

Teenagers

Key points

- Growth and development are rapid during teenage years, and the demand for energy and most nutrients is relatively high.
- National data shows that average intakes of fat among teenagers were close to the adult benchmark of 35% of food energy.
- A proportion of teenagers had low intakes of some vitamins and minerals (*e.g.* vitamin A, riboflavin, iron and magnesium), with more girls aged 11-18 having low intakes compared to boys of a similar age.
- Teenagers in Britain are largely inactive, with 46% of boys and 69% of girls aged 15-18 spending less than the recommended one hour a day participating in activities of moderate intensity.

ENERGY AND NUTRIENT REQUIREMENTS

Growth and development are rapid during teenage years, and the demand for energy and most nutrients is relatively high. This demand differs between boys and girls: boys need more protein and energy than girls due to their greater growth spurt.

The growth spurt usually begins around the age of 10 years in girls and 12 years in boys. In both sexes, an average of 23cm is added to height and 20-26kg to weight. Before adolescence, both girls and boys have an average of 15% body fat. During adolescence this increases to about 20% in girls and decreases to about 10% in boys.

One way to obtain sufficient energy (and nutrients) is by the consumption of nutritious snacks to compliment regular meals. However, some teenagers eat more than they need and may become overweight, especially if they are inactive. It is better to try to prevent obesity than to encourage strict dieting in this age group. Encouraging a healthy lifestyle is therefore of prime importance during these years. Good habits practised now will be likely to benefit their health for the rest of their lives.

There is an increasing tendency for teenagers, particularly girls, to control their weight by unsuitable methods such as smoking or adopting very low energy diets. A recent government survey reporting on the diets of British school children found that one in six girls aged 15-18 years were dieting to lose weight. A restricted diet especially one that excludes whole food groups, can lead to nutrient deficiencies and problems in later life.

During adolescence iron requirements increase to help with growth and muscle development. After menstruation begins, girls need more iron than boys to replace menstrual losses. It is difficult to estimate the number of teenagers who are anaemic but the National Diet and Nutrition Survey of young people published in 2000 found 1% of boys aged 15-18 had a haemoglobin level lower than the limit for men and 9% of girls had a haemoglobin level lower than the limit for women. The survey also found many teenage girls had a low intake of iron, with 45% of 11-14 year and 50% of 15-18 year olds having intakes below the lower reference nutrient intake (LRNI), implying that their intakes were likely to be inadequate. Those who start a poorly planned vegetarian diet or are slimming may be particularly at risk. Bread flour is fortified with iron by law and iron is also added to most breakfast cereals. This makes breakfast an important way of acquiring iron. Although many adolescents do not eat breakfast, these foods can be encouraged as snacks instead together with food or drink containing vitamin C, *e.g.* citrus fruit or a glass of fruit juice to enhance the absorption of iron.

The rapid increase in bone mass in teenagers means that they require more calcium than adults. Boys should aim for 1000mg per day and girls for 800mg. Good sources of calcium include dairy products (such as milk, yogurt and cheese). Low fat milk and dairy products contain at least as much calcium as whole milk and its products. If these are not eaten, a calcium-fortified soya drink can be a useful substitute. In the UK, white and brown flour (but not wholemeal which already has an adequate amount) must be fortified with calcium, so bread made from these flours is a significant source of calcium for many people. Pulses, nuts, dried fruit and green vegetables, such as spring greens and broccoli, contain calcium. But it is a myth that spinach is a good source of minerals – although they are present they are closely bound to digested substances in the spinach which prevents their absorption. Fish that is eaten with the bones, such as whitebait or canned sardines, are also a good source. In some areas of the country, hard water provides a significant amount of calcium. An additional source of calcium is calcium-rich mineral water.

