

Inflammation & Mood

Biohacker Report

REPORT CATEGORIES —



MENTAL HEALTH



INFLAMMATION & AUTOIMMUNITY

Sample Client

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omicsedge

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DISCLAIMER

This report does not diagnose this or any other health conditions. Please talk to a healthcare professional if this condition runs in your family, you think you might have this condition, or you have any concerns about your results.

Personal information

NAME

Sample Client

SEX AT BIRTH

Male

HEIGHT

5ft 5" 165cm

WEIGHT

137lb 62kg



How this works

Our Wellness Reports analyze how your DNA influences your health.
We then use this analysis to give you personalized risk estimates and recommendations.



Similarly, our Trait Reports look at how your DNA influences your traits.



Your DNA is like an instruction manual — it contains a lot of information.
You can think of it as a blueprint for your body.

Genetic variants are parts of DNA that differ from person to person. Some can make you more vulnerable to certain health issues, while others may influence traits such as eye color.



We use artificial intelligence and machine learning to analyze all this information.
We then summarize your results as a risk score or display it on a gauge.

In total, we analyze up to 83 million genetic variants.

When we give a risk score, the risk icon tells you if you are at a higher or lower risk compared to other people:



Genotype color info:

AA

You don't have any risk alleles

AA

You have 1 risk allele

AA

You have 2 risk alleles

Your risk is also displayed as a percentile. This will tell you how your risks compare to our sample population. The lower your percentile number, the lower your risk. The "50th percentile" would be an average risk.

Similarly, the gauge tells you your relative risk score compared to our sample population, or it indicates a specific trait or haplotype you are more likely to have based on your genetic variants.

When applicable, we also list top evidence-based recommendations that may help lower your risk. The focus is on recommendations that may be of benefit to you, based on your genetics.

Our recommendations come in four categories: lifestyle, diet, supplements and drugs.
The following icons tell you which category a recommendation falls into:



Our team of scientists also ranks each recommendation.
We rank based on impact and the strength of evidence in the medical literature.

Impact shows how strongly a recommendation will affect your health in a certain area.
Evidence is how much scientific support there is for the recommendation. Rankings are from 1 to 5 (low to high):



Impact

Impact scores range from 1-5. These scores reflect how much of an effect each recommendation can have. An impact score of 5 predicts the biggest effect.

When a recommendation affects something we can measure, we use those measurements to assign the impact score. For example, a recommendation that decreases cholesterol by 20% will have a higher impact score than one that decreases it by 5%.

Some recommendations affect things that we cannot directly measure, like stress or mood. For these, the impact score is based on how well they work relative to other recommendations and standard treatments. The best ones get the highest scores.

If there is a lot of research that shows a recommendation works especially well for your genotype, the impact score gets increased.

Recommendation Evidence

- 5 / 5
- Recommendations that are considered effective and generally recommended by experts and medical bodies.
-
- 4 / 5
- Recommendations that are considered likely effective and that have multiple independent meta-analyses and a great many studies supporting them.
-
- 3 / 5
- Recommendations that are considered possibly effective and have many studies supporting them
-
- 2 / 5
- Recommendations that have insufficient evidence, with two or several clinical trials supporting them, or many studies but with ambiguous results.
-
- 1 / 5
- Recommendations that have insufficient evidence, with a single clinical trial, or with many studies most of which didn't find support for the recommendation.
-
- 0 / 5
- No evidence in humans.

Genotype-specific Evidence

- High-quality
- Direct evidence that a recommendation helps more in people with your gene variant (many clinical trials, a few large clinical trials, or a meta-analysis).
-
- Medium-quality
- Direct evidence that a recommendation helps more in people with your gene variant (a few clinical trials or one large clinical trial).
-
- Low-quality
- Direct evidence that a recommendation helps more in people with your gene variant (a single clinical trial or more trials with inconsistent results).
-
- Indirect
- A recommendation may help more in people with your gene variant because it targets a specific gene or protein affected by your variant (e.g., MTHFR, dopamine).
-
- In theory
- A recommendation may help more in people with your gene variant because it targets a specific mechanism affected by your variant (e.g., inflammation, oxidative stress).

