

BIOHACKING FOR WEIGHT LOSS





Biohacking is the practice of using technology to hack your biology in order to improve your health and performance. While it might sound like something out of a science fiction novel, biohacking is actually a very real and increasingly popular trend. A growing number of people are using biohacking techniques to lose weight, increase their energy levels, and improve their overall health.

As with any weight loss plan, it is best to eat fewer processed foods, more fruit, vegetables, healthy fats, beans, legumes, organic fish, meat and dairy. Where possible, eat an organic diet to reduce the amount of toxins in the body. Toxins are sequestered away in fat cells, and those fat cells are often created specifically to isolate those toxins to protect your organs and brain (1). Therefore, it makes sense to limit toxin intake to reduce fat cells and lose weight.

Alongside a healthy diet, exercise and moving on a daily basis is also necessary. However, biohackers tend to go the extra mile to boost the effects of diet and exercise.

Fasting

One of the most popular biohacking techniques for weight loss is intermittent fasting. Intermittent fasting is a dietary approach that involves only eating between certain times of the day. The remainder of the day food is not eaten, which is called fasting. One of the most popular fasting regimes is the 16/8 method, which involves fasting for 16 hours and eating only during an 8-hour window. When fasting, you do not eat any food. You should drink only black tea or coffee, herbal or fruit teas and/or water.



Once you have included intermittent fasting in your biohacking lifestyle, it is worth considering the benefits of a longer fast. Prolonged fasts, which typically last for more than 24 hours, can help to improve one's health in many different ways. For example, they can help to detoxify the body, boost the immune system (2), and improve mental clarity (3). In terms of weight loss, prolonged fasts can be helpful because they give the body a chance to burn through stored glycogen. Glycogen is a type of sugar that is stored in the liver and muscles, and it can be converted into glucose when needed for energy. When glycogen stores are depleted, the body has to start burning fat for energy, which can lead to weight loss (4).

When you are eating within a short length of time, you tend to reduce the calories that you ingest. Fasting along with reduced calorie intake helps you lose weight. It also reduces cholesterol, blood pressure, and inflammation, all of which are causes of many life-limiting diseases (5).

Follow the ketogenic diet

Fasting can be the ideal stepping stone for another popular biohacking technique for weight loss, namely the ketogenic (or keto) diet. The keto diet has become increasingly popular in recent years, and for good reason. This low-carbohydrate, high-fat diet has been shown to have many benefits in addition to weight loss. These include increased energy levels, improved mental clarity and the potential to increase longevity (6).

The reason you lose weight on the keto diet is when you consume a low-carb diet, your body is forced to burn body fat for energy.



This process, known as ketosis, leads to weight loss by increasing your body's fat-burning ability. When your body breaks down fat for energy, it produces ketones. These ketones are then used as an energy source by your cells, including those in your muscles and brain (7).

You can also boost the benefits of the keto diet by taking ketones as a supplement (8). Due to their ability to reduce appetite, especially after a period of fasting ketones are often touted as a weight loss aid (9). For that reason, taking a ketone supplement can help bio hack weight loss, keeping hunger at bay and forcing the body to burn those love handles. Taking ketones may also help to minimize muscle loss during periods of calorie restriction.

A popular bio hack for weight loss and general good health is taking a cold shower, or better yet, full body immersion in cold water. This can help you burn more calories and boost your metabolism. When you expose your body to cold water, it has to work harder to maintain its core temperature, which takes energy and hence burns calories. That being said, if you are only having a 5 minute shower, this boost in calorie burn is relatively small and only temporary.

However, a long term effect of taking a cold shower is that brown fat is activated by cold exposure (10). Brown fat is a type of fat that contains large amounts of mitochondria (hence its colour) and is used by the body to generate heat. When activated, brown fat improves insulin control (11) increases metabolic rate and helps burn calories (12). In addition, cold exposure also causes the release of a hormone called irisin.



Irisin is also released during exercise (13) and it helps to convert white fat into brown fat (14). As a result, cold exposure can be an effective way to increase brown fat levels and promote weight loss.

Reduce chronic stress

Chronic stress is one of the most common causes of weight gain. When we are stressed, our bodies release a hormone known as cortisol. Cortisol does have a place in helping us deal with stressful situations. However, it also causes us to store more fat, particularly in the abdominal area. Cortisol can also lead to emotional eating (15), increased cravings for sweet, salty and fatty foods (16), and poor sleeping habits, both of which can further contribute to weight gain.

For these reasons, bio hackers take dealing with stress very seriously when looking at weight loss. There are various ways to reduce your stress levels, which include exercise (17), relaxation techniques, meditation and getting enough sleep.

Get a good night's sleep.

Sleep is an often overlooked aspect of stress reduction and weight loss. Restorative sleep is vital to keep us healthy, focused, and able to repair tissue damage and regulate hormones and enzymes. If we don't get enough sleep, it can interfere with cortisol, which we have already learnt can lead to weight gain. Lack of sleep can also reduce insulin sensitivity, which can again lead to weight gain (18).



