TOP 10
METABOLISM
BOOSTING
FOODS
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"Boosting the metabolism" may be the holy grail of obtaining and maintaining a lean physique. Figuratively speaking, it’s the pot of gold at the end of the rainbow. But what the heck is metabolism? Is it even possible to “boost” it by eating certain foods?

Generally speaking, metabolism is a word used interchangeably with total daily energy expenditure (TDEE), which is generally considered to consist of three main components:

- **Resting Metabolic Rate (RMR).** This is essentially the number of calories, or amount of energy, that your body requires to sustain vital functions at rest. This makes up the largest component of your overall metabolic rate. Depending on activity level, it accounts for 60% to 75% of your daily energy needs.

- **Thermic Effect of Feeding (TEF).** Digestion, absorption, and assimilation of the nutrients you consume (from food) are active processes that require energy. TEF accounts for approximately 5 – 15% of overall metabolic rate. This is also called Diet-Induced Thermogenesis, or DIT.

- **Physical Activity.** This is the single most variable element of metabolism. Depending on activity level, it can account for 15% to 30% of overall energy expenditure. This component of metabolic rate consists of both structured exercise as well as non-structured activity, which includes doing household chores, walking to and from your car, shivering, fidgeting, etc. This non-structured activity is termed non-exercise activity thermogenesis (NEAT).

Interestingly, when researchers examined the role of NEAT in obesity, they found that, on average, obese folks sit for 2 ½ hours longer (each day) than lean individuals. The authors concluded, “If obese individuals adopted the NEAT-enhanced behaviors of their lean counterparts, they might expend an additional 350 calories (kcal) per day.” Thus,
one way that you may “boost” your metabolism is by moving more (and sitting less), which may simply mean parking your car further away from building entrances, taking the stairs, doing yard work, etc.

In addition to NEAT, structured exercise also plays an important role in TDEE. In fact, certain types of exercise may have a much more profound impact on metabolism than others. Typically, when folks think about exercising, they think primarily about exercising to burn calories during a specific time period. However, that type of exercise (e.g., “cardio”) only has an effect on one aspect of your overall metabolic rate (i.e., exercise activity).

To get the biggest bang for your exercise buck, it’s a good idea to incorporate exercises that not only burn calories (during a session) but also increase your RMR. One of the single most important ways you can increase your RMR is by increasing your muscle mass through resistance training. Elia (2) found that muscle tissue contributes approximately 20% to TDEE (versus 5% for fat tissue). Thus, muscle is more metabolically active than fat, and as a result, losing fat and adding muscle “boosts” metabolic rate.

While standard aerobic exercise (i.e., cardio) burns calories during the activity, it does not have the same effect on RMR as anaerobic exercise (i.e., high-intensity exercise), which results in significantly greater excess post-exercise oxygen consumption (EPOC). EPOC, also colloquially termed “afterburn,” refers to the elevation in RMR that occurs after specific types of exercises. That is, certain types of exercise (e.g., resistance training, interval training) can significantly boost your RMR, so you’re burning even more calories while at rest.

To learn more about boosting your metabolism through exercise, please visit the following article published at the BioTrust Community Forums:

Critical Elements of Fat Loss Training

Like exercise, diet can also affect RMR. For instance, very low calorie diets often fail because not enough calories are being consumed to fuel physical activity, and this
underfeeding can diminish metabolic processes. These intense energy restrictive diets are not only tough to maintain, but actually trigger the body to suppress its RMR by as much as 20%. (3)

Basically, biological processes adapt to these conditions as if the body were in a state of famine. Because the body’s most important priority is survival, it initiates a cascade of energy preservation mechanisms to match energy expenditure with energy intake. In addition to reduced RMR, these processes include reduced thyroid hormone output, sympathetic nervous system activity, reproductive hormone output, and spontaneous physical activity, as well as increased appetite, parasympathetic nervous system activity, and muscle efficiencies.

Other studies show significantly decreased levels of important metabolic, fat-burning hormones with crash dieting, such as the *Metabolism* study performed by Dr. Campbell at the University of Vienna in which thyroid levels dropped by a whopping 38% after just 2 weeks of consuming a very low calorie diet. (4)

And yet another *Metabolism* study conducted by Dr. Gloria Dubuc and the nutrition research team at the University of California-Davis, showed a 50% reduction in the body’s production of leptin, the “metabolic master switch,” after just 7 short days of following a severely reduced-calorie diet. (5)
Is it true that metabolic rate declines with age?

It’s generally accepted that metabolic rate declines significantly as folks age (i.e., age-related metabolic decline). In fact, studies show, on average, that sedentary populations experience a 2 – 4% decline in resting metabolic rate with each passing decade after the age of 25. (6, 7, 8) However, this supposedly inevitable metabolic decline may be more lifestyle-related than age-related.