Some things to keep in mind:

- Genetics doesn’t play a considerable role in a condition or a trait.
- There is not enough research available to estimate a genetic predisposition.
- There are technical limitations to estimating or presenting a genetic predisposition.
- The topic is sensitive, and a genetic predisposition should only be estimated and presented by a healthcare professional.

Introduction

Inflammation is a biological response to physical injuries, infections, or diseases aimed at healing and restoring normal tissue function. However, when inflammation becomes chronic, it can lead to cellular and tissue damage across the body, including the brain [R, R].

In line with this, research has associated higher levels of several inflammatory cytokines such as TNF-alpha, IL-6, IL-13, IL-18, IL-12, and IL-1RA with major depressive disorder [R].

Increased peripheral inflammatory cytokines increase the permeability of the blood-brain barrier. This allows the inflammatory cytokines to enter the brain, triggering functional changes in certain brain regions [R].

The connection between inflammation and depression is thought to involve several interrelated biological pathways:

- Neurotransmitter systems: inflammation induces the activity of indoleamine 2,3-dioxygenase (IDO), an enzyme that degrades tryptophan, the precursor to serotonin, thereby reducing serotonin levels and potentially leading to depressive symptoms [R].
- Hypothalamic-pituitary-adrenal (HPA) axis: inflammatory cytokines can stimulate the HPA axis, leading to dysregulation of cortisol production, which has been associated with depression [R, R].
- Neural plasticity: chronic inflammation has been shown to reduce the expression of brain-derived neurotrophic factor (BDNF), a key molecule involved in neural plasticity and resilience, which can lead to depressive behaviors [R].

Understanding the role of inflammation in depression could significantly impact how depression is treated and managed [R, R, R]:

- Anti-inflammatory drugs: there is growing interest in exploring the use of non-steroidal anti-inflammatory drugs (NSAIDs), cytokine inhibitors, and other anti-inflammatory agents as potential treatments for depression.
- Lifestyle modifications: anti-inflammatory diets, regular physical activity, and stress reduction techniques may serve as adjunctive treatments for depression by reducing systemic inflammation.
- Personalized medicine: Identifying biomarkers of inflammation could help tailor depression treatments to individual patients, enhancing effectiveness and reducing side effects.

Genetics of Inflammation & Mood

The [TNF](#) gene encodes a protein called tumor necrosis factor-alpha (TNF-alpha or cachexin). TNF-alpha plays a central role in the immune response and inflammation, and it has been implicated in a wide variety of inflammatory disorders [\[R\]](#).

The [rs1800629](#) polymorphism (also known as *TNF*-308) is one of the most researched SNPs in the *TNF* gene. **The ‘A’ allele is associated with 6-7 times higher levels of TNF-alpha.** This variant doesn’t seem to play a role in depression susceptibility but has been associated with earlier age of onset and more frequent suicide attempts in people with major depressive disorder [\[R, R, R, R\]](#).

Interleukin-6 (IL-6) is a cytokine encoded by the [IL6](#) gene that has either proinflammatory or anti-inflammatory properties, depending on the circumstances and the tissue that secretes it. It has complicated mechanisms of effect and interacts with many other cytokines and inflammatory signals [\[R, R\]](#).

By far, the most well-researched *IL6* polymorphism is [rs1800795](#) (also known as the “-174G>C” polymorphism). The major 'G' allele of this SNP has been linked with higher levels of IL-6, while the 'C' allele has been associated with lower IL-6 levels. In line with this, the minor allele has been associated with a decreased risk of depression. Moreover, the ‘G’ allele may further increase susceptibility to depression caused by painful and stressful life events [\[R, R, R, R\]](#).

