

This means that to calculate your BMI you should:

- i) Use your calculator to find the square of your height in metres (for example, a height of 1.63 m will have a squared value of $1.63 \times 1.63 = 2.82 \text{ m}^2$).
- ii) Divide your mass in kg by the value calculated in step (i). This gives you your BMI.
- iii) Compare your calculated BMI with the values given below in Table 3.9 (There are many websites that will do these calculations for you.)

Body mass index	Interpretation
Below 20	Underweight
20–25	Ideal weight
25–30	Overweight
30–40	Obese
Above 40	Grossly obese

Note: Research projects which would involve asking people their weights should be avoided, as some may feel very uncomfortable giving this information.

Table 3.9 BMI values

Waist/hip ratio measures

Research has shown that waist/hip ratio is a better predictor of deciding if someone is obese and at risk of having heart disease than the traditional BMI method. People can be either 'apple shaped' (with a lot of fat stored around their middles) or 'pear shaped' (with fat stored around their bottom and thighs). Apple-shaped people are more likely to develop heart disease than pear-shaped people. The waist/hip ratio shows whether you are an 'apple' or a 'pear'.

You can work out your waist-to-hip-ratio by dividing the measurement of your waist by that of your hips (there are many websites that will do this for you).

$$\text{i.e. waist/hip ratio} = \frac{\text{waist measurement}}{\text{hip measurement}}$$

For men, ideally the ratio should not be over 0.9.

For women, ideally the ratio should not be over 0.85.

The higher the ratio, the greater the risk of heart disease and strokes. If your ratio is over one, you are at significant risk.

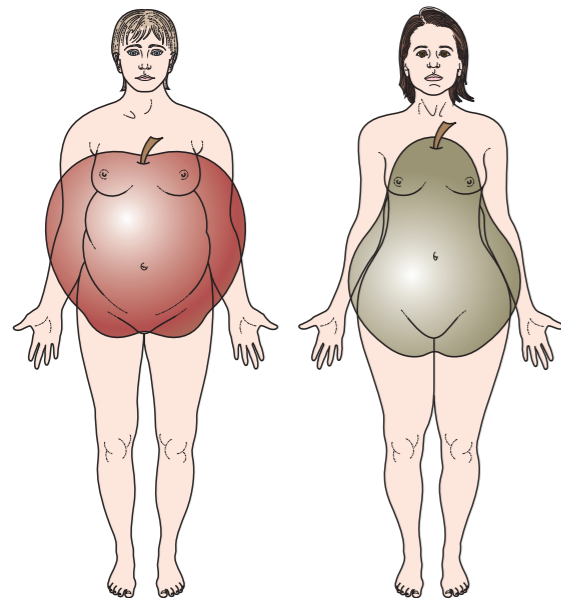


Figure 3.29 People can be either 'apple shaped' or 'pear shaped'

Body fat composition

The amount of body fat a person has can affect health).

Skin fold test

The simplest way of measuring body fat is using a skin fold test (see Figure 3.30). There is a layer of fat under the skin (subcutaneous fat). A caliper is used to pinch the skin at various points on the body and a gauge on the caliper measures the thickness of the pinch.



Figure 3.30 Measuring body fat using a skin fold test

ACTIVITY

If you can obtain calipers, have a go at doing a skin fold test.

- Take readings on the right side of the body.
- Pick up the skin fold between the thumb and forefinger, so that you are measuring two layers of skin and the subcutaneous fat. Place the calipers about one centimeter from the fingers and at a depth about equal to the thickness of the fold.
- Repeat this measurement three times (in mm) and calculate an average.
- The usual places on the body that are measured are shown in Figure 3.31
- Calculators can be found on the internet which will convert skin fold measurements to percentage body fat (for example, www.brianmac.co.uk/fatcent.htm)

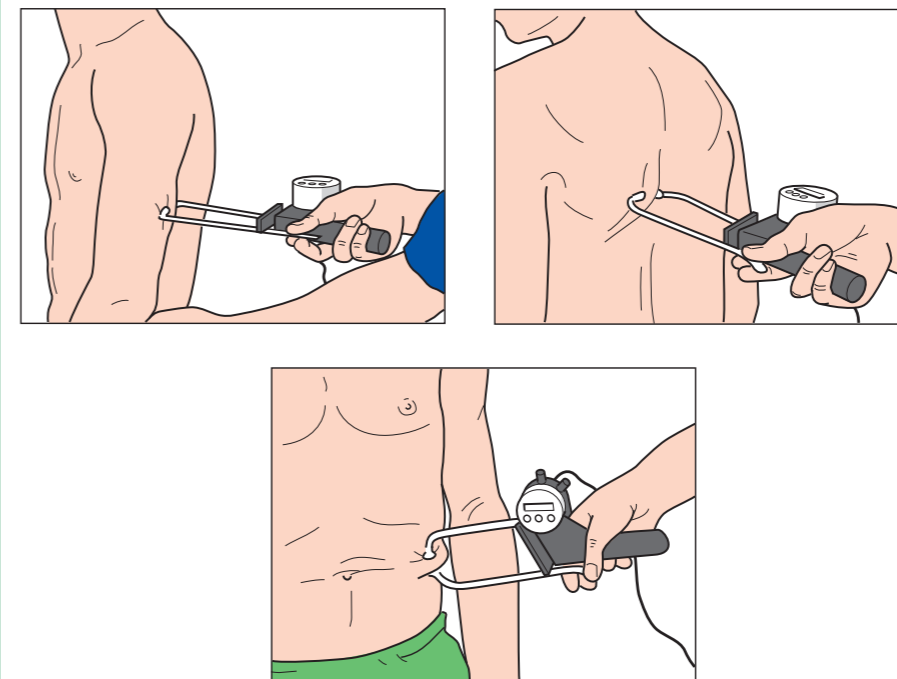


Figure 3.31 The sites shown may be used to determine body fat