Researchers at the University of Colorado found that, amongst sedentary women, postmenopausal women (50 – 72 years old) had significantly lower RMR than premenopausal women, providing evidence for age-related metabolic decline. However, the researchers found that RMR was not significantly different between premenopausal women and postmenopausal women who regularly performed endurance exercise. As a result, they concluded that “age-related decline in RMR in sedentary women is not observed in women who regularly perform endurance exercise. The elevated level of RMR observed in middle-aged and older exercising women may play a role in their lower levels of body weight and fatness compared to those in sedentary women.” (9)

In a follow-up study, these same University of Colorado researchers compared a group of young (age 19-36) and older (age 52-75) inactive men with physically active men of a similar age. They found that RMR was indeed lower with age in both sedentary and physically active men. However, RMR was not significantly lower in older men who maintain exercise volume and/or energy intake at a level similar to that of young physically active men.

Thus, the researchers concluded that the purported age-related decline in metabolic rate is attributable to two controllable lifestyle factors: 1. Reductions in exercise volume (moving less); and 2. Reductions in energy intake (i.e., eating less). (10)
Fortunately, although lowered calorie intakes produce pronounced decreases in metabolism, the reverse is also true: Increasing your daily calorie consumption can aid in reversing the trend. For instance, in a study that appeared in the *British Journal of Nutrition*, researchers found that a single day of over-eating increased metabolic rate by 10%, including an elevation in resting metabolic rate up to 14 hours after the last meal.\(^{(11)}\) Conversely, a single day of under-feeding was found to lead to a 6% reduction in metabolic rate.

Researchers from the University of Texas Medical Branch found that an 8-day over-eating phase resulted in an increase in total daily energy expenditure by 18%, including increases in both RMR and non-resting energy expenditure.\(^{(12)}\) In a study published in the *American Journal of Physiology*, scientists found that, after 9 days of overfeeding, subjects’ resting metabolic rate significantly increased, and it explained up to one-third of the overall increase in total daily energy expenditure, which was also impacted by thermic effect of feeding and increased cost of physical activity.\(^{(13)}\)

It is important to point out, however, that the increase in energy expenditure during these over-feeding trials did not fully match energy intake. Thus, while increasing daily calories can indeed help boost the metabolism, it can be a surefire way to gain weight unless you offset the increase in calorie intake by burning even more calories through exercise.

In fact, studies that combine increased energy expenditure (through structured exercise) and increased energy intake demonstrate an even more significant boost in resting metabolic rate.\(^{(14, 15)}\) That is, in these “high energy flux” states, subjects’ total daily energy expenditure significantly increased not only through physical activity and TEF (i.e., thermic effect of feeding) but also through increased RMR.

Speaking of TEF, here’s where things get even more interesting, and specifically, where your day-to-day food choices can have a significant impact on your metabolism. As mentioned, TEF can account for approximately 5 – 15% of total daily energy expenditure, and the amount (i.e., calorie intake) and types of foods you eat most heavily influence this component of metabolic rate.
There is a general consensus in the scientific literature that protein stimulates dietary-induced thermogenesis to a greater extent than other macronutrients (e.g., carbohydrates, fat).\(^{(16)}\) In fact, protein-rich foods are estimated to boost metabolic rate by as much as 30%, whereas as fats and carbohydrates are typically estimated to be in the 5 – 10% range.\(^{(17)}\) Thus, simply swapping out some carbohydrates for protein-rich foods may be a step in the right direction to boosting your metabolism and improving your health and body composition.

As a matter of fact, researchers at the University of Illinois assigned women to either a high-carbohydrate diet or a high-protein diet, both with the same overall calorie intake and calorie deficit. After 10 weeks, both groups lost weight while dieting, but the high-protein group—which simply replaced some calories from carbohydrate with protein—lost more weight overall and nearly double the amount of body fat.

Not only does a higher protein intake yield greater weight loss, more importantly, it results in more fat loss and greater retention of calorie-burning muscle mass. What’s more, the high-protein group had improved levels of blood triglycerides, better blood sugar management, and reported greater satiety throughout the course of the 10 weeks of dieting. The scientists concluded with the following:

“*This study demonstrates that increasing the proportion of protein to carbohydrate in the diet of adult women has positive effects on body composition, blood lipids, glucose homeostasis and satiety during weight loss.*” \(^{(18)}\)

With that in mind, it’s the perfect time to segue into our list of the Top 10 Metabolism Boosting Foods, which is highlighted by, you guessed it, several protein-rich foods. Enjoy!

