IT'S NOT YOUR FAULT, IT'S YOUR MICROBIOME:

4 surprising things that are sabotaging your weight loss

by
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ABOUT THE AUTHOR

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Lindsey Elmore is a pharmacist, educator, author, international speaker, and host of The Lindsey Elmore Show. She earned her Doctor of Pharmacy at the University of California, San Francisco, completed two residencies, served on the pharmacy practice faculty at Samford University, and is a Board Certified Pharmacotherapy Specialist.

For more than fifteen years, she has helped people understand their health and make more informed decisions. Her guests have included New York Times and Wall Street Journal best-selling authors, Ivy League professors, researchers, physicians, and pharmacists.

After healing her own IBS, she is dedicated to teaching others how to heal the microbiome.

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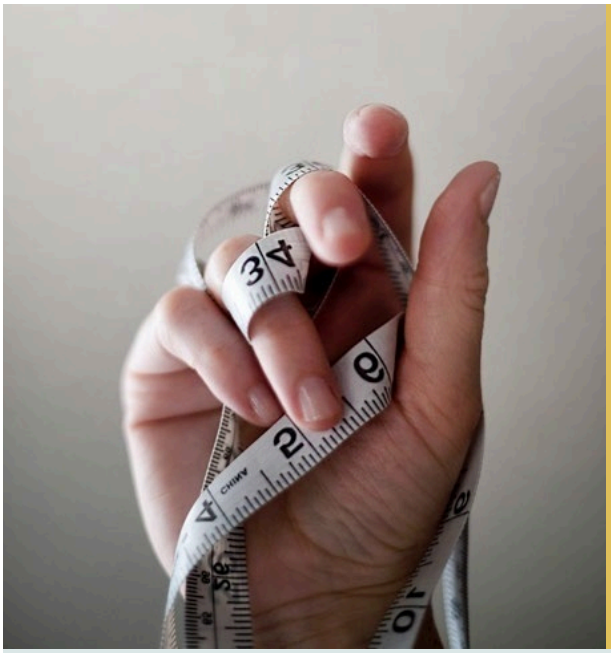
DO YOU STRUGGLE

to lose weight?

Even with a sensible diet and adequate exercise, do you feel like those extra pounds just won't budge?

When it comes to weight loss, we automatically think of diet and exercise. But what if there's more to the weight loss equation? What you may not know is that the balance of microbes in your gut may make it harder to let go of extra weight.



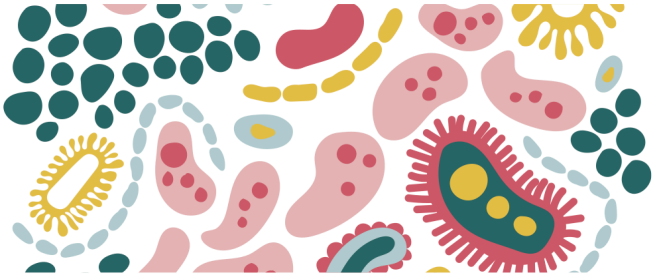
Dysbiosis is a loose term for an imbalance, often lower microbial diversity and more proinflammatory species. This means that there is an imbalance of the good bacteria in your gut accompanied by increased bodily inflammation.

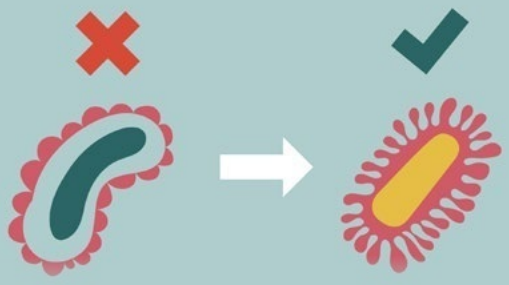
HOW THE MICROBIOME
impacts body weight

Your gut is home to trillions of microbes that make up your microbiota. These microorganisms form an ecosystem that is directly involved in regulating many bodily functions, including metabolism, hunger, and digestion.

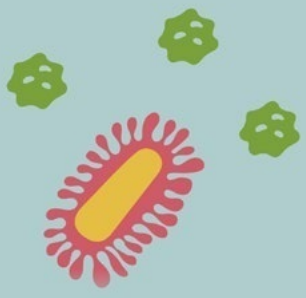
A healthy balance of symbiotic microorganisms provides a variety of nutrients and metabolites for healthy metabolism, energy, and homeostasis. It also aids the immune system and prevents the overgrowth of pathogens.

