

## Energy Needs

### Key Words

**BMR: Basal Metabolic Rate** is the amount of energy we need to keep our body alive.

**Energy balance:** the amount of energy we get from food each day is the same as the amount of energy we use each day.

**Energy dense:** foods containing high amounts of fat and carbohydrates (especially sugar) e.g. pizza, pastry, chocolate bars, pastries, cakes, cookies, meat products i.e. sausages, burgers salami).

**Kilocalorie (kcal)/ kilojoule (Kj):** units used to measure energy.

**PAL (Physical Activity Level):** the amount of energy we use for movement and physical activity every day.



### Functions in the body.

- Everyone needs energy to survive. It allows the body to:
- Move muscles and be physically active
- Produce heat to keep warm
- Send messages to the brain to make nerves work
- Allow the body to grow and develop
- Produce sound when using the voice

### Sources:

**Carbohydrate:** foods containing sugar and starch (1g of pure carbohydrates = 3.75 kcals/16kJ of energy)  
**Fat:** foods containing visible and invisible fats and oils. (1g of pure fat = 9 kcals/37kJ of energy)  
**Protein:** (1g of pure protein = 4 kcals/17kJ of energy)  
**Alcohol:** many people drink alcohol in beer, cider, wines and spirits. (1g of pure alcohol = 7 kcals/29kJ of energy)

### Effects of deficiency

The body will lose weight because if there is not enough energy to meet the needs of the body, the fat stores will be used over time gradually reducing them.

### Effects of excess in the diet:

Energy not used will be stored in the fats cells for future use. If too much energy is stored as fat = obesity.

### Amount needed for different life stages:

This depends on the amount of energy used every day. Three factors influence this:

- Physical Activity Level (PAL).
- Basal metabolic Rate (BMR).
- **Life stage** e.g., young children need extra energy due to their growth rate, energy used and small appetites.

Depending on a person's lifestyle and age, 40 to 70% of the energy needed is for their BMR. The BMR is different for different people due to their:

**Age:** Adults have higher rates than children. BMR decreases with age.

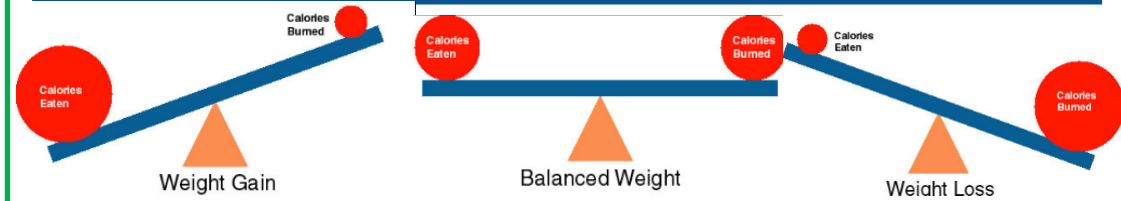
**Body size:** As the body grows their BMR increases due to the amount needed to move.

### Energy Balance

The amount of energy we take in from food **must** be used up by our Basal Metabolic Rate and Physical Activity Level.

If we take in **more energy** from the food we use every day, the energy we do not use will be stored as fat and the body will **gain weight**.

If we take in **less energy** from food than we use every day, the energy stored in body fat will need to be used and the body will gradually lose weight. This is the basis of weight reducing diets.



### Amount of energy needed daily by each nutrient:

**Carbohydrate:** 50%. **Most of which** should come from starch, intrinsic and milk sugars.  
**No more than** 5% of the energy from carbohydrate should come from free sugars, intrinsic sugar found in fruit and vegetables.  
**Fat:** 35% or less  
**Protein:** 15%

### Physical Activity Level:

Regular exercise is an important part of a healthy lifestyle. Physical activity :

- Reduces risk of developing heart disease, obesity and some cancers.
- Improves health of muscles and skeleton
- Keeps the brain alert and working
- Makes people feel good about themselves.
- Health experts are concerned about the **sedentary** (inactive) lifestyles due to too much sitting for long periods of time e.g. working at a desk, watching television, using the internet or playing computer games.

### The recommended physical activity needed daily is suggested to be:

- Under 5 years: A minimum of 3 hours of physical activity spread over the day
- 5—18 years: Up to 60 minutes for several hours a day
- 19—64 years: 30 minutes on at least 5 days a week, for a minimum of 10 minutes at a time.