**Lean Red Meat (grass-fed preferred)**

Beef is loaded with protein, and when it comes to fighting the battle of the bulge, there is likely not a more important nutrient than protein. As a matter of fact, researchers suggest that an increased protein intake may be one of the single most important...
dietary and lifestyle changes that one can make as part of an effective weight loss strategy.

Specifically, there are multiple potential beneficial outcomes associated with an increased protein intake: (19)

1. Increased satiety: Protein-rich foods induce a greater sense of satisfaction than fat- or carbohydrate-rich foods, and they may even decrease energy intake in subsequent meals;

2. Increased thermogenesis: Dietary protein exerts a significantly higher “thermic effect” than fats or carbohydrates, and high-protein diets have continuously been shown to boost the metabolism (i.e., increase energy expenditure); and

3. Maintenance or building of fat free mass (FFM) and preservation of metabolic rate: High-protein diets have repeatedly been shown to preserve FFM when dieting for fat loss, and they have also been shown to be necessary for the preservation of metabolic rate, which is frequently compromised as a result of dieting. (20)

Clearly then, one of the single most important dietary factors that you can do to support your metabolism is to boost your protein intake. As mentioned, beef is a great source of protein, as well as the following essential nutrients:

- Vitamin B12
- Selenium
- Zinc
- Niacin
- Vitamin B6
- Phosphorus
- Choline
- Iron
- Riboflavin
Obviously, despite a bad rap in certain circles, beef is a nutrient-dense, fat-fighting all-star. However, not all beef is created equally, and grass-fed beef may be a superior option over standard grain-fed options.

Interestingly, regardless of whether your beef is grain-fed or grass-fed, you’ll be getting about 40-50% saturated fat, about 40-50% monounsaturated fat, and somewhere near 10% polyunsaturated fat. However, and this is a BIG however, the diet of the cow significantly influences the types of each fat present.

Depending on the breed of cow, grass-fed beef contains up to 5 times more omega-3 fatty acids than grain-fed beef. The average ratio of omega-6 to omega-3 fatty acids in grass-fed beef is 1.5:1, which is essentially ideal. On the contrary, in grain-fed beef, this ratio jumps all the way up to nearly 8:1.

This is important to note for a plethora of reasons, but succinctly put, this type of Omega Imbalance, which is characterized by excessive consumption of omega-6 fatty acids coupled with a deficiency in omega-3 fatty acids, is connected to an increase in all inflammatory diseases, including:

- Cardiovascular disease
- Type 2 diabetes
- Obesity
- Metabolic syndrome
- Irritable bowel syndrome and inflammatory bowel disease
- Macular degeneration
- Rheumatoid arthritis
- Asthma
- Psychiatric disorders
- Autoimmune disease

What’s more, this overconsumption of omega-6 fatty acids not only affects you but also may impact your offspring, as it can increase the incidence of obesity in future generations.
In addition to a much healthier omega-3 fatty acid profile, grass-fed beef is one of the best dietary sources of conjugated linoleic acid (CLA), as it contains an average of 2 to 3 times more CLA than grain-fed beef. CLA possesses significant antioxidant activity, and research has shown it to reduce body fat, increase lean body mass, and improve body composition. (24)

**Wild-Caught, Fatty Fish**

Wild-caught, cold-water fish like salmon, sardines, anchovies, mackerel, halibut, and tuna are rife with protein and omega-3 fatty acids. In addition to their brain and cardiovascular health benefits, these essential fats have been shown to have beneficial effects on metabolism and body composition.

Researchers from Gettysburg College found that supplementation with fish oils, which supply the same types of omega-3 fatty acids found in fatty fish like salmon, for 6 weeks significantly increased fat free mass and decreased fat mass. (25) What’s more, the subjects also experienced increased metabolic rate and significantly decreased levels of cortisol, a stress hormone associated with increased abdominal fat storage. (26)

Researchers from Australia recently found similar impressive results as they combined omega-3 fatty acid supplementation with a specific weight loss diet. The scientists found that subjects with higher omega-3 fatty acid intakes lost significantly more fat than the subjects who did not supplement with the essential fats, despite the fact that both groups followed the same diet protocol. (27)

Interestingly, recent research suggests that fish oil supplements (i.e., omega-3 fatty acids) significantly increase metabolic rate. What’s more, the scientists making this finding also discovered that supplementation with omega-3 fatty acids or CLA, which is found in beef and full-fat dairy, significantly increases the body’s number of mitochondria, which are known as the muscle cells’ calorie-burning “power plants.” (28)
One concern with fish intake is the potential heavy metal and purity issues that are common with the modern fish supply. What’s more, there are some ethical concerns regarding mislabeling of fish. Specifically, a recent study conducted by the world’s largest ocean conservation group, Oceana, revealed that nearly half of the fish being sold in the United States are actually less expensive, potentially harmful fish that have been deliberately mislabeled as a higher quality, more sought-after fish. (29)

With these things in mind, you’ll want to make sure that you ask questions and only purchase these fish from a trusted market/supplier, who can confirm that they are precisely as marked. If you can find a source you trust, these fish indeed possess some fat-fighting benefits.