Other *IL6* alleles associated with higher IL-6 levels and an increased risk of depression are ‘G’ at [rs1800796](#) and ‘A’ at [rs1800797](#) [\[R, R\]](#).

The [IL6R](#) gene codes for a subunit of the IL-6 receptor, the protein on target cells that binds to the IL-6 cytokine and ensures that the cell receives its signals. Binding of IL-6 and IL6R does not transduce the signal until it forms a complex with IL6ST [\[R\]](#).



BETTER GENETICS

Less likely to have mood disorders based on your inflammation genetics based on 9 genetic variants we looked at



Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
IL6	rs1800795	GG
IL6	rs1800796	GC
IL1B	rs16944	AG
IL1A	rs1143627	GA
IDO1	rs9657182	TT
KMO	rs1053230	CT
STEAP1B	rs1800797	GG
TNF	rs1800629	GG
IL6R	rs4129267	TT

The number of "risk" variants in this table doesn't necessarily reflect your overall result.

The ‘T’ genotype of [rs4129267](#) has been linked to higher IL6R and inflammation levels. In contrast, people with the ‘CC’ genotype may have increased inflammation (measured as IL-6 levels) only in the presence of stressors such as anxiety [\[R\]](#), [\[R\]](#).

The [IL-1B](#) gene encodes interleukin 1-beta (IL-1β), one of the chief inflammatory cytokines. IL-1β is released from [white blood cells](#) (macrophages, [monocytes](#), and [neutrophils](#)) in response to cell stress or damage and acts as an "alarm signal" for the release of many other pro-inflammatory compounds [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

One of the most highly-studied SNPs in the *IL-1B* gene is [rs16944](#), also known as the ‘C-511/T’ polymorphism. Its ‘A’ allele is associated with higher IL-1β levels. This variant has been associated with increased depressive and anxiety symptoms of [PTSD](#). However, it has also been associated with a decreased risk of major depressive disorder, lower susceptibility to depression in response to early-life stressful events, and greater odds of achieving remission [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

Another variant of this gene, the ‘T’ allele of [rs1143627](#), has been associated with an increased risk of major depressive disorder [\[R\]](#).

Indoleamine 2,3-dioxygenase, commonly referred to as IDO, is an enzyme encoded by the [IDO1](#) gene that catalyzes the first and rate-limiting step of the kynurenine pathway, where the essential amino acid [tryptophan](#) is broken down to kynurenine. This pathway is also significant for the regulation of immune responses and maintaining immune tolerance [\[R\]](#), [\[R\]](#).

The ‘T’ allele of [rs9657182](#) has been associated with higher IDO1 levels and greater odds of post-stroke depression. However, IFN-alpha treatment is more likely to cause depression in hepatitis C patients with the ‘CC’ genotype [\[R\]](#), [\[R\]](#).

The [KMO](#) gene encodes an enzyme called kynurenine 3-monooxygenase that catalyzes the second step in the kynurenine pathway, in which kynurenine is transformed into L-3-hydroxykynurenine [\[R\]](#).

The ‘T’ allele of [rs1053230](#), associated with higher KMO activity and L-3-hydroxykynurenine levels, has been linked

to a decreased risk of depression and bipolar disorder with psychosis. However, this allele has also been associated with an increased risk of postpartum depression and suicidal behavior [R, R, R, R].

Your Recommendations

Your recommendations are prioritized according to the likelihood of it having an impact for you based on your genetics, along with the amount of scientific evidence supporting the recommendation.

You’ll likely find common healthy recommendations at the top of the list because they are often the most impactful and most researched.

