

## Is BMI just a big fat lie?

When a health index says the woman pictured is overweight should we trust it any more? Vicki-Marie Cossar investigates

**B**Y any normal standard, bodybuilder Anita Albrecht would be considered the picture of health. Yet as reported in Metro last month, the 39-year-old personal trainer was told by an NHS nurse in east London she should go on a strict diet. The reason? Her body mass index was 29 – meaning she was just short of obese. But what is BMI? And should we still be using a system designed in the early 1800s? BMI was created by Belgian statistician Adolphe Quetelet around 1830 as a measure of obesity and adopted by the British government in an effort to promote healthy eating.

It is calculated by dividing your weight in kilograms by your height in metres, then dividing the answer by your height again. This ratio is then compared to an index chart (known as the Quetelet index, main picture) to see whether you are underweight (a score of under 18), normal (18.5-24.9), overweight (25-29.9) or obese (over 30). Albrecht is 1.5m tall and weighs 66kg – giving her the reading of 29. Accordingly, the nurse told her to exercise more and limit herself to 1,000 calories per day – just half the recommended number for a woman. For a competitive athlete, this was not good advice.

'The last thing someone like Anita needs to do is restrict herself to 1,000 calories a day,' says Caroline Finucane, health editor at NHS Choices. 'Muscle cells need more energy to maintain than fat cells, so she's already burning calories like

there's no tomorrow. Taking into account her fitness, waist measurement and factors such as cholesterol level and blood sugar would have given a much more accurate picture.'

**F**INUCANE says for most adults BMI is a quick and simple way to check whether you need to take action. But she admits it's not perfect and doesn't work for everyone. 'It doesn't distinguish between fat and muscle,' she says, 'so if you're one of the few very muscly people like Anita, it could put you in an overweight category even if you have very little body fat. For this minority of people, BMI's a fat lot of good.'

Although BMI might be a good rule of thumb for most, industry professionals say there are better alternatives for those who work out regularly.

'BMI assumes we're all made of the same proportion of fat, muscle and bone,' says Pratik Sufi, weight-loss surgeon at the private Spire Bushey Hospital in Hertfordshire.

'It's not the most accurate measurement but because it is used so widely, it's difficult to change. It's something people recognise and trust, so to change it would take a huge concerted effort.'

So what's the best way to see if you're overweight? A cheap, simple and non-invasive method is to check your waist-hip ratio.

'I don't go by BMI because it doesn't take into consideration 100 per cent of the population,' says Greg Small, from the Register of Exercise Professionals. 'But a waist-hip ratio is a good indicator of health and the risk of developing serious health conditions.'

In 2005, the Institute of Preventive Medicine in Copenhagen said people who carry weight around the waist (apple-shaped bodies) face more health risks than those who carry more weight around the hips (pear-shaped bodies).

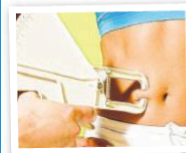
And in 2008, The World Health Organisation published a report concluding: 'The fundamental question of whether waist circumference and waist-hip ratio are useful measures for predicting disease risk was answered with convincing evidence.'

As an ex-professional rugby player, Small says his BMI puts him as morbidly obese. 'For those working out regularly I wouldn't use BMI,' he says. 'The waist-hip ratio is a much better assessment of where you are storing fat.'

### GO FIGURE ALTERNATIVES

**Skin fold test** Also known as the pinch test, this uses callipers to measure the amount of fat beneath the skin.

It involves pinching the skin and taking readings at specific points on the body. These are then converted to an estimated body fat percentage. It can be done at home but it is best to have it done by a professional as the callipers and testing points can have an influence.

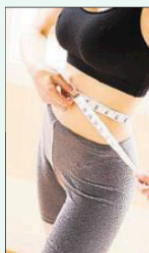


**Hydrostatic weighing (underwater weighing)** First you are weighed on land, then, in minimal clothing, you sit in a seat, expel all the air from your lungs and are lowered into a tank until all body parts are submerged. You're not allowed to move while your underwater weight is recorded. A formula then calculates your body density and body fat percentage.

**Air displacement plethysmography** This uses the same principles as underwater

weighing but is based on air displacement. It works by measuring the volume of air a person or object displaces inside an enclosed chamber – known as a plethysmograph. The device uses the relationship between pressure and volume to calculate your body volume. From this, your body density is calculated and body fat percentage estimated.

**Bioelectrical impedance** It involves standing on two footpads with built-in electrodes (some devices require electrodes to be touching both the feet and hands) while an electrical signal is sent round the body to measure the resistance caused by body tissue. The current flows more easily through parts of the body composed mostly of water (blood, urine and muscle) than it does through bone, fat or air. Your bioelectrical impedance measurement is then combined with your height, weight, gender, fitness level and age to estimate your body fat percentage.



### A BETTER MEASURE IT'S ALL IN THE HIPS

With questions around the validity of using BMI to determine whether you are overweight, some experts favour measuring your waist-hip ratio.

The World Health Organisation (WHO) says the waist should be measured midway between the lower margin of the last palpable rib and the top of the iliac crest (the nobby bit at the top of

your hip). Hips should be measured around the widest portion of the buttocks.

Stand with feet close together, arms at the side and body weight evenly distributed, wearing little clothing. Each measurement should be repeated twice. If the measurements are within 1cm of each other, use the average. If the

difference is more, repeat the measurements.

When you have both measurements divide the one for your hips by that for your waist to arrive at your waist-hip ratio.

WHO says a result of more than 0.85 for women and 0.9 for men shows abdominal obesity and carries health risks including type 2 diabetes and heart problems.