**Eggs (omega-3 and cage-free preferred)**

Based on what you’ve read so far, you likely realize how important protein-rich foods are to support your metabolism-boosting efforts. In addition to grass-fed beef and wild salmon, cage-free whole eggs should be at the top of your list.

In addition to packing 7 grams of appetite-satiating protein, a single egg is also loaded with several critical nutrients, including:

- Choline, which supports brain health and nervous system function;
- Lutein and zeaxanthin, which are potent antioxidants that fight free radicals and help prevent macular degeneration;
- Vitamin A;
• Vitamin D;
• Selenium;
• Phosphorus;
• Potassium;
• And more.

That being said, just like there are differences between beef from grass-fed and grain-fed animals, not all eggs are created equally from a nutrition standpoint. Specifically, research from Mother Earth News suggests that eggs from cage-free pasture-raised hens provide a drastically improved nutrition profile than standard store-bought eggs. For example, compared to typical supermarket eggs, the eggs from pasture-raised hens may contain:

• 1/3 less cholesterol
• 1/4 less saturated fat
• 2/3 more vitamin A
• 2 times more Omega-3 fatty acids
• 3 times more vitamin E
• 6 times more vitamin D
• 7 times more beta-carotene

Because the lines are somewhat blurry on the definitions of cage-free and pasture-raised, it may be beneficial to do some additional research on the eggs available to you. Better yet, you may attend a local farmer’s market and purchase certified organic eggs from cage-free, pasture-raised hens.

Since eggs are synonymous with breakfast, this is as good a time as any to remind you to include protein at your first meal of the day. Research suggests that the satiety effects of a high-protein breakfast will have far-reaching implications on your appetite and waistline.
In a recent study, researchers from the University of Missouri found that people who ate a high-protein breakfast (e.g., eggs and lean beef) felt more full, had fewer cravings, and were less likely to snack on high-fat and high-sugar foods at night, compared with a group who ate a calorically equivalent bowl of cereal. (31)

Multiple other studies comparing a high-protein breakfast (e.g., 30+ grams of protein) to a breakfast of ready-to-eat cereal have also shown similar benefits in satiety, appetite, hormonal responses, and subsequent food choices. (32, 33)

**Plain Greek Yogurt and Cottage Cheese (organic preferred)**

If the metabolism-boosting benefits of a high-protein diet have not yet been extolled upon you, please allow us the opportunity to remind you that a diet rich in high-quality protein has well-established scientific support as a successful strategy to promote weight loss and weight management in adults, as high-protein diets have regularly been shown to result in greater losses in fat mass, maintenance or building of fat free mass, improved body composition, and preservation of metabolic rate when dieting. (34)

Along these lines, high-protein meals increase satiety and boost the metabolism. (17) For those reasons, you can add plain Greek yogurt to your list of fat-fighting foods. Greek yogurt contains more than double the protein of regular yogurt and only about one-third the amount of sugar.

What's more, authentic strained Greek yogurt is rich in multiple sources of probiotics. Research indicates that the gut flora (i.e., the bacterial ecosystem) of obese folks differs significantly from that of thin people. (35) Along these lines, recent research published in...
the *British Journal of Nutrition* suggests that certain probiotics from the *Lactobacillus* family of bacteria, which are prominent in Greek yogurt, may help you lose weight and keep it off. (36)

When choosing a Greek yogurt, we recommend that you opt for plain versions, as fruit-flavored varieties have over three times as much sugar. Instead, add some fresh fruit (e.g., berries), which will provide a nutrient-dense source of fiber, vitamins, antioxidants, and polyphenols.

Cottage cheese goes hand-in-hand with Greek yogurt. Cottage cheese packs a whopping 28 grams of protein per single cup, and it is also a good source of calcium, riboflavin, vitamin B12, selenium, and phosphorus.

