

## Red meat and weight management



The prevalence of obesity in England has nearly doubled in the last 20 years<sup>1</sup> and by 2050 obesity is predicted to affect 60% of adult men, 50% of adult women and 25% of children<sup>1</sup>. Obesity occurs when energy intake is greater than energy expenditure over a prolonged period of time. However there are many complex behavioural and societal factors that combine to contribute to the causes of obesity and over 100 variables have been identified which have been proposed to directly or indirectly influence the risk of obesity.

Key factors which can influence energy balance include portion size, eating frequency and the nutritional quality and energy density of the foods consumed.

### Red meat, protein and energy intake

The majority of weight loss diets are unsuccessful and weight regain generally occurs within a year, which may be partly due to the hunger generated by energy restriction. Weight loss interventions that control hunger and promote fullness are likely to be more successful<sup>2</sup>. Several studies have compared the effects of the macronutrients (protein, carbohydrate and fat) and found that, gram for gram, protein increases feelings of satiety the most<sup>3,4</sup>. Satiety is the feeling of fullness that persists after eating so boosting satiety can potentially lengthen the time until the next eating occasion and/or reduce subsequent food or energy intake. As such, including good sources of protein within main meals may, as part of a calorie-controlled diet, help weight loss or weight maintenance<sup>5,6</sup>.

Incorporating lean protein into a calorie-controlled diet may also help improve the palatability of the diet, thereby improving long-term compliance<sup>9,7</sup>.

---

<sup>1</sup> [www.noo.org.uk/NOO\\_about\\_obesity](http://www.noo.org.uk/NOO_about_obesity)

<sup>1</sup> Foresight (2007)

<sup>2</sup> [López-Nicolás R](#) et al. Current Obesity Reports. 2016; 5(1):97-105

<sup>3</sup> Chambers et al. Trends in Food Science and Technology. 2015; 41; 149-160.

<sup>4</sup> Eistenstein J et al. Nutrition Reviews 2012; 60(7):189-200.

<sup>5</sup> Yang et al. European Journal of Nutrition. 2014; 53:493-500

<sup>6</sup> Leidy et al. American Journal of Clinical Nutrition 2015;101:1320S-9S

<sup>9</sup> Wilkinson DL and McCargar L. Best Practice & Clinical Gastroenterology, 2004; 18(6): 1031-47.

<sup>7</sup> Chambers et al. Trends in Food Science and Technology. 2015;41:149-160.

## Defining High Protein

For labelling purposes, a food is considered high in protein when at least 20% of the energy value of the food is provided by protein. Red meat is high in protein, providing about 25-35 g per 100 g of cooked lean beef, pork or lamb, which equates to around 50-70% of the energy value.

Different approaches to weight loss will be successful for different individuals. Consuming a high protein, moderate-carbohydrate diet (around 30% protein, 30% fat and 40% carbohydrate), whilst controlling energy intake, has been found to facilitate weight loss and weight maintenance in some people, when compared with consuming a diet of similar energy intake that is lower in protein<sup>12,13,8,9</sup>. This effect is thought to be due to the satiety-inducing effect of protein and its positive effects on retaining lean muscle mass during weight loss. However, the long-term effects of high-protein diets have not been fully investigated.

## Energy Density

As well as consuming a sufficient amount of protein intake to support weight management, it has been proposed that the concept of energy density is a useful alternative to counting calories.

The energy density of a food represents calories per gram (or 100 g) of food. Eating a high proportion of lower energy density foods (such as fruits and vegetables, and low fat soups or stews and) has been shown to increase satiety and aid weight loss which is why diets with a lower energy density are associated with a reduced risk of obesity<sup>10</sup>.

There are a variety of ways to reduce the energy density of the diet. For example, eating only small portions of fatty foods, increasing the water content of dishes, eating more fruits and vegetables, choosing higher-fibre foods and choosing lean sources of protein such as red meat will all contribute. Cooking using the minimum amount of oil and including vegetables or pulses in meat recipes will help to reduce the energy density of the final dish.

---

<sup>12</sup> Layman D et al. American Journal of Clinical Nutrition, 2008; 87: 1571S-1575S

<sup>13</sup> Paddon-Jones, D et al. American Journal of Clinical Nutrition, 2008; 87: 1555S – 1561S.