Numerous studies show that reduced bacterial diversity is associated with obesity. An imbalance of the intestinal environment—or dysbiosis—causes a cascade of events that disrupts metabolism in a few ways:

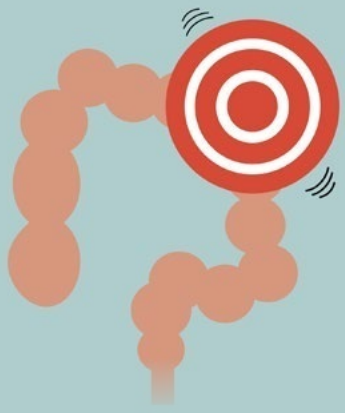




When good bacteria decrease, it opens the door for more pathogenic microbes to thrive.



The toxins from these organisms increase gut permeability and trigger the immune system to produce cytokines, chemokines, nitric oxide (NO), and reactive oxygen species (ROS).



This, in turn, causes local and systemic inflammation.

Over time, chronic inflammation is linked to insulin resistance, obesity, high blood pressure, and metabolic syndrome.[1,2]

Altogether, dysbiosis negatively impacts your health and may even explain why some people put on weight more easily than others.

On the other hand, there is a clear link between a healthy microbiome and healthy weight management. In the colon, microbes help to ferment indigestible carbohydrates and proteins into short-chain fatty acids (SCFAs) (primarily acetate, propionate, and butyrate). These short-chain fatty acids, in turn, provide energy for many vital body processes, including cellular metabolism, regulation of cholesterol synthesis in the liver, and fat storage and metabolism.[3]

In addition to increasing energy and metabolic efficiency, the short-chain fatty acid butyrate plays an important role in the regulation of insulin in the body. In fact, dysbiosis is thought to be one contributor to prediabetes, type 2 diabetes, and obesity. Butyrate also acts as a histone deacetylase inhibitor, switching genes on and off, including some that help control blood sugar and appetite hormones like GLP-1.[2]

THE ROLE OF PRE-, PRO-, AND POSTBIOTICS **in Weight Loss**

Most people know the importance and role of quality probiotics. But it's important to provide your gut with prebiotics and postbiotics as well in order to create a thriving environment for the good bacteria.

Prebiotics

Prebiotics are indigestible compounds, mostly fibers, that feed the beneficial microbes already living in your gut. Because the body can't break down prebiotic fiber, it passes through the upper part of the gastrointestinal tract. The fiber is then fermented in the colon, providing food for live, active bacteria in the gut.[4]

Certain types of indigestible fiber may improve insulin sensitivity and modestly support fat loss. For example, inulin, a type of fiber found in bananas, artichokes, garlic, leeks, asparagus, and other foods, has been shown in animal studies to counteract high-fat-diet obesity and insulin resistance by changing gut microbial activity.[5,6]

On average, US adults eat about 16 grams of fiber a day, well below the roughly 25 grams (women) to 38 grams (men) recommended.[7,8] Fiber intake can be increased by taking a quality fiber supplement and/or consuming more fiber-rich foods, such as:

- High-fiber cereals
- Beans
- Nuts and seeds
- Fruits; especially avocados, berries, apples (with the peel), and bananas
- Vegetables; especially broccoli, cauliflower, cabbage, spinach, peas, sweet potatoes, and carrots

Galactooligosaccharides (GOS) are prebiotics found in beans; human milk has its own cousins, called HMOs. There is evidence that breastfeeding infants contributes to the development of the infant's microflora and immune system.[9] Breastfeeding is also linked to lower obesity risk later in life, and the infant microbiome may be part of why.[10]

Probiotics

All probiotics are not created equal, especially when trying to target metabolism and weight loss. Research points to certain types (genera) of bacteria, namely *Bifidobacterium*, *Lactobacillus*, and *Akkermansia*, as most promising for weight, though effects depend on the strain.[3,11]

Early studies show that *Lactobacillus* may exert anti-obesity effects by suppressing lipid absorption in the small intestine. In one 12-week study, adults with extra belly fat who drank milk

fermented with the strain *L. gasseri* SBT2055 had less visceral fat and lower weight, BMI, and waist and hip size.[12] Lab work suggests it makes fat droplets harder for lipase, the enzyme that digests fat, to break down.[13]

Some *Bifidobacterium* strains carry a molecule called lipoteichoic acid. In a lab study in tiny worms, this molecule from one strain (*B. lactis* BPL1) reduced fat storage. It is an early finding that still needs testing in people.[14]

In animal studies, *Akkermansia* reduces inflammation, strengthens the gut lining, supports other helpful microbes, and trims belly fat.[15,16] An early human trial found better insulin sensitivity but no clear weight loss.[17] Scientists view these findings as a promising area of research for weight and metabolic health.