Cottage cheese is rich in casein protein, which is known as a slow-digesting protein. In essence, casein forms a gel-like substance in the stomach, which makes it a very efficient supplier of amino acids, the building blocks of proteins. In fact, studies show that levels of amino acids remain elevated upwards of 5 hours after ingestion of casein protein. (37)

While whey, a fast-digesting protein, is often thought of as the “gold standard” of protein supplements, some studies suggest that casein—or a combination of whey and casein—may provide greater muscle building and recovery benefits. In animal studies, scientists have found that, compared to whey, casein protein provides a more sustained anabolic (i.e., building) effect. (38)

Recent research in humans demonstrated that a blend of whey and casein is superior to whey protein alone after resistance training to promote muscle protein synthesis and recovery. (39) Furthermore, scientists recently demonstrated that casein protein provides muscle recovery benefits during sleep when consumed before bed. (40)
One cup of cottage cheese also packs a healthy punch of branched-chain amino acids (BCAAs), including over 2 ½ grams of leucine, which is essential to muscle health. BCAAs are crucial to exercise performance, muscle recovery, and maintaining blood sugar levels, and the amino acid leucine is considered to be the “anabolic trigger” for muscle recovery and growth following exercise. (41)

We recommend that you choose organic sources of Greek yogurt, cottage cheese, and other forms of dairy whenever possible. Similar to the discussion regarding grass-fed beef, organic dairy has a significantly different fatty acid profile when compared to conventional dairy.

Specifically, studies comparing organic to conventional have reported that organic dairy contains: (42)

- 25% fewer omega-6 fatty acids, which are pro-inflammatory;
- 62% more omega-3 fatty acids, which are anti-inflammatory;
- 2.5 times lower omega-6 to omega-3 fatty acid ratio, which is much closer to optimal;
- 32% more EPA and 19% more DHA, which are two omega-3 fatty acids crucial for nervous system function, cardiovascular health, pain management, hormonal regulation, body composition, feelings of well being, and more; and
- 18% more conjugated linoleic acid (CLA), which has been shown to reduce body fat, increase lean body mass, and improve body composition. (24)

**Chicken**

Chicken is best known for its high protein content, and at up to 35 grams of protein per 4-ounce (cooked) portion, it is indeed an excellent source. As a result, it helps boost the metabolism, increase satiety, and support the maintenance of calorie-burning lean body
mass. Muscle mass is more “metabolically active” than body fat, and generally speaking, metabolic rate is proportionate to lean body mass. (43)

In addition to its rich protein content, chicken is also a very good source of numerous other vitamins and minerals that are critical to overall health and metabolism, including:

- Vitamin B3
- Vitamin B6
- Vitamin B12
- Pantothenic acid
- Selenium
- Phosphorus
- Choline
- Zinc
- Copper
- Magnesium
- Iron

Clearly, chicken provides broad nutrient support. Like cottage cheese, chicken is also an excellent source of the amino acid leucine. A cooked 4-ounce portion of chicken breast provides over 2 ½ grams of leucine, which is the threshold at which protein synthesis is restored, according to researchers at the University of Illinois.

In fact, high-leucine diets (a minimum of 2 ½ grams of leucine per meal) have been shown to lead to greater weight loss, greater fat loss, and better preservation of lean body mass. What’s more, researchers have found that high-leucine diets also result in better blood sugar management. (18, 44)
Mixed Beans

Beans are an excellent plant-based source of protein, and depending on the type, they provide upwards of 12 grams of fiber per 1-cup serving. Dietary fiber and protein are two nutrients that researchers have found to be positively associated with satiety, or feelings of fullness. (45)

Not surprisingly, researchers found that, when study participants supplemented their regular diet with garbanzo beans daily, they reported significant improvements in satiety, appetite, meal satisfaction, and bowel function. Participants were also found to decrease consumption of snack foods and overall calorie intake. (46) Additionally, researchers from Purdue University found that subjects who added beans to a reduced-calorie diet lost over three times as much weight as the control group, which consumed the same number of calories, over the course of 6 weeks. (47)

What’s more, an increase in the hormone cholecystokinin (CCK), which is secreted in the gut in response to protein and fat intake and helps to slow gastric emptying and increase satiety, has been reported following bean consumption. (48) Thus, in addition to their high protein and fiber content, beans may positively influence appetite by stimulating satiety centers in the brain.

Legumes, including certain beans and lentils, are also a good source of resistant starch, which is a special type of carbohydrate that is not digested by the human body. (49) Resistant starch is not technically classified as a fiber, although many researchers now believe that it should be.
Multiple studies have shown that naturally-occurring resistant starch intake increases satiety and reduces food intake both acutely and in the long-term. (50, 51) Research has also shown that consumption of resistant starch increases fat oxidation (i.e., fat burning). (52) Resistant starch has also been shown to decrease fat storage in adipocytes (i.e., fat cells) and improve insulin sensitivity. (53)

Furthermore, researchers speculate that resistant starch may also increase the thermic effect of feeding, which means that it boosts the metabolism, as well as promote weight loss and preserve fat free mass. (54)

If the weight management and metabolism benefits aren’t enough, regular consumption of beans appears to also possess significant cardioprotective benefits. Specifically, researchers found that eating just one serving daily of pulses, which include beans, lentils, and peas, can significantly reduce “bad” (i.e., LDL) cholesterol and the risk of heart disease. (55)

Scientists from throughout Canada and the US reviewed 26 randomized controlled trials that included over 1,000 people. Despite variation between studies, the researchers found a 5% reduction in LDL cholesterol in individuals who ate one serving (i.e., 3/4 cup) of beans per day. Men had greater reduction in LDL cholesterol than women, perhaps because their diets are poorer, cholesterol levels are higher, and benefit more markedly from a healthier diet.