DOSAGE		DOSAGE			
1	Magnetic Stimulation	20 minutes	2	Avoid Food Triggers	
3	Mediterranean Diet		4	Curcumin	500 mg
5	Probiotic Dairy		6	Reduce Arachidonic Acid Intake	
7	Fish		8	EPA (Omega-3)	500 mg
9	Dietary Tryptophan		10	Anti-Inflammatory Diet	
11	Probiotics	30 billion CFU	12	Limit Omega-6 Fatty Acids	
13	Omega-3 (Fish Oil)	2000 mg	14	Meditation	30 minutes
15	Social Activity	1 hour	16	Mindfulness	30 minutes

1



Magnetic Stimulation

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Schedule sessions of transcranial magnetic stimulation (TMS) with a licensed healthcare provider, typically involving 4-6 weeks of daily treatments for 20-60 minutes per session.

TYPICAL STARTING DOSE

20 minutes

Description

Magnetic stimulation techniques, such as transcranial magnetic stimulation (TMS), are used in neuropsychiatry to treat conditions like depression and anxiety. They work by targeting specific areas of the brain with magnetic fields to alleviate symptoms and promote mental health.

How it helps

Magnetic stimulation therapy alleviates mood disorders by modulating neural circuits associated with emotional regulation, reducing inflammation in the brain and enhancing overall mental health. This targeted approach is effective for individuals experiencing inflammation-related mood issues.

2



Avoid Food Triggers

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Identify foods that trigger negative reactions in your body, such as digestive issues, allergies, or headaches, and eliminate them from your diet entirely. This may require keeping a food diary for a few weeks to observe patterns and might involve cutting out common triggers like dairy, gluten, soy, or certain additives. Continuously monitor and adjust your diet to avoid these triggers as long as the symptoms persist.

Description

Food triggers are specific substances or ingredients in one's diet that can exacerbate or induce adverse reactions, such as allergies, sensitivities, or digestive issues, often leading to symptoms like inflammation, bloating, or discomfort.

A "trigger" is something that prompts or worsens the symptoms of a health condition.

Food triggers can lead to a wide range of symptoms in people who are sensitive to them. These may include [R](#), [R](#), [R](#), [R](#):

- Gut problems
- Skin problems
- Migraines

How it helps

Avoiding food triggers reduces the risk of systemic inflammation, which can negatively impact mood stability. By minimizing dietary sensitivities, individuals may experience improved emotional regulation and a decrease in mood disorder symptoms.

3



Mediterranean Diet

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Incorporate a variety of primarily plant-based foods, such as fruits, vegetables, whole grains, nuts, and legumes, into every meal. Choose healthy fats, like olive oil, over saturated fats and consume fish and poultry at least twice a week. Limit red meat to a few times a month and include a moderate amount of dairy products. Opt for water and red wine in moderation as your beverages.

Description

The [Mediterranean diet](#) is based on the traditional cuisine from the Mediterranean regions. It moderates the intake of red meat and dairy, while being rich in fruits and vegetables, whole grains, and healthy fats ([olive oil](#)).

The [Mediterranean diet](#) focuses on traditional cuisine from the Mediterranean regions. It’s rich in [\[R\]](#):

- [Olive oil](#)
- Fruits and vegetables
- Whole grains
- Nuts and seeds
- Fish

This type of diet may **reduce inflammation and protect the brain and heart** [\[R, R, R, R\]](#).

Limited intake of animal products, saturated fat, and refined sugar likely contribute to the health benefits of the Mediterranean diet [\[R\]](#).

How it helps

The Mediterranean diet can help reduce inflammation through its high intake of antioxidants and anti-inflammatory compounds found in fruits, vegetables, and healthy fats. Additionally, its nutrient-rich profile supports brain function, potentially enhancing mood and emotional well-being.

4



Curcumin

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take a 500 mg curcumin supplement daily with food. To enhance absorption, take it with a meal that contains fats or oils since curcumin is fat-soluble.

TYPICAL STARTING DOSE
500 mg

Description

Curcumin is a compound found in turmeric known for its anti-inflammatory and antioxidant properties. It has been studied for its potential to reduce inflammation, support joint health, and contribute to overall well-being.

[Turmeric](#) is a yellow spice from India. It may reduce inflammation and [oxidative stress](#) [R].