Postbiotics

Postbiotics are nonliving microbes and their parts, plus (informally) the helpful compounds, like SCFAs, that gut microbes make.[18] The easiest way to get more postbiotics is to feed your gut microbes with prebiotic and probiotic foods; your microbes make the rest.

Postbiotics do a lot of quiet, useful work in the gut, including:

- Supporting healthy gut bacteria (probiotics)
- Reducing harmful pathogens and infection
- Balancing the immune system and reducing inflammation
- Supporting healthy blood sugar (early research)
- Supporting antioxidant defenses (early research)[18]

So How Do We Get More Postbiotics?

You could take a fiber supplement, but this often comes with side effects, such as gas, bloating, constipation and diarrhea. Instead, focus on the wide variety of fiber that you can get from food:

- Inulin – May slow digestion, boost fullness, and modestly improve cholesterol and blood sugar. It is found in asparagus, bananas, burdock, chicory, dandelion root, garlic, artichokes, leeks, and onions.
- Fructooligosaccharides – Protect against unhealthy bacteria, decrease cholesterol, and may improve symptoms of abdominal distress. Good sources of fructooligosaccharides include yacon root, garlic, onion, leeks, chicory root, artichokes, asparagus, and bananas.
- Resistant starch – Feeds butyrate-making bacteria and can blunt blood sugar after meals. Find it in oats, beans, lentils, green bananas, and cooked-then-cooled potatoes and rice.
- Pectin – A soluble fiber that slows stomach emptying, thereby decreasing blood sugar. It is almost completely fermented by gut bacteria into short chain fatty acids. Good sources include apples, grapefruit, sweet potatoes, squash, peas, green beans, and tomatoes.

4 SURPRISING THINGS THAT ARE **sabotaging your weight loss**

Now that you have a basic understanding of how important the microbiome is to healthy weight management, let's take a look at some often overlooked factors that may work against your efforts.

1. Medications and the Microbiome

Many people are not aware that dozens of commonly prescribed drugs can wreak havoc on the delicate microbial environment of the gut. Let's look at a few of the most damaging medications to the microbiome that can contribute to altered metabolism, weight gain, and obesity.

Antibiotics

Antibiotics are designed to destroy bacteria and prevent them from replicating. A major downside of many antibiotics, especially broad-spectrum ones, is that they are not selective. This means they will exterminate the "good" microbes in the gut right along with the "bad" ones.

For most healthy adults with a stable microbiome, the short-term impact of occasional antibiotic use is minimal, and in most cases the microbiome will recover. However, in infants under the age of two with developing microbiomes and the elderly, damage to the microbiome from antibiotic use may have lasting consequences.[19,20]

Even for healthy adults, some antibiotics cause more damage than others. One study analyzed the effects of four common antibiotics on the microbiome of healthy adults. Clindamycin caused the "most pronounced and long-lasting change in microbial profiles," lasting up to four months; ciprofloxacin's effects lasted about one month.[21]

The bottom line is, antibiotics are meant to destroy bacteria, and they don't differentiate between the good and the bad. If you must take an antibiotic, ask whether a narrower-spectrum option fits, and take it exactly as prescribed. You can also take steps to restore your microbiome once you discontinue using an antibiotic, such as eating plenty of fiber-rich plants and fermented foods and limiting added sugar. Ask your pharmacist whether a probiotic makes sense for you.[22]

Acid Reducers

Acid reducers are widely used for indigestion, ulcers, and acid reflux; they neutralize stomach acid or reduce how much is made. Because stomach acid aids the absorption of important micronutrients, use of acid blockers has been associated with an increased risk of micronutrient deficiencies. Additionally, stomach acid provides a barrier against pathogenic microorganisms, and neutralizing the acid can contribute to small intestinal bacterial overgrowth (SIBO). Decreasing the amount of available micronutrients and increasing bad bacteria both alter the microbiome.[23]

Common acid blockers include:

- Over-the-counter calcium carbonate antacids, such as Tums® and Rolaids® (least potent)
- H2 blockers, like famotidine (Pepcid®)
- Proton Pump Inhibitors (PPIs), like Prilosec® and Nexium® (most potent and harmful to the microbiome)

