

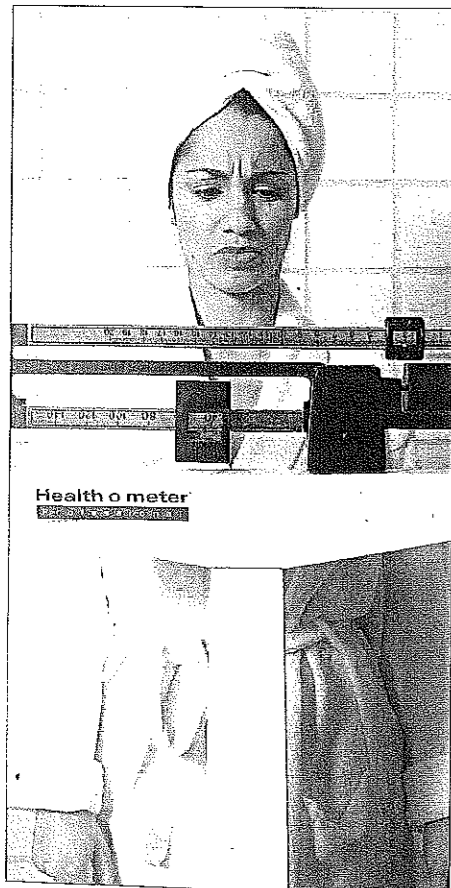
# Measuring Body Fat

If you are trying to gain weight in the form of muscle, and you are eating more and taking supplements, measuring body fat regularly will help you to see whether you are gaining muscle or fat, and keep you on track to reach your goals.

As already stated at the beginning of this book, fad diets simply don't work. Many of them, in fact, can result in a higher percentage of body fat because a diet that leads to fast results often causes you to lose just as much muscle as fat. This reduction in muscle means that your metabolism will be lower, and as a result you will put on more fat, especially after the diet has come to an end – which, invariably, it will.

If your weight on the scales is the same as before you started the diet, but your body fat has dropped from 15 to 10 per cent, you will know that you have gained a considerable amount of muscle.

*Below: Don't be discouraged if you are not losing weight quickly; slow and steady ensures it stays off.*



## Body fat table

Once you have calculated your body fat, compare your percentage with the figures on this table. You should try to stay within these boundaries – having some fat is essential for regulating the body's temperature and protecting vital organs.

Age	up to 30 years old	30–50 years old	50+ years old
Female	14–21 per cent	15–21 per cent	16–25 per cent
Male	9–15 per cent	11–17 per cent	12–19 per cent

## How to measure body fat

There are several different ways to measure body fat. The most accurate is hydrostatic weighing, which works by submerging the subject in a tank and measuring the water that is displaced. It is one of the most reliable tests, as factors such as how much fluid has been drunk in the last hour will not affect the results. However, you are unlikely to have a suitable tank at home and you won't find one at many sports clubs either. Instead, you are more likely to encounter body-fat scales and callipers.

A set of body-fat measuring scales will give you a rough estimate of your body fat. A low level electrical current is passed through the body and the impedance (opposition to the flow of current) is measured. The result is used with your weight and other factors to give you a body fat percentage. However, your body's impedance level can be affected by the amount of water in your body, any recent exercise and your skin temperature. If you are going to use body-fat scales to measure body fat don't eat or drink for at least 3 hours before measuring and avoid exercise for 12 hours before measuring.

Using body-fat callipers is more accurate if the same person does the measuring each time; the same amount of skin is pinched; the same side of the body is measured (usually the right-hand side); and the same equation is used to calculate body fat. If you repeat the same test in a month's time, and your fat

percentage has gone down, you know your training plan is working. There are a few rules you should stick to:

- The same person should measure you every time.
- Measure at the same time of day.

*Below: This woman is having her fat measured in a hydrostatic weighing pool, which is a very accurate method.*



## Body fat by sport

Average body-fat percentage for athletes.

Sport	male	female
Baseball	12–15	12–18
Basketball	6–12	20–27
Football	9–19	15–30
Cross-country running	5–12	12–18
Tennis	12–16	16–24
Triathlon	5–12	10–15

- Avoid drinking and eating for at least 3 hours before measurement.
- Avoid exercise for at least 12 hours before measuring.
- Hold the skin fold between the thumb and the index finger.
- Apply the callipers at a depth equal to the thickness of the fold.
- Repeat the measurement three times and take an average, so that you get an accurate reading.
- Add the readings for the different areas of the body together and use the equations that follow.

