

## 6. Misconceptions about human metabolism and weight loss: Solutions

Newspapers, online news and blogs often feature articles on weight loss, diets and human metabolism. However, many of these articles are not based on reliable scientific research.

*Read the following statements and decide whether you think they are true. Why or why not? What data would you need to back up such statements?*

“Most of the energy we burn is from being physically active; exercise is the most efficient way to lose weight.”

*Actually, physical activity accounts for only 10-30% of calories burnt throughout the day. The vast majority of energy is used for the maintenance of basic functioning while at rest, i.e. basal metabolic rate. Exercise is hugely important for health (it boosts mood, immune system, sleep quality, decreases risks or many diseases) but compared to restriction of caloric intake, exercise is relatively inefficient for weight loss. It is, however, important for weight maintenance<sup>1</sup>. Large scale human studies, in which diet and physical activity are tightly controlled, are needed to investigate their respective contribution to weight loss, and this is not always easy with human subjects. It is known that humans tend to underestimate their caloric intake and overestimate the amount of exercise they get.*

“Wine can help you lose weight.”  
e.g. in this *Daily Telegraph* article

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Revealed: How to lose weight - drink plenty of red wine

*This claim is usually made in reference to a compound present in wine, resveratrol. Resveratrol is a polyphenol produced by certain plants, e.g. grapes, apples and raspberries, and found in the products derived from these fruits, such as wine. There have been multiple studies claiming resveratrol's positive effect on health, including cardiovascular disease, diabetes and obesity. Several mechanisms have been proposed, including resveratrol supposedly stimulating production of the “good”, energy-burning brown fat<sup>2</sup>, as well as resveratrol affecting metabolism by enhancing mitochondrial function. For example, in high fat diet fed mice, it was shown that by indirectly affecting transcription resveratrol can significantly increase mitochondrial number, prolong healthspan and protect the animals against diet-induced obesity<sup>3,4</sup>. The data from human trials are scarce and not always consistent<sup>5</sup>, in addition to often coming from small sample sizes. And while the potential beneficial effects of resveratrol on human metabolism are still being investigated, generally alcohol consumption, including wine, is actually a risk factor for obesity<sup>6</sup>.*

See more debunking from the NHS website -

<https://www.nhs.uk/news/obesity/drinking-plenty-of-red-wine-wont-help-you-lose-weight/>

## References

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