

Serotonin

Biohacker Report

REPORT CATEGORY —



MENTAL HEALTH

Sample Client

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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

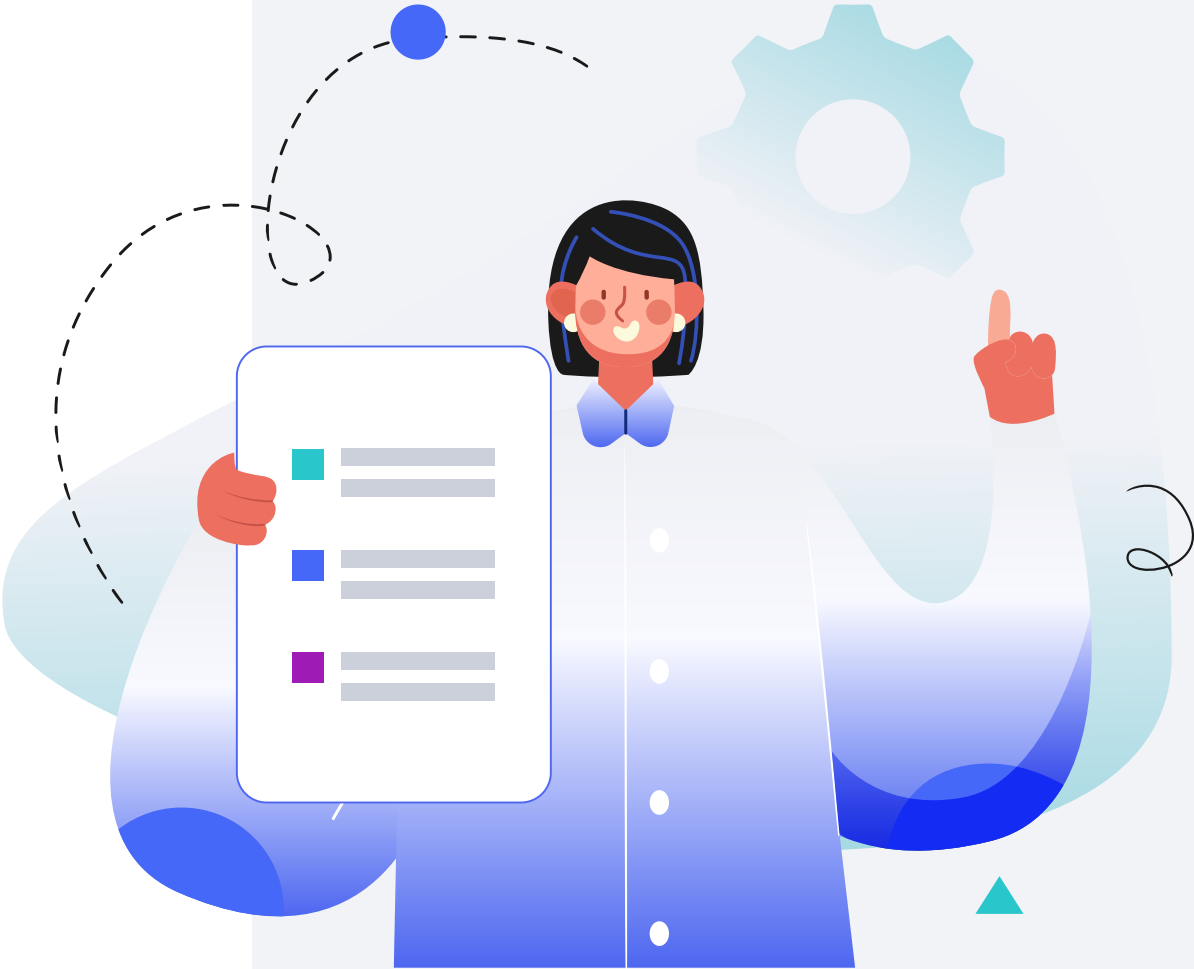
Male

HEIGHT

