their body with what it needs. They forget how to listen to their body's signals that tell them when they have to eat. Adults who eat very little food and have a BMI of under 17.5 are considered anorexic and need help from a doctor. Anorexia puts the body under enormous pressure. **Anorexic** teenagers may experience difficulty growing, while adults become very weak. In 2006 a Brazilian model died of anorexia – she had a BMI of 13.21. In the same year Spain banned models from fashion shows who had a BMI of under 18.



Figure 16 A case³ of self-deception⁴

If you think that you or a friend might have one of these eating disorders, talk about it with someone you trust as soon as possible. Your biology teacher can also help you. While we all know it is normal to see a doctor about an obvious problem like a broken leg, some people feel embarrassed or ashamed about talking to anyone about eating disorders. Still, just like a broken leg, eating disorders are a serious matter and need to be treated. So don't worry about what others might think. It is best to get help quickly.

- 1 Describe the consequences of obesity, bulimia and anorexia. Make a table comparing the three conditions.
- 2 Calculate your own BMI using an online calculator (e.g. http://pediatrics.about.com/cs/usefultools//bl_metric_calc.htm). It is important to choose a calculator for teenagers (not adults) and to use metric units of measurement when entering your height and weight. How reliable do you think the result is?
- 3 Why do you think teenagers in particular often feel they are too fat although they have a perfectly normal weight? Discuss this question with a partner and make a list of your ideas. Then, in small groups, discuss possible responses to this. How can teenagers become more satisfied with their bodies?
- 4 Using the Internet, the telephone book and any other resources, find out how people with eating disorders can be helped and where in your area people can find this help. Do you think there is enough help available for teenagers with eating disorders where you live? If not, where else could you get help?

4.6 Tips for healthy snacks

Healthy food does not have to be boring, and it can be very easy to prepare. Here are a few recipes¹ for snacks that are not only tasty but also good for you. Give them a try!



Smoothies²

This drink is the right choice for a hot day. It is quick, easy, and you can try out a lot of different ways of making it.

Ingredients³ for two servings:

- 200 g natural low-fat yoghurt
- 2–3 medium-sized bananas
- 1 handful strawberries or other fresh fruit
- 400 ml fruit juice (e.g. orange, apple or cranberry)

Procedure:

Put all the ingredients into a blender⁴ and mix them until smooth. You can also try flavoured yoghurt and any other mix of fruits. Bananas, though, make the drink especially smooth. For an extra boost of coolness, add some crushed ice.

Fruit muffins

Even cakes can be part of a healthy diet if you do not eat them all the time. This recipe makes six large or 12 medium-sized muffins.

Ingredients:

- 75 g white flour
- 75 g wholemeal⁵ flour
- 2–3 teaspoons baking powder⁶
- 50 g caster sugar⁷
- 1 egg
- a pinch⁸ of salt
- 75 ml milk
- 75 ml vegetable oil
- 50–75 g fresh or frozen fruit, e.g. raspberries, blueberries
- 50 g chopped⁹ walnuts¹⁰



Procedure:

1. Heat the oven¹¹ to 190 °C. Using a special baking tray¹² for muffins, grease¹³ the muffin tins¹⁴ with a little oil.
2. In a large bowl¹⁵ mix together the flour, baking powder, salt and sugar. In another bowl beat the egg, milk and oil lightly with a fork. Then pour all of the liquid ingredients into the dry ingredients and add the fruit and walnuts. Stir¹⁶ with a tablespoon¹⁷ until the ingredients combine, but no longer. Make sure to include the sides and bottom of the bowl.
3. Using a tablespoon, fill the muffin tins. Make sure to fill the tins only $\frac{3}{4}$ full. Bake for 15–20 minutes in the preheated oven. The muffins are ready when they are lightly browned.

- 1 recipe Rezept
- 2 smoothie cremiges Getränk mit frischen Früchten
- 3 ingredients Zutaten
- 4 blender Mixer
- 5 wholemeal Vollkorn
- 6 baking powder Backpulver
- 7 caster sugar Streuzucker
- 8 pinch Prise
- 9 chopped gehackt
- 10 walnut Walnuss
- 11 oven Backofen
- 12 baking tray Backblech, Kuchenblech
- 13 grease sth. etwas einfetten
- 14 muffin tin Muffinform
- 15 bowl Schüssel
- 16 stir sth. etwas rühren
- 17 tablespoon Esslöffel