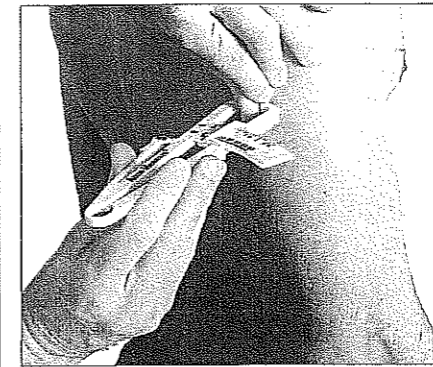
Instead of converting your skin-fold measurements into an actual body-fat reading, you could just add up your skin-fold measurements and use this to determine whether you are losing or gaining fat. If you want to focus on one area, such as losing weight from your stomach, then simply take one skin-fold measure from your abdomen using the following method. With a thumb and finger, pick up a skin fold with two thicknesses of skin and subcutaneous fat. Grip the skin with the callipers 1cm/1/2in from the fingers, at a depth the same thickness as the skin fold.

## Measurements

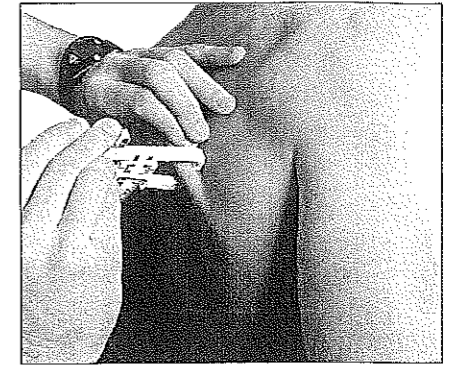
Remember that muscle weighs more than fat so if the reading on the scales doesn't change don't feel defeatist. To check if you are losing fat, take body measurements using a tape measure, measure your skin folds with callipers and use your mirror to see the changes. Use your scales only twice a week unless you are an athlete in training.

## How to calculate body-fat percentage

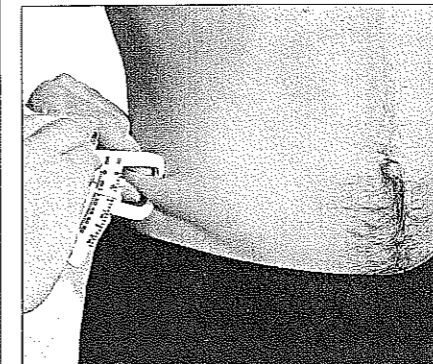
Specially calibrated callipers that grip the skin and fat are used for the measurement; three readings are taken at each site and an average is used for the calculation of body fat.



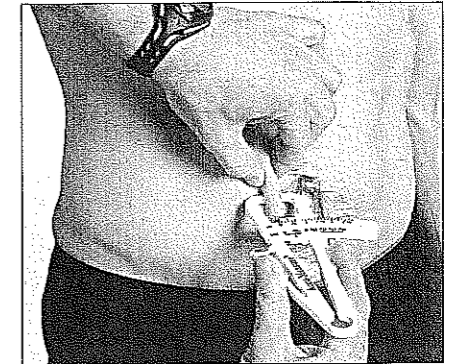
**Triceps:** the back of the arm located halfway between the shoulder and the elbow. Measure vertically.



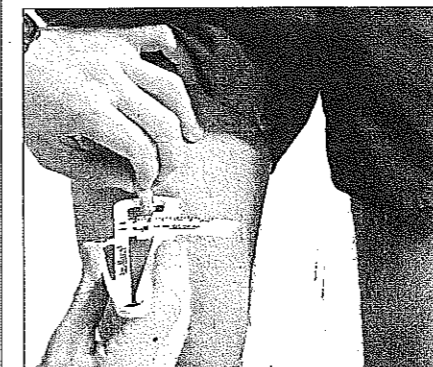
**Sub scapular:** situated just below the shoulder blade. Measure at a 45-degree angle.



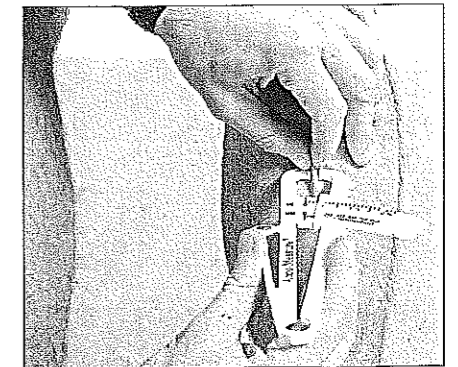
**Supraspinale:** on the side of the abdomen just below the line of the belly button. Measure horizontally.



**Abdominal area:** this is just beside the belly button. Measure the fat vertically.



**Thigh:** at the midpoint of the front of the thigh. Measure vertically.



**Calf:** taken at the back of the largest part of the calf. Measure vertically.

Calculate your body-fat percentage using an equation such as this:

**Equation for males:** percentage body fat = (0.1051 x sum of triceps, sub scapular, supraspinale, abdominal, thigh and calf) + 2.585

**Equation for females:** percentage body fat = (0.1545 x sum of triceps, sub scapular, supraspinale, abdominal, thigh and calf) + 3.580

Yuhasz, M.S., *Physical Fitness Manual*, University of Western Ontario, 1974