5ft 5" 165cm

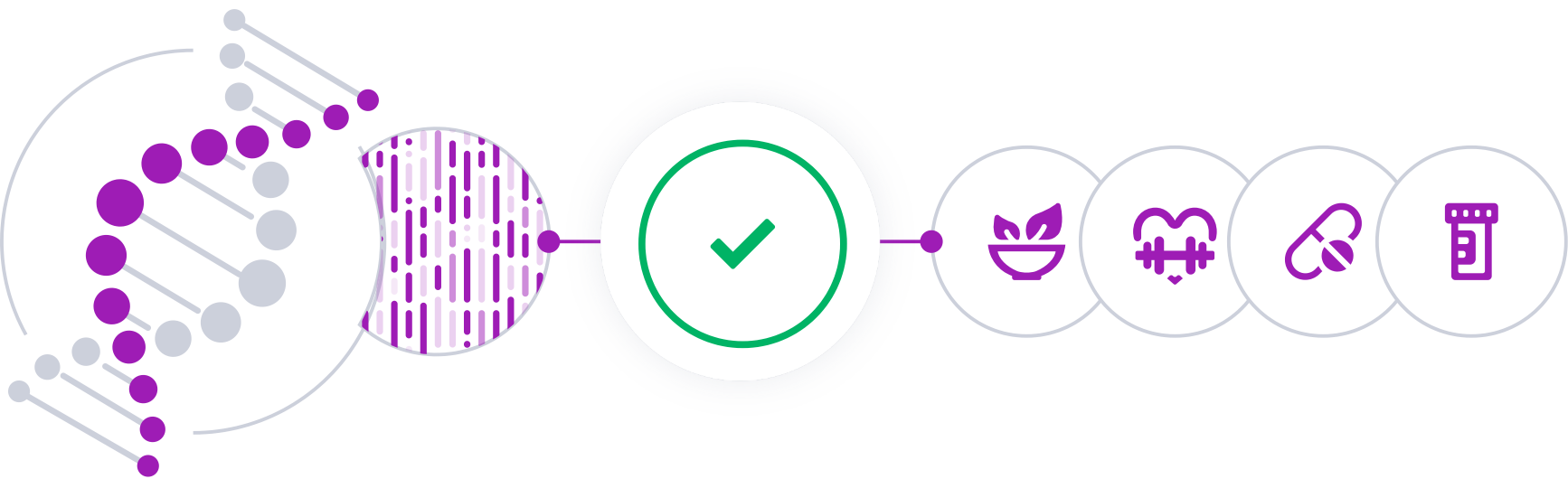
WEIGHT

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.

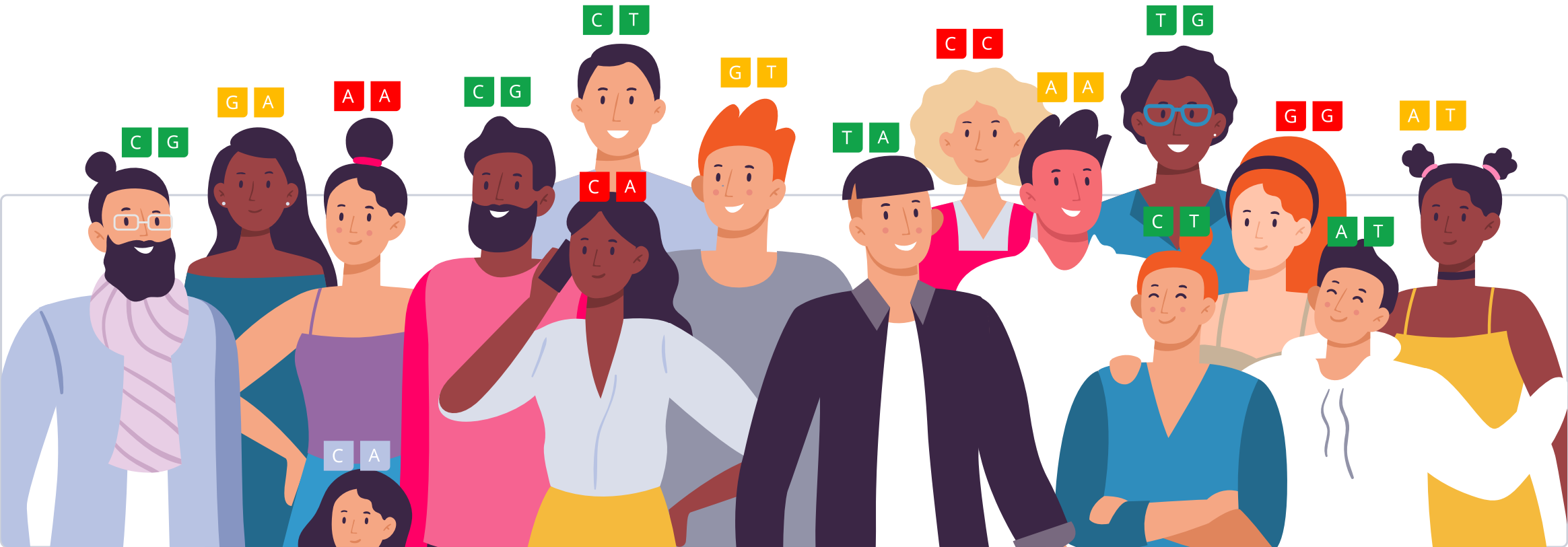


Similarly, our Trait Reports look at how your DNA influences your traits.