Just as with antibiotics, acid suppressant use in the first two years of life is linked to a higher risk of childhood obesity, possibly through the microbiome.[20]

Birth Control Pills

Oral contraceptives are absorbed in the small intestine, and gut bacteria in the colon help recycle estrogen.[24] Birth control hormones may shift the gut microbiome, though studies disagree. The pill is also linked to more frequent vaginal yeast infections in some women.[25]

Oral contraceptives can also raise blood markers of inflammation, like CRP.[26] Recall that chronic inflammation is linked to insulin resistance, obesity, high blood pressure, and metabolic syndrome. Pill use is also linked to a modestly higher risk of Crohn's disease.[27,28]

Hormonal contraceptives can also affect digestion through bile. Estrogen makes the liver send more cholesterol into bile, and studies link the pill to a small rise in gallstone risk, lower with today's low-dose pills.[29,30] Bile is critical for digesting fats and for carrying cholesterol and other waste out of the body. Poor bile flow can affect fat digestion, absorption of fat-soluble vitamins, and the gut's microbial balance.

2. What are your food cravings telling you?

Ever wonder why we tend to crave so many foods that are bad for us, and yet we rarely crave healthy foods? It may come as a surprise to you that your microbiota plays an integral role in your food cravings.

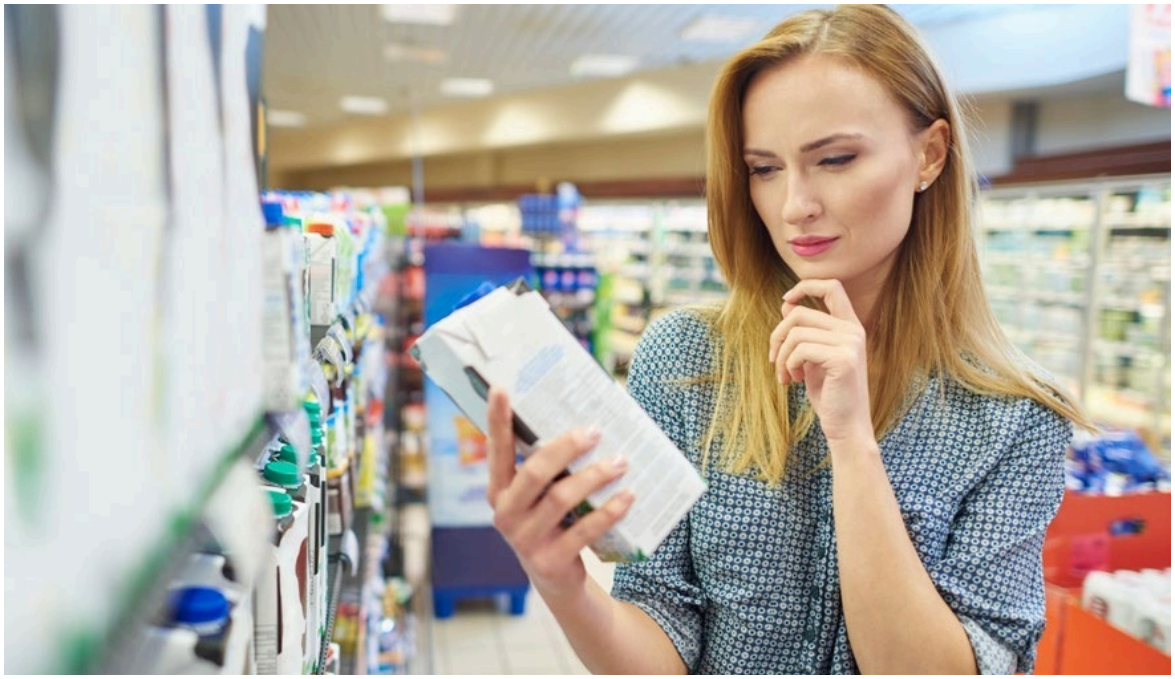
In fact, scientists have proposed that bacteria that thrive on certain nutrients may nudge us, even via taste receptors, to crave those foods. For example, *Prevotella* grow best on carbs, *Bifidobacteria* on fiber, and some *Bacteroidetes* favor fats and animal protein.[31,32] According to a 2017 systematic review of gut microbiota studies in eating and alcohol use disorders, scientists have proposed that gut bacteria act "to enhance their own survival or hinder that of competitive gut bacteria." The authors call the evidence promising but preliminary.[33]

We know that what we eat contributes to weight gain or loss, but most people don't realize that their gut bacteria may also influence the food cravings we experience. But this is not all bad news. The positive side of this is that what you eat doesn't just affect your weight, it's also one of the fastest ways to change your microbes. In fact, "diet plays a significant role in shaping the microbiome, with experiments showing that dietary alterations can induce large, temporary microbial shifts within 24 hours."[32] This means that we can actually

manipulate our microbial environment simply by changing our diet.