Overall, the research is quite clear that adding 3 – 5 cups (per week) of beans to your diet may have some significant beneficial effects on your body composition as well as your cardiovascular health. There are many options from which to choose, including black beans, dried peas, garbanzo beans, kidney beans, lentils, lima beans, navy beans, pinto beans, and more.
Coconut Oil (cold-pressed, extra virgin)

While extra virgin olive oil has always been (and will continue to be) a staple, nutritious, go-to oil for healthy cooking, there’s a new kid on the block that’s getting all the attention as of late, and for good reason. Coconut oil, which is actually 90% saturated fat, is the new superstar, but it hasn’t always been viewed as healthy.

Perhaps some of the negative light that has previously been shined on coconut oil is somewhat deserved. According to Alexandra Bernardin:

“For years, coconut oil was portrayed as a destroyer of cardiovascular health. Its artery-clogging, heart attack-causing, cholesterol-raising side effects were flaunted in the media, and the public responded by shunning this useful and natural oil. However, researchers made one big mistake, which they conveniently did not publicize: In their studies, they used hydrogenated and partially hydrogenated coconut oil. By doing so, they changed everything good about coconut oil.” (56)

For sake of reference, hydrogenation essentially refers to the fact that these were trans fats that were used, and of course, coconut oil is going to get a bad rap if it’s being chemically warped into this health-derailing nightmare (i.e., trans fats). But, what happens when we use fresh, cold-pressed, extra-virgin coconut oil? We get an all-natural food that is chockfull of health-building saturated fats.

According to Bernardin, here are some of the top reasons you should include coconut oil in your diet:
1. It’s composed of medium chain triglycerides (MCTs), which your body can quickly and efficiently use for energy and are not stored in the body as fat.

2. Like breast milk, coconut oil is high in the fatty acid lauric acid, which plays a critical role in immune system function.

3. It is antiviral, antifungal, antiparasite, and antiprotozoa.

4. Coconut oil is high in capric acid and caprylic acid, which are antioxidants.

5. It is cardioprotective. Populations that consume 30-60 percent of their daily caloric intake from coconuts are virtually free from cardiovascular disease, and it helps to lower cholesterol.

6. Unlike unsaturated vegetable oils like soybean and corn oil, coconut oil does not block the secretion of thyroid hormone.

7. Coconut oil is easily digested and can support healthy digestive function.

8. Coconut oil helps with zinc and magnesium absorption, two very important minerals vital for a multitude of functions in the body including bone health.

In addition, several studies have linked the consumption of extra virgin coconut oil to smaller waist sizes. For example, researchers found that subjects who consumed two tablespoons of coconut oil per day for 12 weeks while following a reduced-calorie diet and including daily exercise (i.e., walking) lost a significant amount of abdominal fat compared to the control group that followed the same diet and exercise program without coconut oil. (57) In addition, the coconut oil group also experienced an increase in HDL cholesterol and a decrease in their LDL:HDL cholesterol ratio.

The researchers concluded, “Supplementation with coconut oil does not cause dyslipidemia and seems to promote a reduction in abdominal obesity.”
What’s more, research also suggests that the MCTs found in coconut oil have a significant thermogenic (i.e., metabolism-boosting) effect. In one study, rats were overfed with either long-chain fatty acids (LCTs), which are the common form of fat found in foods, or MCTs. The rats fed the MCTS gained 20% less weight and 23% less body fat despite consuming the same overall amount of energy. (58)

In another study, researchers found that consuming MCTs increased metabolism more than eating LCTs from other foods. As a matter of fact, the subjects that consumed MCTs lost significantly more weight and burned more fat than the group consuming LCTs. (59) Researchers have also found that consuming just 1 – 2 tablespoons daily of MCTs can elevate the metabolism by as much as 5%, which may mean burning an additional 150 calories or more just by swapping your oils. (60)

