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## Body mass index (BMI)

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### Summary

- BMI is an approximate measure of your total body fat.
  - Being underweight or overweight can cause health problems, especially if you are also inactive.
  - Your waist circumference is a better predictor of health risk than BMI.
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Body mass index (BMI) is one method used to estimate your total amount of body fat. It is calculated by dividing your weight in kilograms by your height in metres squared ( $m^2$ ).

Differences in BMI between people of the same age and sex are usually due to body fat. However, there are exceptions to this rule, which means a BMI figure may not be accurate.

BMI calculations will overestimate the amount of body fat for:

- body builders
- some high-performance athletes
- pregnant women.

BMI calculations will underestimate the amount of body fat for the elderly, and for people with a physical disability, who are unable to walk and may have muscle wasting.

BMI is also not an accurate indicator for people with eating disorders like anorexia nervosa or people with extreme obesity.

BMI is not considered the best measurement of weight and health risk. A person's waist circumference is thought

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to be a better predictor of health risk than BMI.

### **What is a healthy BMI range for children?**

The healthy BMI range for adults is 18.5 to 24.9. However, children are constantly growing, which makes it difficult to have set values for BMI cut-offs. For adults who have stopped growing, an increase in BMI is usually caused by an increase in body fat. But as children grow, their amount of body fat changes and so will their BMI. For example, BMI usually decreases during the preschool years and then increases into adulthood.

For this reason, a BMI calculation for a child or adolescent is interpreted differently from an adult's, and takes into account the age and sex of the child or adolescent.

The current BMI charts for children have been developed by the US Centres for Disease Control and Prevention. They are useful for the assessment of overweight and obesity in children aged over two years. However, BMI charts should be used only as a guide to indicate when to make small lifestyle changes, and when to seek further guidance from a doctor or a dietitian.

To calculate a child's BMI, you can use the [body mass index calculator for children and teenagers](#).

### **How do I calculate my BMI?**

BMI is an approximate measure of the best weight for health only. To calculate your BMI, you can use the [body mass index \(BMI\) calculator for adults](#). You need to know:

- your weight in kilograms (kg)
- your height in centimetres (cm).

### **What your BMI means**

Once you have calculated your BMI, you can work out your healthy weight range.

If you have a BMI of:

- Under 18.5 – you are considered underweight and possibly malnourished.
- 18.5 to 24.9 – you are within a healthy weight range for young and middle-aged adults.
- 25.0 to 29.9 – you are considered overweight.
- Over 30 – you are considered obese.

For older Australians over the age of 70 years, general health status may be more important than being mildly overweight. Some researchers have suggested that a BMI range of 22-26 is desirable for older Australians.

### **Some exceptions to the BMI rule**

BMI does not differentiate between body fat and muscle mass. This means there are some exceptions to the BMI guidelines, including:

- **Muscles** – body builders and people who have a lot of muscle bulk will have a high BMI, but are not overweight.
- **Physical disabilities** – people who have a physical disability and are unable to walk may have muscle wasting. Their BMI may be slightly lower, but this does not necessarily mean they are underweight. In these instances, it is important to consult a dietitian who will provide helpful advice.
- **Height** – BMI is not totally independent of height and it tends to overestimate obesity among shorter people and underestimate it among taller people. Therefore, BMI should not be used as a guide for adults who are very short (less than 150 cm) or very tall (more than 190 cm).
- **People of different ethnic groups** – Asians and Indians, for example, have more body fat at any given BMI compared to people of European descent. Therefore, the cut-offs for overweight and obesity may need to be lower for these populations. This is because an increased risk of diabetes and cardiovascular disease begins at a BMI as low as 23 in Asian populations. Some populations have equivalent risks at a higher BMI, such as people of Torres Strait Islander and Maori origin.

### **Being overweight or underweight can affect your health**

The link between being overweight or obese and the chance you will become ill is not definite. Research is ongoing, although statistically, there is a greater chance of developing various diseases if you are overweight. For example, the risk of death rises slightly (by 20 to 30 per cent) as BMI rises from 25 to 27. As BMI rises above 27, the risk of death rises more steeply (by 60 per cent).

### **Risks of being overweight (high BMI) and physically inactive**

If you are overweight (with a BMI over 25) and physically inactive, you may develop:

- cardiovascular (heart and blood circulation) disease
- gallbladder disease
- high blood pressure (hypertension)
- type 2 diabetes
- osteoarthritis
- certain types of cancer, such as colon and breast cancer
- depression and other mental health disorders.

### **Risks of being underweight (low BMI)**

If you are underweight (BMI less than 18.5), you may be malnourished and develop:

- compromised immune function
- respiratory disease
- digestive diseases
- cancer
- osteoporosis.

### **Body fat distribution and health risk**

A person's waist circumference is a better predictor of health risk than BMI. Having fat around the abdomen or a 'pot belly', regardless of your body size, means you are more likely to develop certain obesity-related health conditions.

Fat predominantly deposited around the hips and buttocks doesn't appear to have the same health risk. Men, in particular, often deposit weight in the waist region and therefore have an increased risk of obesity-related disease.

Studies have shown that the distribution of body fat is linked to an increased prevalence of diabetes, hypertension, high cholesterol and cardiovascular disease.

Generally, the association between health risks and body fat distribution are:

- least risk – slim (evenly distributed body fat)
- moderate risk – overweight with no pot belly
- moderate to high risk – slim with pot belly
- high risk – overweight with excess belly fat.

### **Waist circumference and health risks**

Waist circumference can be used to indicate health risk for chronic diseases.

For men:

- 94 cm or more – increased risk
- 102 cm or more – substantially increased risk.

For women:

- 80 cm or more – increased risk
- 88 cm or more – substantially increased risk.

## Genetic factors

The tendency to deposit fat around the middle is influenced by a person's genes. However, you can take this genetic tendency into account and still do something about it.

Being physically active, avoiding smoking and eating unsaturated fat instead of saturated fat have been shown to decrease the risk of developing abdominal obesity.

## Where to get help

- Your doctor
- Maternal and child health nurse
- **Dietitians Association of Australia** Tel. (02) 6163 5200 or 1800 812 942

**This page has been produced in consultation with and approved by:**

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