3. Could everyday chemicals be making you fluffy?

Endocrine disruptors are chemicals that mimic or interfere with the body's hormones. This disruption is linked to developmental, reproductive, brain, immune, and other problems.[34] Chemicals that disrupt normal hormonal function are everywhere. We find them in plastics, food packaging, detergents, cleaning products, air fresheners, foods, drinking water, cosmetics and personal care products, fragrances, pesticides, and more. Because minute changes in hormones can cause significant biological effects, it is not surprising that even low doses of endocrine-disrupting chemicals may be unsafe.



Research, mostly in animals, shows that endocrine disrupting chemicals also affect the microbiome. Because hormones have a direct effect on the gut and certain bacteria are vulnerable to chemical exposures, small amounts of endocrine disruptors can lead to dysbiosis in various ways. For example:

- Bisphenol A (BPA) can disrupt insulin release and signaling in the body, which may lead to insulin resistance.
- In mice, certain fungicides change the microbiome and promote fat-cell formation. Such chemicals are classified as obesogens, foreign chemical compounds that disrupt normal development and balance of lipid metabolism, which can lead to obesity.
- Various endocrine disruptors may impair the function of the mucosal intestine barrier similarly as do pathogenic microbiota.
- In animal studies, some pesticides cause dysbiosis and inflammation that alter fat metabolism and promote weight gain.
- Endocrine disruptors can lead to systemic inflammation, which has been consistently linked to obesity, insulin resistance, and other alterations of metabolism.
- Triclosan, an antibacterial once common in soaps and toothpaste (the FDA banned it from consumer soaps in 2016), shifts the microbiome toward Proteobacteria, a group proposed as a marker of dysbiosis and of diabetes and colitis risk.[35]
- Phthalate exposure is linked to changes in blood sugar and fat metabolism that may raise the risk of insulin resistance.[36,37]

There are many more endocrine disruptors that alter the microbiome. The sad truth is that we are constantly surrounded by products and contaminants that contain risky chemicals. So what can we do?

Avoiding Endocrine Disruptors

The simple answer is to avoid endocrine-disrupting chemicals as much as possible. Here are a few ways to limit your exposure:

- Read labels and look for foods and products that do not contain chemical additives. Avoid canned foods as much as possible.
- Swap out personal care products and household cleaners that contain artificial fragrances and chemicals. Opt for fragrance-free cleaning products instead.
- Choose organic produce when possible.
- Use a water filter for all drinking water.
- Consider a HEPA filter for your home.

Some contaminants are simply unavoidable. Making sure you nourish your gut with prebiotics and probiotics helps keep your intestinal environment as resilient as possible.

4. Malnutrition. . .No, really.

Malnutrition is a deficiency, excess, or imbalance of nutrients, and it includes overweight. When we think of malnutrition, we usually think of impoverished people without adequate food supply. What many people may not realize is that malnutrition is often directly related to obesity. This is because micronutrient deficiency includes not only poor dietary choices and lack of nutrient-rich foods, but also changes in the absorption, distribution, or excretion of nutrients. And obesity-related inflammation alters micronutrient metabolism. In short, a body can be overfed and still undernourished.

According to a 2012 review of literature, "Deficiencies of specific vitamins and minerals that play important roles in glucose metabolism and insulin signaling pathways may contribute to the development of diabetes in the obese population." In fact, researchers conclude that obesity raises the risk of type 2 diabetes about fourfold, and even more at higher weights.[38]

Because microbes in the gut play an essential role in fermenting dietary macronutrients into usable metabolites, such as short-chain fatty acids, dysbiosis and malnutrition are closely linked. Furthermore, research in undernourished children found their gut microbes likely make fewer amino acids, and the children had lower blood levels of essential amino acids.[39]

Several nutrients vital for glucose metabolism and insulin signaling are more often low in people with obesity:

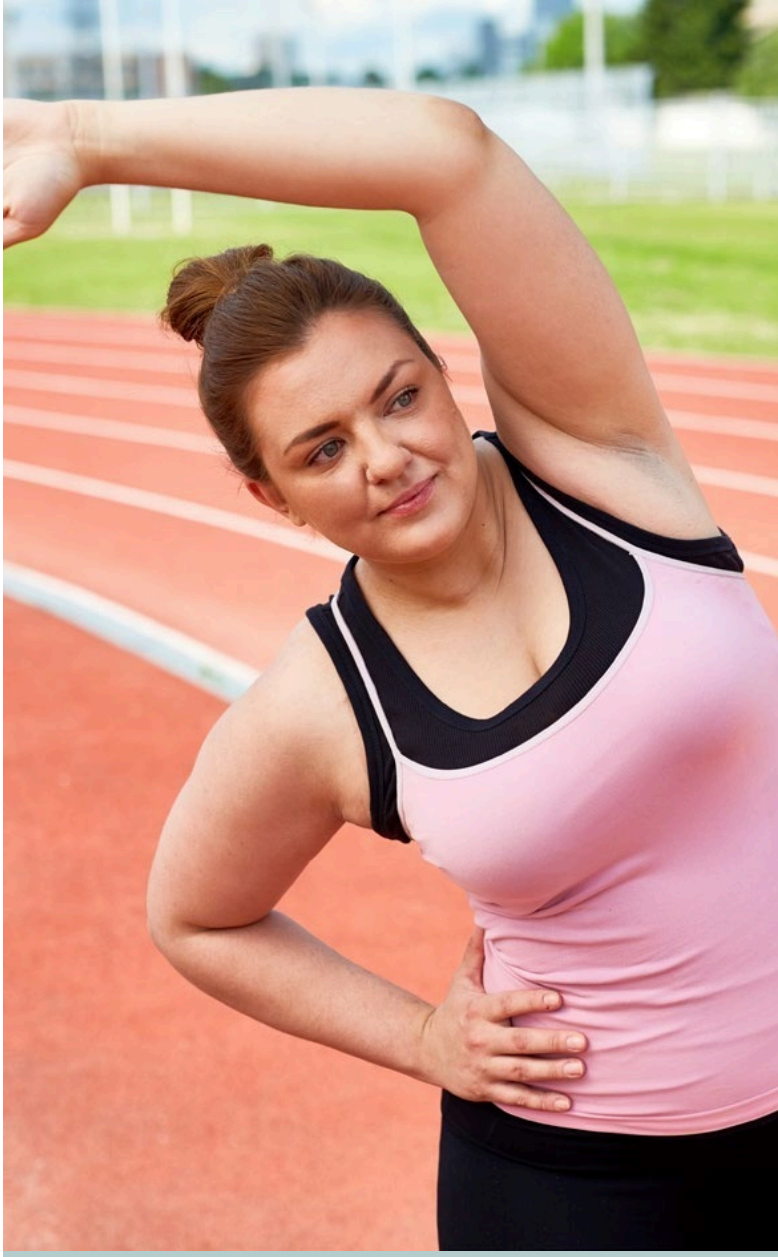
- Vitamin D
- Thiamine
- Zinc
- Vitamins A and C[38]

While it may be hard to square with the stereotypical starving image of a malnourished individual, nutrient deficiency is actually very common among obese individuals. It presents a dangerous cycle: Your gut microbes need nutrients to make many of the metabolites your body relies on, and an imbalanced microbiome may make it harder to absorb nutrients from food. A person who is malnourished is at an increased risk of becoming even more malnourished.

The key to overcoming malnourishment is a nutrient-dense diet, with supplements to fill any proven gaps. Improve the quality and quantity of nutrients in your diet by avoiding processed foods, increasing fruit and vegetable consumption, and decreasing sugar in the diet. Additionally, focusing on improving the health and diversity of your microbiome is key to ensuring proper nutrient absorption.

FIX YOUR MICROBIOME TO

optimize weight loss



If you struggle with weight loss and feel like you're just missing part of the equation, it could just be your microbiome. Fixing your gut environment probably won't result in instant weight loss, but it can support your metabolism and your long-term efforts to reach a healthy weight.

Your lifestyle impacts the diversity of your gut microbiome, thereby influencing your susceptibility to weight gain. By making small changes that impact your microbiome, you can increase the abundance of health-promoting bacteria. Taking steps to support your microbes may help with weight management, inflammation, and your long-term metabolic health as well.

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