The most important active compound in turmeric is **curcumin**. People use curcumin for [R, R, R, R, R, R]:

- Joint pain
- Hay fever
- Mood
- High blood sugar
- Gut health
- Liver health

How it helps

Curcumin helps alleviate inflammation, which is often linked to mood disorders, thereby potentially enhancing mood regulation. Its anti-inflammatory properties can support brain health and improve emotional well-being.

5



Probiotic Dairy

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Incorporate probiotic-rich dairy products, such as yogurt or kefir, into your diet daily. Aim to consume at least one serving, which typically ranges from 100 to 200 grams, per day.

Description

Probiotic dairy products, such as yogurt and kefir, contain live beneficial bacteria that support gut health and digestion, as well as the immune system, blood sugar, and mood. These products are rich in probiotics, calcium, and protein.

Probiotic bacteria are “good” bacteria found mainly in the large intestine. They support your body and mind by [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Maintaining gut health
- Supporting a healthy immune system
- Improving your mood
- Helping to maintain healthy blood sugar

Probiotics can be taken as supplements. They can also be added to dairy products like milk and yogurt [\[R\]](#), [\[R\]](#).

How it helps

Probiotic dairy products help reduce inflammation by enhancing gut microbiota balance, which in turn can positively influence mood and emotional well-being. This is particularly beneficial for managing symptoms associated with mood disorders linked to inflammatory processes.

6



Reduce Arachidonic Acid Intake

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Limit consumption of arachidonic acid-rich foods such as egg yolks, red meats, and shellfish. Aim to eat these foods no more than once or twice a week. Preferably, incorporate more lean proteins, fruits, and vegetables into your diet to balance your intake.

Description

Arachidonic acid (AA or ARA), is an omega-6 fatty acid. Arachidonic acid is important for normal human functioning and has both inflammatory and anti-inflammatory effects. [\[R\]](#), [\[R\]](#)

Metabolites made from arachidonic acid are important for [\[R\]](#), [\[R\]](#):

- Proper immune system function
- Muscle growth
- Brain function
- Mood
- Appetite

Too much arachidonic acid has been linked to vascular diseases like high blood pressure and heart disease [\[R\]](#), [\[R\]](#).

Arachidonic acid is primarily consumed from animal products like poultry, dairy, beef, eggs and sausage [\[R\]](#).

How it helps

Reducing arachidonic acid intake can lower the production of pro-inflammatory mediators, thereby helping to alleviate inflammation. This reduction is crucial for improving mood disturbances that are often linked to inflammatory processes.

7



Fish

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Incorporate two servings of fish into your diet each week, focusing on oily fish like salmon, mackerel, or sardines for their high omega-3 fatty acid content. Each serving should be about 3.5 ounces cooked, or about ¾ cup of flaked fish.

Description

Fish, particularly fatty fish like salmon and mackerel, is an excellent source of omega-3 fatty acids, which support cardiovascular health, brain function, and inflammation management. Regular consumption of fish can promote heart health and overall well-being.

Fish is a great source of [omega-3s](#), protein, and other essential nutrients. Omega-3s from fish (EPA and DHA) are some of the healthiest fats we can eat. They help reduce inflammation and **protect the heart, brain, and eyes** [\[R\]](#), [\[R\]](#), [\[R\]](#).

Fatty fish are rich in EPA and DHA. They include [\[R\]](#):

- Salmon
- Tuna
- Herring
- Sardines

For optimal protection, try to get at least **two servings of fatty fish per week**. Fish oil supplements are available for those who don’t eat fish regularly [\[R\]](#).

How it helps

Incorporating fatty fish into your diet provides omega-3 fatty acids that exert anti-inflammatory effects, helping to reduce inflammation levels. Additionally, these fatty acids are linked to improved mood regulation, supporting emotional well-being.