<sup>8</sup> López-Nicolás R et al. Current Obesity Reports. 2016; 5(1); 97-105

<sup>9</sup> Yang et al. European Journal of Nutrition. 2014. 53:493-500

<sup>10</sup> Rouhani MH et al. Nutrition. 2016;32(10):1037-47

A low energy density diet does not mean that higher energy dense foods can't be eaten. However, portion sizes of these should be kept small, or they should be eaten less frequently. Also, combining very low and medium energy density foods in a meal makes the food lower in energy density overall.

### **Categorising food by energy density**

You can calculate the energy density of foods if you know the weight of a serving of the food (in grams) and the amount of calories that serving contains. The energy density of foods can be categorised as follows:

- Very low energy density foods = less than 0.6 kcal/g
- Low energy density foods = 0.6 to 1.5 kcal/g
- Medium energy density foods = 1.5 to 4 kcal/g
- High energy density foods = more than 4 kcal/g

Foods with a lower energy density (less than 1.5 kcal/gram) include fruit and vegetables and foods with lots of added water, such as soups and stews. Lower fat foods, including pasta, noodles, breakfast cereals, yogurt and some lean red meats dishes, also tend to have a lower energy density.

### **Lower energy density foods should make up most of what we eat**

The medium energy density category contains a wide range of foods, some of which can be an important part of a healthy balanced diet such as grilled salmon, lower fat cheese or lean red meat and some higher in fat or sugars that should only be consumed occasionally and in small amounts such as pizza, fried chips, pastries and cakes, and jams. When foods are chosen from this category, healthy eating guidance should be considered.

Foods with a high energy density tend to be high in fat and have a low water content e.g. biscuits and confectionery, fried crisps, peanuts, cheese, butter, oil and mayonnaise. When consuming a low energy density diet, foods from this category can still be eaten but in small portions and less often.

The table illustrates the protein and energy content of selected red meat cuts and dishes. Typically, when red meat is included in a recipe with other ingredients, such as vegetables, the energy density changes from medium to low.

**Protein, calorie and energy density of red meat cuts and composite dishes**

<b>Cut</b>	<b>Protein/100g</b>	<b>Energy/calories Kcal/100g</b>	<b>Energy density Kcal/gram</b>	<b>Category</b>
Lean roast beef	25.3	175	1.75	medium
Extra lean minced beef	24.7	137	1.37	low
Spaghetti Bolognese	7.8	129	1.29	low
Shepherds pie	6.0	112	1.12	low
Lean rump steak grilled	31.0	177	1.77	medium
Lean stewing steak	32.0	185	1.85	medium
Beef casserole	15.1	136	1.36	low
Beef chow mein	6.7	136	1.36	low
Beef burger grilled	26.5	326	3.26	medium
Lean lamb chop grilled	29.2	213	2.13	medium
Lamb mince	24.4	208	2.08	medium
Moussaka	8.5	122	1.22	low
Lamb hotpot	7.2	108	1.08	low
Liver and onions	14.8	148	1.48	low
Lean pork fillet, stir-fried	32.1	182	1.82	medium
Pork and apple casserole	10.9	99	0.99	low
Pork stir fry	12.1	105	1.05	low
Sweet & sour pork	13.7	135	1.35	low
Lean roast pork	33.0	182	1.82	medium
Lean back bacon grilled	25.7	214	2.14	medium
Pork sausages grilled	14.5	294	2.94	medium
Ham	18.4	107	1.07	low

## Conclusion

Contrary to what some people may believe, lean red meat can play a positive role in weight loss and weight maintenance programmes. Lean red meat is a good source of protein which can help to increase satiety. Higher protein diets can be effective for weight loss and weight maintenance in some individuals as they can help with hunger management and appetite control. However, the long-term effects of higher protein diets have not been fully investigated. Some cuts of lean red meat and red meat dishes have a low energy density. Low energy density diets have been shown to help with weight loss and are associated with a lower risk of obesity.

Please visit [www.meatandhealth.com](http://www.meatandhealth.com) for more information.