

# CALORIE MYTHS



 dietflex

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Many people are still influenced by the theory that if we reduce the calories we eat, or if we burn more calories through exercise, we'll lose weight.

The word calorie is actually an abbreviation of kilocalorie, and the correct metric term is kilojoule. A calorie is equal to 4.184 kilojoules.

The calorie as we know it today is derived from a series of studies in 1819 by Nicholas Clemente originally meant to measure the efficiency of steam engines. Calories were defined by 1824 as "the measure of the amount of energy required to heat one gram of water by one degree Celsius."

In 1887, Wilbur O. Atwater wanted to establish detailed nutrition tables, and the only quantitative measure for energy available was the calorie.

The number of calories in food was established using a bomb calorimeter, a unit where food is placed in a chamber surrounded by water. The food is burned and the heat from the fire warms the surrounding water. The temperature change of the water is measured and the energy given out by the food sample is calculated.

The closed system bomb calorimeter burns the selected food into ash. The short-comings of using a bomb calorimeter to measure calories of food, and then assuming that value to be the same in the human body, include:

- The human body is not a closed system (or a steam engine). The body runs on chemical energy which is fuelled by the oxidation of carbohydrates, fat and protein that occurs in the mitochondria of the cells. We inhale and exhale and give off heat and waste products, making the body an open system.
- Digestion does not turn food to ash. Every metabolic pathway in our body starts with a molecule and converts it to another molecule.

This uses energy rather than generating it. Every action in our body requires raw materials and energy. Waste products are passed through the body and excreted.

- Eating does not usually involve eating only one food at a time. The interaction of the different chemical structures of foods alters the amount of heat generated by the body. The food we eat has many functions:
- Build and repair our tissues, both cellular (e.g. muscles, skin, nerves) and acellular (e.g. hair, collagen, bone mineral).
- Build enzymes, hormones, and other molecules necessary for cellular function and communication.
- Build bile, stomach acid, mucus, and other necessary secretions, both internal and external.
- Used by gut bacteria to keep themselves alive.
- It can fail to be digested or absorbed, and be excreted partially or completely unused.
- It can be converted to a form in which it can be stored for future use, such as glycogen or fat.
- It can be transported to an individual cell that takes it in and converts it to energy in order to perform the above tasks.

The final point here (conversion to energy) is the only one that is even close to what occurs in a bomb calorimeter.

## THE CALORIE MYTH

Each kilogram of fat contains around 7,700 calories. This would suggest that if you eat 7,700 calories more, you'd gain one kilogram. Conversely, if you exercised off 7,700 calories you'd lose a kilogram.

### Unfortunately, it's not as simple as this.

The body doesn't recognise calories.

Calories are a measure of heat and have no nutritional value. The body can't use them for anything, but it does use the nutrients in the food which carries the calories.

Instead of thinking about the calorie content of food, think instead of the nutrient content and compare that to the number of calories.

## 1. PROTEIN AND CALORIES

Protein yields 4 calories per gram. For every 100 calories of protein consumed, we use 20 – 30 calories for digestion.

Let's say you're looking for a good source of protein:

	Calories	Fat	Carb	Protein	% Protein
<b>40g</b> Protein Plus cereal	148	0.9g	27.4g	5.3g	13.25g
<b>100g</b> grilled rump steak	177	5.5g	0g	31.5g	31.5g

The steak is a better source of protein than the cereal, and at more than twice the weight per serving and only 29 calories more, it is a superior choice for satisfying hunger and assisting weight loss.

## 2. CARBOHYDRATE AND CALORIES

Carbohydrates yield 4 calories per gram. For every 100 calories of carbohydrate consumed, we use 5 – 10 calories for digestion.

Many people feel that they need carbohydrates for satiety, so they opt for foods like bread and pasta. As many people who carry extra weight have a low tolerance to carbohydrate, these sorts of high carbohydrate foods are not good choices. Vegetables are a better source of carbohydrate, as their weight, water and fibre content makes them an excellent food to fill up on for very few calories and high micronutrient value.

Compare:

	Calories	Fat	Carb	Protein	Fibre
1 slice multigrain bread <b>(28g)</b>	66	0.8g	11.5g	2.5g	1.4g
1 cup broccoli florets <b>(156g)</b>	48	0.5g	0.6g	7.2g	5.9g

### 3. FAT AND CALORIES

Fats yield 9 calories per gram. For every 100 calories of fat consumed, we use around 5 calories for digestion.

Many people are still scared of fats, holding to the idea that 'eating fat makes you fat'. Some seem to think that you either eat a high fat diet (bad) or no fat diet (good), with little middle ground. Of course neither of these options is desirable, so finding the middle ground is essential.

Knowing that fat is an essential nutrient, particularly for the transport and absorption of fat soluble vitamins, structure of cell walls and production of enzymes and hormones, it is vital that fat is present in the diet. Consider that 1 teaspoon of fat weighs about 5g, so getting just a small amount of fat per meal is sufficient for good health and weight loss.

The fat you choose to eat makes a big difference in your weight and health outcomes:

	Calories	Fat	Carb	Protein
6 Almonds <b>(7.2g)</b>	43	3.9g	0.3g	1.4g
Cinnamon donut <b>(45.5g)</b>	149	6.3g	20.8g	2g

### EXERCISE AND CALORIES

Most people think that exercise is the best way to burn calories. While it's true that exercise does burn calories, the amount of calories even fitness fanatics burn through their daily exercise pales in comparison to the calories required for normal bodily functions.

At least 60 - 70% of calories are used in assisting nutrients in performing normal maintenance activities such as breathing, digestion, enzyme production, general movement etc. Only around 10 - 20% of calories are used for exercise, and that's for the most dedicated amongst us. For those following the recommendations to get just 30 minutes

of exercise daily, the amount of calories burned will barely make a difference in their weight loss efforts. Luckily, the benefits of exercise go far beyond just burning calories!

### DON'T IGNORE THE CALORIES

Despite all that has been said, calories are still important: it's just that they are not the most important thing.

Focus on food quality and quantity:

- Choose foods high in nutrients compared to the calories they contain.
- Ensure you eat foods with protein, carbohydrate and fat at each meal.
- Stop eating when you're no longer hungry. Just because the food is nutrient-dense, doesn't mean you can eat enormous amounts. A 100g steak will suit most women. Men usually eat more, but an 800g steak at an all-you-can-eat pig-out will not help anybody lose weight.
- Enjoy your food. Focus on what you can eat and enjoy, not on what you can't.
- Eat food. Don't think about eating protein, or carbs, or fat, or even calories. Just eat food.