8



EPA (Omega-3)

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take an EPA (Eicosapentaenoic acid) supplement in the form of fish oil or algae oil capsules, aiming for a dosage of 500-1000 mg per day. This should be taken with a meal to improve absorption, and continuous daily use is recommended for general heart health and to support mental well-being.

TYPICAL STARTING DOSE
500 mg

Description

EPA is an omega-3 fatty acid found in fish oil supplements and fatty fish like salmon. It is known for its anti-inflammatory properties and is associated with cardiovascular health, mood regulation, and cognitive function.

[Omega-3 fatty acids](#) are some of the healthiest fats we can eat. They help lower inflammation and protect the heart, brain, and eyes. Our bodies produce less omega-3s than we need for optimal health, so it's important to get enough through food or supplements [\[R\]](#), [\[R\]](#), [\[R\]](#).

There are three major types of omega-3s: ALA, EPA, and DHA. **EPA and DHA are vital for cognition and mental health** [\[R\]](#), [\[R\]](#).

The body can produce eicosapentaenoic acid (EPA) from alpha-linolenic acid (ALA), another type of omega-3 fatty acid found in plants. We can also get EPA directly from food sources such as oily fish, shellfish, and algae. EPA helps make DHA. [\[R\]](#), [\[R\]](#), [\[R\]](#).

Please note: *Fish oil can interact with blood thinners (like aspirin, Plavix, Coumadin). Consult your doctor before taking fish oil* [\[R\]](#).

How it helps

EPA, as an omega-3 fatty acid, reduces inflammatory markers in the body, which can alleviate mood disturbances related to chronic inflammation. By enhancing neurotransmitter function, EPA may also promote better mood regulation.

9



Dietary Tryptophan

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Increase your intake of tryptophan-rich foods in your daily diet. Examples include turkey, chicken, milk, cheese, yogurt, eggs, bananas, tofu, salmon, and nuts such as almonds and peanuts. Aim to incorporate these foods into at least one meal per day to meet the dietary recommendation for tryptophan.

Description

Tryptophan is an essential amino acid that plays a crucial role in serotonin production, contributing to mood regulation and sleep quality. Adequate tryptophan intake through diet supports emotional well-being and overall mental health.

[Tryptophan](#) is an amino acid, or a protein building block. **Humans can’t make tryptophan, so we need to get it from protein-rich foods** [\[R\]](#), [\[R\]](#).

Your body uses tryptophan to make [serotonin](#) and [melatonin](#). **These brain chemicals are important for mood and sleep** [\[R\]](#), [\[R\]](#).

An average adult needs at least **250-425 mg** of tryptophan per day, which is the amount you can get from [\[R\]](#):

- A pound of turkey or chicken
- Two cups of milk
- An ounce of canned tuna
- Two cups of oatmeal

Other foods high in tryptophan include **cheddar cheese, peanuts, pumpkin seeds, and seafood**. Most people get enough tryptophan from their diets, but supplements are also available [\[R\]](#).

How it helps

Incorporating dietary tryptophan helps enhance serotonin synthesis, which can regulate mood and potentially reduce inflammation-related mood disturbances, thereby improving emotional stability and overall mental health.

10



Anti-Inflammatory Diet

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Incorporate foods rich in omega-3 fatty acids, such as salmon and flaxseeds, fruits, vegetables, nuts, and whole grains into your daily meals. Avoid processed foods, red meats, and refined sugars. Aim for a balanced diet consisting mostly of plant-based foods and lean protein sources, adjusting portions sizes to meet your individual nutritional needs and health goals.

Description

An anti-inflammatory diet focuses on reducing inflammation in the body by emphasizing foods rich in anti-inflammatory compounds, such as fruits, vegetables, fatty fish, nuts, and seeds, while minimizing processed foods and those high in added sugars and trans fats.

Anti-inflammatory diets use healthy foods to reduce inflammation. These diets are generally high in [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Colorful fruits and vegetables
- Nuts and seeds
- Fish
- Olive oil
- Tea

They also tend to restrict [\[R\]](#), [\[R\]](#):

- Processed food
- Sugar and refined carbs
- Red meat

The [Mediterranean diet](#) and the DASH diet are good examples of anti-inflammatory diets [\[R\]](#), [\[R\]](#).