**Green Tea**

If your goals are to lose fat and add calorie-burning lean muscle mass—and who doesn’t want to do that—then, besides plain, filtered water, your beverage of choice should be green tea. According to researchers, *Camellia sinensis*, which is the plant species whose leaves and buds are used in the production of tea, exerts several “anti-obesity effects.” (61)

Although various types of teas (e.g., oolong, black, green) all come from the *Camellia sinensis* plant, green tea leaves are processed (i.e., fermented) differently, which leaves them with a higher concentration of beneficial polyphenols called catechins, and it’s these compounds, which also have noteworthy anti-inflammatory and antioxidant properties, along with green tea’s naturally-occurring caffeine that seem to have quite a potent effect on the metabolism and helping reduce body fat.
Specifically, green tea extracts standardized for the catechin epigallocatechin gallate (EGCG) and caffeine have been shown to increase the rate of fat oxidation (i.e., fat burning) at rest and during exercise. In one study, subjects that took a green tea extract, which contained both caffeine and EGCG, three times per day increased both thermogenesis (i.e., metabolic rate) and fat oxidation over the course of 24 hours. (62) The authors stated that the effect was superior to that witnessed by caffeine alone.

Subsequently, researchers have found that consumption of a green tea extract prior to exercise increased the amount of fat burned during the bout of training. (63) What’s more, the researchers also noted improvements in blood sugar management and insulin sensitivity. Overall, researchers have concluded, “A green tea-caffeine mixture improves weight maintenance, through thermogenesis, fat oxidation, and sparing fat free mass.” (64)

In addition to an increased metabolic rate, heightened fat oxidation, and improved blood sugar and insulin sensitivity, green tea consumption has also been found to decrease appetite and help regulate blood triglycerides. Researchers suggest consumption of 2 – 4 cups (i.e., 500mL – 1L) of green tea per day to reap these fat-burning and health promoting benefits. (65)

**Coffee**

Coffee is one of the world’s most consumed drinks, trailing only water and tea, although the latter is often debated. Despite its popularity, coffee seems to be a somewhat contentious beverage, as it is frequently considered “unhealthy.” However, there’s seemingly more research to suggest the opposite, as there are a multitude of health benefits associated with regular coffee consumption, and amongst them is an increase in metabolic rate.

Research over the past several years suggests that
coffee consumption may protect against type 2 diabetes, Parkinson’s disease, liver cancer, and liver cirrhosis. It’s important to point out that studies suggesting these benefits are observational in nature, which means that they don’t necessarily prove that coffee caused the effects. Here’s a sampling of some of the health benefits associated with regular coffee consumption:

- Research suggests that regular coffee consumption is associated with a substantially lower risk of type 2 diabetes. (66)
- Some studies have shown an inverse relationship between coffee consumption and Alzheimer’s disease, suggesting that coffee may have protective benefits against dementia. (67) Recent reports estimate that moderate coffee consumption may lower the risk of Alzheimer’s by as much as 20%. (68)
- Studies have shown that coffee drinkers have a significantly lower risk of developing Parkinson’s disease. (69)
- Recent research on coffee and mortality performed by scientists from the Harvard School of Public Health found that people who regularly drank coffee had a lower risk of death from cardiovascular disease than those who rarely drank coffee. (70)

Often, people think of coffee just as a vehicle for caffeine, which we’ll discuss more in just a moment. But it’s actually a very complex beverage with hundreds and hundreds of different compounds in it. In fact, a cup of coffee contains all of the following essential nutrients:

- Pantothenic Acid (Vitamin B5)
- Riboflavin (Vitamin B2)
- Niacin (Vitamin B3)
- Thiamine (Vitamin B1)
- Potassium
- Manganese

Even more, coffee is loaded with antioxidants. In fact, studies show that coffee is the single greatest dietary source of antioxidants—outweighing even fruits and
vegetables—amongst many cultures. (71)

Of course, coffee is synonymous with caffeine, and there may be a host of benefits—including metabolism-boosting advantages—associated with caffeine consumption. For instance, coffee consumption increases alertness and energy levels, and studies have shown that coffee consumption can improve performance on mental tasks. (72, 73)

In addition, studies have found that coffee can improve mood, feelings of well being, reaction times, vigilance, and cognitive function. (74) Caffeine is also widely studied from a sports performance standpoint, and it has been shown to significantly improve physical performance and reduce perceived levels of exertion (i.e., makes tasks feel easier) when taken before exercise. (75)

From a metabolism standpoint, studies show that coffee consumption significantly increases metabolic rate. (76) In fact, consuming as little as 100mg of caffeine, which you can get from a single cup of coffee, is enough to boost metabolic rate, and it appears that repeated/greater doses lead to an even more pronounced effect. (77) What’s particularly interesting is that this increase in resting metabolic rate is accompanied by greater oxidation of fat. Simply put, coffee and caffeine appear to boost metabolic rate and increase fat burning.