CURRENT INTAKES

The National Diet and Nutrition Survey of young people, published in 2000, found:

- The main sources of dietary energy were cereal and cereal products, including bread, biscuits, buns, cakes and pastries, which together provided a third of dietary energy. Other sources of energy in the diet included vegetables, potatoes and savoury snacks which together contributed 15% of energy in boys and 19% in girls, and meat and meat products (which provided 15% of energy in boys and 13% in girls).
- Both sexes exceeded the recommendation that only 11% of food energy to come from non-milk extrinsic sugars, with boys and girls aged 11-18 consuming on average about 16% of energy from NMES.
- Boys aged 15-18 consumed more coffee, tea and carbonated drinks than younger boys.
- Girls aged 15-18 also consumed more tea and coffee than younger girls as well as more rice, vegetable dishes, bottled water and wine.
- Average intakes of fat were close to the adult benchmark of 35% of food energy (Table 1). Currently there is no specific benchmark for children's intake of fat, although the adult value is considered relevant for school age children.
- Average intakes of saturates were higher than the adult recommendations (14% vs. 11% of food energy).
- Some children had low intakes of some nutrients (Table 2), with more girls aged 11-18 having vitamin and mineral intakes below the LRNI compared to boys of a similar age. Intakes below the LRNI are likely to be inadequate.
- Excluding salt added during cooking and at the table, daily sodium intakes were already higher than the RNI. The mean intake was 2.7 g in boys aged 11-14 years; 3.3 g in boys aged 15-18 years; 2.3 g in girls aged 11-14 years and 2.3 g in girls aged 15-18 years. This equates to 6.75 g, 8.25 g, 5.75 g and 5.75 g of salt, respectively. Average target salt intakes for population groups in children are 5 g/day for children aged 7 – 14 years and 6 g per day for those aged 15 and over.

Teenagers need a varied diet, incorporating all the major food groups. In the short-term this will help with general appearance (*e.g.* shiny hair and healthy skin) and energy levels, while in the long term it will help prevent diseases such as cardiovascular disease and osteoporosis.

Table 1. Macronutrient Contribution to Total Energy Intake

% Energy	Boys		Girls	
	11-14 years	15-18 years	11-14 years	15-18 years
Protein	13.1	13.6	12.7	13.6
Total carbohydrate	51.7	51.1	49.3	49.7
Total fat	35.2	35.1	36.1	35.2
Alcohol	< 0.1	1.9	< 0.1	1.4

Table 2. Proportion (%) of 11-18 year olds with intakes of selected nutrients below LRNI

% below LRNI	Boys		Girls	
	11-14 years	15-18 years	11-14 years	15-18 years
Vitamin A	13	12	20	12
Riboflavin	6	6	22	21
Iron	3	2	45	50
Calcium	12	9	24	19
Zinc	14	9.9	37	10
Magnesium	28	18	51	53

PHYSICAL ACTIVITY

National data suggests that a majority of teenagers in Britain are largely inactive, with 46% of boys and 69% of girls aged 15-18 spending less than one hour a day participating in activities of moderate intensity. The 2004 report *At Least Five a Week, Evidence on the impact of physical activity and its relationship to health* from the Chief Medical Officer recommended that teenagers (and children) have at least 60 minutes of at least moderate intensity exercise every day. It also recommended that activities that increase muscle strength and flexibility and also improve bone strength should be included at least twice a week.

EATING DISORDERS

Anorexia nervosa, bulimia nervosa, binge eating disorders and their variants are psychological illnesses characterised by a serious disturbance in eating, as well as distress or excessive concern about body shape or weight. Eating disorders are typically seen in girls and young women, but increasingly in teenage boys. Anorexia nervosa is the refusal to eat enough to maintain a normal body weight. Sufferers are of the impression that they are overweight and often picture themselves as being fat even though they are underweight. In teenage girls (and women), anorexia may lead to menstrual abnormalities including cessation of periods, which may have a serious effect on bone health.

Bulimia nervosa sufferers are also obsessed with the fear of gaining weight. There is a recurring pattern of binge eating, which may be followed by self-induced vomiting. People with bulimia often have an overconcern with their body weight and shape and may feel a lack of control. The foods eaten tend to be high in carbohydrate and fat. Sufferers may also use large quantities of laxatives, slimming pills or strenuous exercise to control their weight. Many bulimics have poor teeth due to regular vomiting. Vomit is acidic and can erode teeth.