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

[Serotonin](#) is a crucial chemical messenger throughout the brain and body. It's sometimes called the "happiness hormone" due to its prominent role in mood and mental health [\[R\]](#), [\[R\]](#).

However, brain serotonin is only a fraction of the total serotonin found in our bodies. Most serotonin is made, stored, and released by the gut [\[R\]](#), [\[R\]](#).

Serotonin helps control [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Mood and emotions
- Movement
- Sleep
- Appetite
- Digestion
- Blood vessel function
- Immunity
- Reproductive health

More serotonin is not necessarily better. Excessive levels can cause [serotonin syndrome](#), a serious medical condition, and worsen some mental health problems [\[R\]](#), [\[R\]](#).

Natural ways to maintain healthy [serotonin levels](#) include:

- Exercise [\[R\]](#), [\[R\]](#)
- Sleep [\[R\]](#)
- Stress reduction [\[R\]](#)
- Sun exposure [\[R\]](#)
- Social interaction [\[R\]](#)
- Getting enough carbs, vitamin D, and omega-3s [\[R\]](#), [\[R\]](#), [\[R\]](#)

Serotonin Lab Tests and Genetics

Blood serotonin gets rapidly broken down into inactive metabolites. The main metabolite is **5-HIAA** (5-hydroxyindoleacetic acid). It can be measured in different fluids to estimate serotonin levels [\[R\]](#).

Blood serotonin generally doesn't reach the brain. Hence, **the levels of serotonin in the blood don't always correlate with the levels of active serotonin in the brain** [\[R\]](#).

A more reliable test of **brain serotonin** measures 5-HIAA levels in the *cerebrospinal fluid* (CSF). Low levels may be linked to [\[R, R, R, R, R\]](#):

- Aggressive and suicidal behavior
- Depression
- Parkinson's disease

Around **30%** of differences in brain serotonin levels may be due to genetics. Involved genes may play a role in [\[R\]](#):

- Mental health
- Transport and release of brain chemicals
- [Glutamate](#) activity

Keep in mind that your health condition, lifestyle, and environment also influence your brain serotonin levels.



Predisposed to higher brain serotonin levels based on 500 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
GPC5	rs61970269	AT
SRR	rs11078884	CT
PCSK5	rs7047865	TG
PROX1	rs4655303	AT
KIF25	rs2843012	AG
/	rs2244067	AT
HAS2	rs279612	GA
WWOX	rs78867184	GA
SDC3	rs4949316	GC
KCNJ5	rs11221522	GG
/	rs13402855	TT
CSMD1	rs77265424	AA
MCPH1	rs6559140	TT

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

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	Aerobic Exercise (Cardio)	1 hour	2	Lactoferrin	100 mg
3	Pyridoxine (Vitamin B6)	50 mg	4	Yoga	30 minutes
5	Tryptophan	500 mg	6	Vitamin B12	100 mcg
7	Dietary Tryptophan		8	Pranayama (Yoga Breathing)	15 minutes
9	Chromium	200 mcg	10	5-HTP	100 mg
11	Swimming	30 minutes	12	Acceptance and Commitment Therapy (ACT)	
13	Mindfulness-Based Stress Reduction (MBSR)	2 hours	14	Listen to Music	30 minutes
15	Social Activity	1 hour	16	Morning Bright Light Therapy	20 minutes
17	SAM-e	400 mg	18	Mindfulness Meditation	30 minutes
19	Spend Time in Nature	2 hours	20	Exercise At Least One Hour a Day	1 hour
21	Fish				

1



Aerobic Exercise (Cardio)

IMPACT

3 / 5

EVIDENCE

2 / 5

How to implement

Engage in at least 150 minutes of moderate-intensity aerobic exercise or 75 minutes of vigorous-intensity activity each week. Distribute this time over at least 3 days per week, avoiding consecutive days of vigorous exercise to allow for recovery.

TYPICAL STARTING DOSE

1 hour

Description

Engaging in regular aerobic exercise, such as running, swimming, or cycling, offers numerous health benefits, including improved cardiovascular fitness, weight management, and mood enhancement. It supports overall physical and mental well-being while reducing the risk of chronic diseases.

Cardio, short for cardiovascular exercise, is any type of physical activity that temporarily increases your heart rate. Examples include **running, cycling, swimming, and brisk walking**.

Regular cardio exercise has many benefits for your overall health. It can help lower your risk of heart disease and diabetes, support weight loss, and improve your mood and energy levels. To get the most out of cardio, try to do it for at **least 30 minutes, 3-5 times a week**.