How it helps

An anti-inflammatory diet helps mitigate systemic inflammation, which has been linked to the exacerbation of mood disorders. By prioritizing nutrient-dense foods, this dietary approach may promote better mood stability and overall mental health.

11



Probiotics

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take a probiotic supplement containing 10 billion or more live cultures once daily, preferably with a meal or as directed by the packaging or a healthcare provider.

TYPICAL STARTING DOSE
30 billion CFU

Description

Probiotics are live beneficial bacteria and yeasts that can support gut health and digestive function when consumed as supplements or found in fermented foods like yogurt and sauerkraut. They may be beneficial to gut health, immune function, blood sugar, and mood.

[Probiotic bacteria](#) are “good” bacteria found mainly in the large intestine. They support your body and mind by [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Maintaining gut health
- Supporting a healthy immune system
- Improving your mood
- Helping to maintain healthy blood sugar

Prebiotics are certain types of fiber and other complex carbs that serve as food for gut bacteria. **They support gut health by helping boost the activity and growth of “good” bacteria** [\[R\]](#), [\[R\]](#).

Prebiotics are also added to foods and supplements. Common prebiotic ingredients are [\[R\]](#), [\[R\]](#):

- Oligo-fructose
- Oligo-galactose
- [Inulin](#)

Mixtures of probiotics and prebiotics are known as **synbiotics** [\[R\]](#).

How it helps

Probiotics modulate the gut microbiome, which can influence the production of neurotransmitters and inflammatory markers, thereby improving mood and reducing inflammation. This interplay supports emotional well-being, making probiotics beneficial for mood disorders associated with inflammation.

12



Limit Omega-6 Fatty Acids

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Reduce your intake of foods high in omega-6 fatty acids, such as processed snacks, fast foods, cakes, fatty meats, and certain vegetable oils like corn, soybean, and sunflower oil. Aim to consume these foods less frequently, perhaps limiting them to once a week or less, and focus on increasing your intake of foods rich in omega-3 fatty acids like fish, walnuts, and flaxseeds to help balance your omega-6 to omega-3 ratio.

Description

Balancing omega-6 and omega-3 fatty acids in the diet by limiting excessive omega-6 intake can help reduce inflammation and lower the risk of chronic diseases. Achieving a healthier ratio of these fatty acids promotes overall cardiovascular and metabolic health.

Omega-6 fatty acids are polyunsaturated fatty acids (PUFAs). Food sources of omega-6s include [\[R\]](#), [\[R\]](#):

- Vegetable oils (e.g., corn, soybean, sunflower, safflower, and cottonseed oils)
- Nuts, especially walnuts
- Seeds (e.g., safflower, sunflower, and pumpkin seeds)

The most highly consumed omega-6 fatty acid is linoleic acid. Linoleic acid is essential, meaning we have to get it from our diets. Our bodies use it to produce other omega-6s such as gamma-linolenic acid (GLA) and arachidonic acid (AA) [\[R\]](#).

How it helps

Limiting omega-6 fatty acids helps to decrease inflammatory markers in the body, which can alleviate symptoms of mood disorders by promoting a more stable mood and reducing the risk of mood-related fluctuations.

13



Omega-3 (Fish Oil)

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 1-2 g of omega-3 (fish oil) supplement daily, preferably with a meal to enhance absorption.

TYPICAL STARTING DOSE

2000 mg

Description

Omega-3 fatty acids are essential fats found in fatty fish like salmon, flaxseeds, and walnuts. They are known for their potential cardiovascular and brain health benefits, including reducing the risk of heart disease and supporting cognitive function.

