



B.C. Principals' & Vice-Principals' Association

MEMBER UPDATE

ReFresh

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Fat That Burns Fat

What does a polar bear plunge and eating an apple a day have in common? It sounds like the first line of a joke, but rest assured both are linked to how our body can use fat to burn fat! Yes, it is possible!

The answer: **Brown Fat**.

Do not confuse brown fat with the extra 'cushion' you may have around your mid section. Most of the fat in our body is **white adipose tissue** (WAT). The purpose of this fat is to store energy in large fat droplets that accumulate around the body. The accumulation of this fat helps keep you keep warm by providing insulation for your organs. However, we know that too much white fat is **not** good for us. It leads to obesity. Too much white fat around the midsection may also create a higher risk of heart disease, diabetes, and other diseases.

But did you know our bodies also have **brown fat**, or brown adipose tissue (BAT)? Brown fat is packed with iron-rich mitochondria, which is how it gets its colour. Mitochondria are the 'engines' in brown fat that burn calories to produce heat. Brown fat is activated when you get cold before you start to shiver. It produces heat to help maintain your body temperature in cold conditions. This process is called thermogenesis.

Brown fat has generated interest in the past 10 years among researchers because it appears to be able to use regular body fat as fuel. Brown fat also breaks down blood sugar (glucose)

and fat molecules to create heat and help maintain body temperature. In a way, brown fat is 'good' fat. Humans with higher levels of brown fat may have lower bodyweights.

Scientists used to believe that only babies had brown fat, which makes up about 5 percent of their total body mass. They also thought this fat disappeared by the time most people reached adulthood. Now we know that even adults have small reserves of brown fat. This fat is typically stored in small deposits around the shoulders and neck.

All people have some "constitutive" brown fat, which is the kind you're born with. There's also another form that's "recruitable." This means it can change to brown fat under the right circumstances. This recruitable type is found in muscles and white fat throughout your body.

So, we can technically increase our own body's brown fat. By doing so, it will burn more calories *by burning off our white fat*.

Increasing Your Brown Fat

Emerging research is proving that it's possible to boost our levels of brown fat, which is considered healthy since it actually helps us burn calories and sucks white fat out of the rest of the body. Luckily for us, there are some simple ways to boost your levels of brown fat:

1. Turn the temperature down

Exposing your body to cool and even cold temperatures may help recruit more brown fat cells. Some research has suggested that just two hours of exposure each day to temperatures around 18 degrees Celsius may be enough to turn recruitable fat to brown.

Consider taking a cold shower or ice bath. Turning the thermostat down a few degrees in your home or going outside in cold weather are other ways to cool your body and possibly create more brown fat.

2. Eat an Apple

An apple a day may just keep the doctor – and fat – away: Researchers at the University of Iowa found that ursolic acid, found in apple peels giving them their sheen, boosted brown fat in mice even when they were fed a high-fat diet.

3. Don't Starve — Or Stuff — Yourself

Our bodies rely on hunger-regulating neurons in the brain to notify us when we've had enough. Now it turns out these neurons have another duty: these neurons can actually encourage fat to turn brown. Research has found that eating too few calories prevented white fat from turning brown, while eating just enough to satisfy hunger—prompting the action of the neurons—turned white fat to brown. Other research shows that eating too much can do harm as well. Not only does overconsumption increase white fat, but it also interferes with our brown fat's ability to burn calories.

4.Exercise

As usual, exercise is part of the solution! Moving your body may seem like a no-brainer when it comes to burning fat. Research on mice suggests that a protein called irisin may help transform white fat to brown. Humans also produce this protein. Researchers uncovered that people who are sedentary produce far less irisin compared to those who exercise often. Specifically, levels are increased when people do more intense aerobic interval training.

There's not enough research to know for sure if exercise creates more brown fat. But exercise has so many health benefits that you should do it regardless.

5. Stimulate Your Body's Melatonin Production

Not only does the hormone melatonin help regulate our sleep-wake cycle, but research published in the *Journal of Pineal Research* found that in rats, it increases the presence of 'beige' fat, which is similar to brown fat in its calorie-burning capabilities. Stimulate your body's own natural production of melatonin by avoiding nighttime exposure to light from TVs, computers and other screens, getting sunlight exposure during the day, and loading up on melatonin-rich foods, including almonds, tomatoes, tart cherries, cardamom, and coriander.

There you have it: now you know how to use your own fat to burn your own fat. Just 'chill' and let the brown fat do the work! *Check out this short video to learn more:* ["Brown Fat – What you need to know"](#).

If you would like to contribute, or have ideas about what you would like to see in the [ReFresh](#) series, we would love to hear from you: contact rochelle@bcpvpa.bc.ca.

Sources:

- ["Brown Fat: What You Should Know"](#) Healthline
- ["What is brown fat?"](#) Mayo Clinic
- ["How brown fat improves metabolism"](#) National Institute of Health

- [“5 Ways to Increase Your Brown Fat to Burn More Calories”](#) By Meghan Rabbitt
(Prevention)