While there are many health and metabolism benefits associated with regular, moderate coffee consumption, it’s important to assess and consider your tolerance to caffeine. Individual differences in caffeine metabolism apply, and genetically, some folks are “slow” caffeine metabolizers, which makes them more sensitive to the stimulatory effects (e.g., jitters, feeling wired) of the compound.

**Dark Chocolate**

Who doesn’t like dessert? For the most part, nearly all
desserts are heavily processed and are rife with refined sugars and inflammatory fats. Simply put, they are not a great option to help you lose fat, boost your metabolism, or optimize your health. But, what if you could literally have your cake and eat it too? Well, with high-quality dark chocolate, you may be able to do precisely that.

Perhaps a more suitable title for this section would be cocoa, as it’s actually cocoa that seems to possess significant health and metabolism-boosting benefits. Cocoa contains up to three times more antioxidants than green tea, and it’s these polyphenols that appear to be responsible for the health-conferring benefits of cocoa. (78)

Cocoa, and therefore dark chocolate, is rich in a compound called theobromine, which structurally belongs to a family of compounds collectively referred to as xanthine alkaloids. Also included in this family is caffeine, and as you now know from the section above, caffeine effectively boosts the metabolism and increases fat burning. Theobromine possesses mild stimulant qualities similar to caffeine, and cocoa typically contains about 10 times as much theobromine as caffeine.

Like caffeine, theobromine has been shown to have some unique fat loss properties. As is the case with other methylxanthines, theobromine has been shown to suppress the appetite (i.e., anorexia). (79) With dark chocolate, this is an especially nice effect, as relatively small amount will help control both hunger and your cravings for sweets.

Also similar to caffeine and other methylxanthines, theobromine has been shown to increase lipolysis (i.e., the break down of fat), which means it has the potential to heighten your fat-burning abilities. What’s more, researchers have found that theobromine can increase fatty acid utilization during exercise, which means more fat burning and, under certain conditions, improved performance. (80)

A very distinct benefit of the polyphenols found in dark chocolate was discovered in a study published in The American Journal of Clinical Nutrition in March of 2005 where researchers found significant insulin sensitivity benefits associated with the naturally-occurring polyphenols found in dark chocolate rich in cocoa. (81) And, as you likely
already know, insulin sensitivity is a critical piece of the puzzle when it comes to fat burning, as it holds a key to unlocking your body’s ability to burn fat effectively. (82)

Remember, cocoa is not a chocolate bar, something whose added ingredients and processing reduce the number and type of flavonols, increase calories (cocoa itself has very few), and possibly change the physiological response to the cocoa. As researcher Dr. Andrew Neilson, assistant professor at Virginia Tech states, “The evidence does not show that you can eat a chocolate bar every day and expect to improve your health.”

Keep the following in mind when searching for a dark chocolate bar: Generally speaking, the higher the cocoa content the better. As you move down the “healthy” scale of dark chocolate bars (from highest to lowest cocoa content), you’ll typically find more calories and sugar and less protein and fiber (as well as fewer flavonols).

Thus, you should choose a dark chocolate bar with the highest possible cocoa content, and clearly, 100% cocoa will be your best bet. When enjoying dark chocolate, a couple of squares should do the trick, as it still packs a significant amount of calories.

**Bonus Booster: Hot Peppers**

Like protein and compounds found in coconut oil, green tea, coffee, and cocoa, hot peppers also appear to effectively boost the metabolism. Specifically, various hot peppers contain a compound called capsaicin, which has been shown to boost metabolic rate 15 – 20% for up to two hours after consumption. (83) Research has also shown that capsaicin may increase fat oxidation, and supplementation with the spicy compound has been shown to decrease body weight and abdominal fat. (84)

With all of that in mind, you might consider spicing up your meals a bit
more with cayenne, jalapeño, habanero, and other hot peppers. Basically, the hotter the pepper, the greater the capsaicin content, and the Scoville scale is used to measure the heat of peppers based on capsaicin concentration. If you’re feeling especially spicy, then you might try the bhut jolokia pepper (aka, the “ghost pepper”), which is currently the highest-rated on the Scoville scale and often used as an elephant repellant in India.

**Spark the Fire**

With all of this at your disposal, you now have the figurative lighter to spark your metabolic fire. A good place to start is to make sure that you’re consuming plenty of protein-rich foods, and you might consider replacing some carbohydrates with those foods shared in the list above. While you’re at it, you might try cooking those foods with coconut oil to further enhance your metabolism. Of course, you could start or finish your meal with some green tea or coffee to fully optimize the metabolism advantage.
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