[Omega-3 fatty acids](#) are some of the healthiest fats we can eat. They help lower inflammation and protect the heart, brain, and eyes. Our bodies produce less omega-3s than we need for optimal health, so it's important to get enough through food or supplements [\[R\]](#), [\[R\]](#), [\[R\]](#).

There are three major types of omega-3s: ALA, EPA, and DHA [\[R\]](#), [\[R\]](#).

Fatty fish are rich in EPA and DHA. They include [\[R\]](#):

- Salmon
- Tuna
- Herring
- Sardines

For optimal protection, try to get at least **two servings of fatty fish per week**. Fish oil supplements are available for those who don't eat fish regularly [\[R\]](#).

How it helps

Omega-3 fatty acids help reduce inflammatory markers in the body and promote neuroplasticity, which can enhance mood regulation. This dual action may alleviate symptoms associated with inflammation and support overall emotional well-being.

14



Meditation

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Set aside 10-20 minutes each day in a quiet space without distractions to practice meditation. Focus on your breath or perform guided meditation using an app or audio track.

TYPICAL STARTING DOSE

30 minutes

Description

Meditation is a mindfulness practice that can reduce stress, improve mental clarity, and promote relaxation. Regular meditation is associated with numerous mental and emotional health benefits, including reduced anxiety and enhanced emotional well-being.

[Meditation](#) is a relaxation technique that trains your mind to focus and redirect your thoughts. Some of the main types of meditation are [\[R\]](#):

- Mindfulness
- Focused
- Transcendental
- Mantra
- Moving

People use meditation to improve [\[R\]](#), [\[R\]](#):

- Stress and anxiety
- Mood
- Sleep disturbances
- Pain

How it helps

Meditation aids in reducing stress and anxiety, which can contribute to inflammatory processes in the body. By improving emotional well-being and promoting relaxation, it can help lower inflammation levels associated with mood disorders.

15



Social Activity

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Participate in group activities or gatherings with friends, family, or community members at least twice a week. This could include joining clubs, attending local events, or scheduling regular outings with friends. Aim for these social engagements to last at least an hour each time to foster meaningful connections and conversations.

TYPICAL STARTING DOSE

1 hour

Description

Engaging in social activities, such as spending time with friends and family or participating in group events, can have numerous mental and emotional health benefits. It helps reduce feelings of loneliness, enhances mood, and promotes a sense of belonging and well-being.

Social activities involve physical and mental activities with others that you enjoy and find meaningful. There are plenty of ways to stay socially active and maintain social well-being as you age.

Research has shown that a socially active lifestyle [\[R\]](#):

- Makes you less likely to develop certain chronic conditions.
- May promote a longer lifespan.
- Can improve mood and mental health.
- Can improve memory and other aspects of cognition.

How it helps

Participating in social activities stimulates the release of endorphins and oxytocin, which can mitigate the effects of inflammation on mood disorders. This engagement fosters emotional support and reduces feelings of loneliness, enhancing overall psychological well-being.

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Mindfulness

IMPACT

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EVIDENCE

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How to implement

Set aside 5-10 minutes each day to practice mindfulness meditation. Find a quiet place, assume a comfortable seated position, close your eyes, focus on your breathing, and observe your thoughts and sensations without judgment.

TYPICAL STARTING DOSE

30 minutes

Description

Mindfulness involves paying focused and non-judgmental attention to the present moment. It can reduce stress, improve emotional regulation, and enhance overall mental clarity and well-being.

Mindfulness is the practice of being aware of the present moment. When practicing mindfulness, a person acknowledges their thoughts, feelings, and sensations without any judgment [\[R\]](#).

Mindfulness and other types of [meditation](#) may improve [\[R\]](#):

- Weight and anxiety
- Low mood
- Sleep disturbances
- Pain
- High blood pressure

How it helps

Mindfulness practices help mitigate inflammation-related mood disturbances by fostering emotional regulation and reducing stress responses, which can exacerbate inflammatory processes. This engagement in present-moment awareness promotes psychological resilience and overall mental well-being.