To get a good night's sleep, follow strict sleep hygiene, including going to bed at the same time each night and getting up at the same time each day; keep your bedroom dark and cool; keep televisions and mobile phones out of the bedroom, and avoid exposure to blue light from mobile phones and other screens at least an hour before bedtime.

Many bio hackers track their sleep with wearable tracking devices to keep them in the picture as to how much deep sleep they are getting and how much REM sleep (which is the good stuff).

A small change that many bio hackers swear by is standing. Research has shown that moving more throughout the day can impact weight loss more effectively than an hour in the gym after a day sitting still at a desk (19). An easy way to stand more during the day, especially if you have an office job, is to get a standing desk. Unsurprisingly, it has been found to be better for you than sitting, and it burns more calories. When you stand, you have to engage your core muscles, whereas when you sit, they are relaxed, so it makes sense really (20).

Exercise is an important part of weight loss. Many biohackers prefer high-intensity exercise to long periods of cardio, such as jogging. High-intensity exercise has been shown to boost weight loss and it's over and done a lot quicker than an hour on a treadmill, leaving you to get on with your day (21). If done correctly, high-intensity exercise can keep burning calories even after you have finished exercising.

Another way that bio hackers boost weight loss by making sure they stay hydrated. The whole body needs water to work properly; just like your car needs oil to function properly. Without it, the body becomes sluggish.



When you drink water, your body can work efficiently, which fires up your metabolism, burns energy, uses calories and burns fat. Drinking water also reduces hunger, leading to eating fewer calories. Drinking water also helps to prevent or relieve constipation, another common issue that can sabotage weight-loss efforts. And since water has no calories, it's a great choice for quenching thirst without adding unwanted pounds (22).

There are a number of different ways to hack your body for weight loss. Some of these methods are more effective than others, but all of them can help you lose weight and improve your health. So if you're looking to shed some excess pounds, be sure to give these bio hacks a try.

References

1. Toxicological Function of Adipose Tissue: Focus on Persistent Organic Pollutants <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3569688/>
2. Fasting as a Way to Boost Your Immune System <https://www.ugm.ac.id/en/news/19336-fasting-as-a-way-to-boost-your-immune-system>
3. Psychological Benefits of Fasting <https://www.webmd.com/diet/psychological-benefits-of-fasting>
4. Fasting: Molecular Mechanisms and Clinical Applications <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3946160/pdf/nihms551820.pdf>

5. 2 years of calorie restriction and cardiometabolic risk (CALERIE): exploratory outcomes of a multicentre, phase 2, randomised controlled trial [https://www.thelancet.com/journals/landia/article/PIIS2213-8587\(19\)30151-2/fulltext](https://www.thelancet.com/journals/landia/article/PIIS2213-8587(19)30151-2/fulltext)

6. Ketone bodies as signalling metabolites <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4176946/>

7. Very-low-carbohydrate ketogenic diet v. low-fat diet for long-term weight loss: a meta-analysis of randomised controlled trials <https://bit.ly/3JO2L1a>

8. Ketone body therapy: from the ketogenic diet to the oral administration of ketone ester <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4617348/>

9. A Ketone Ester Drink Lowers Human Ghrelin and Appetite <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5813183/>

10. Cold exposure induces dynamic, heterogeneous alterations in human brown adipose tissue lipid content <https://www.nature.com/articles/s41598-019-49936-x>

11. Brown and Beige Fat: Molecular Parts of a Thermogenic Machine <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4477363/>

12. How brown fat improves metabolism <https://www.nih.gov/news-events/nih-research-matters/how-brown-fat-improves-metabolism>



13. Plasma Irisin Modestly Increases during Moderate and High-Intensity Afternoon Exercise in Obese Females

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0170690>

14. Irisin: A Hope in Understanding and Managing Obesity and Metabolic Syndrome

<https://www.frontiersin.org/articles/10.3389/fendo.2019.00524/full>

15. Stress may add bite to appetite in women: a laboratory study of stress-induced cortisol and eating behavior

<https://pubmed.ncbi.nlm.nih.gov/11070333/>

16. How Too Much Stress Can Cause Weight Gain (and What to Do About It)

<https://www.orlandohealth.com/content-hub/how-too-much-stress-can-cause-weight-gain-and-what-to-do-about-it>

17. The protective role of exercise on stress system dysregulation and comorbidities <https://pubmed.ncbi.nlm.nih.gov/17148741/>

18. Sleep Restriction for 1 Week Reduces Insulin Sensitivity in Healthy Men

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2927933/>

19. What are the risks of sitting too much?

<https://www.mayoclinic.org/healthy-lifestyle/adult-health/expert-answers/sitting/faq-20058005>

20. Energy Expenditure During Acute Periods of Sitting, Standing, and Walking <https://pubmed.ncbi.nlm.nih.gov/26693809/>



21. Impact of exercise intensity on body fatness and skeletal muscle metabolism <https://bit.ly/3KO0bd6>

22. Can water help you lose weight?
<https://www.medicalnewstoday.com/articles/322296>