Interval training is a type of cardio that combines periods of high-intensity training with brief rest periods.

How it helps

Exercise, especially cardio, is known to improve mood [\[R\]](#).

In line with this, several trials found increased serotonin levels after aerobic exercise in young adults, older participants, and patients with fibromyalgia [\[R, R, R\]](#).

2



Lactoferrin

IMPACT2 / 5

EVIDENCE1 / 5

How to implement

Take 100-200 mg of lactoferrin supplement per day, preferably on an empty stomach to enhance its absorption. Continue this regimen daily for 8 to 12 weeks to observe beneficial effects.

TYPICAL STARTING DOSE
100 mg

Description

Lactoferrin is a protein found in milk and other bodily fluids that has been studied for its potential health benefits, including immune system support and antimicrobial properties. It plays a role in promoting gut health.

Lactoferrin is a protein found in milk. It can bind to iron and travel all around the body [R].

Lactoferrin may help support [R, R]:

- Immunity
- Iron status

How it helps

Lactoferrin does not directly treat the condition of serotonin imbalance as it primarily functions in iron binding and immune response. However, since it has anti-inflammatory properties, it can potentially improve symptoms in physical illnesses that might relate to serotonin levels.

In a randomized pilot study in 50 people with Alzheimer's disease lactoferrin (250 mg/day for 3 months) increased **serum acetylcholine (ACh), serotonin (5-HT), antioxidant and anti-inflammatory markers, and expression of Akt in peripheral blood lymphocytes (PBL),** as well as **PI3K,** and **p-Akt** levels in PBL lysate. It also reduced **serum amyloid β (A β) 42, cholesterol, oxidative stress markers, IL-6, heat shock protein (HSP) 90, caspase-3, and p-tau, expression of tau, MAPK1, and PTEN.** Additionally, it enhanced **cognitive function** [R].

3



Pyridoxine (Vitamin B6)

IMPACT

2 / 5

EVIDENCE

1 / 5

How to implement

Take a pyridoxine (vitamin B6) supplement daily. Requirements range from 1.3 to 1.7 milligrams per day for adults, but supplement doses usually start from 50 mg. Consult with a healthcare provider for higher doses or specific medical conditions that might benefit from increased supplementation.

TYPICAL STARTING DOSE

50 mg

Description

A **vitamin B6 supplement** of up to 1.3-1.7 mg per day can be taken to meet needs not achieved through diet. Long term supplementation of vitamin B6 can be problematic, so talk to your doctor before using.

How it helps

The body requires vitamin B6 to produce serotonin from its precursors, such as 5-HTP (specifically, vitamin B6 acts as an enzyme *cofactor*) [\[R\]](#).

In line with this, **low levels of vitamin B6 are associated with increased depression symptoms** while a high dietary intake of vitamin B6-rich foods is associated with a lower risk of depression, especially in women [\[R, R, R, R, R, R, R, R\]](#).

In an animal study in Rhesus monkeys, a single dose of vitamin B6 was reported to increase serotonin production in the brain [\[R\]](#).

4



Yoga

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Practice yoga for at least 20 to 30 minutes a day, most days of the week. Choose a style that matches your fitness level and goals, and consider attending a class or using online resources to guide your practice.

TYPICAL STARTING DOSE

30 minutes

Description

Yoga is a mind-body practice that combines physical postures, breathing exercises, and meditation. It enhances flexibility, strength, and mental well-being and is used for stress reduction, relaxation, and overall health improvement.

[Yoga](#) combines breathing, stretching, and relaxation techniques. Practicing yoga may help [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Reduce [stress](#)
- Improve fitness
- Lower blood pressure and heart rate
- Manage pain

How it helps

A 12-week yoga program with Pranayama significantly increased serotonin levels in a non-placebo-controlled trial of 25 healthy volunteers [\[R\]](#).

5



Tryptophan

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Take 500 mg of tryptophan supplement daily. This dosage can be taken all at once, preferably before bedtime to support sleep, or as directed by a healthcare professional.

TYPICAL STARTING DOSE

500 mg

Description

Tryptophan is an essential amino acid found in various protein-rich foods. It serves as a precursor for serotonin, a neurotransmitter that plays a role in mood regulation. Tryptophan is used in dietary supplements to potentially support mood and sleep disorders, although its effectiveness can vary among individuals.

[Tryptophan](#) is an amino acid. Your body uses it to make proteins and some hormones. **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 [\[R, R\]](#).

How it helps

In the body, serotonin is made from 5-HTP, and 5-HTP is made from L-tryptophan. Therefore, increasing the levels of either of these “building blocks” can, in theory, lead to increased overall levels of serotonin.

Limited research suggests that taking L-tryptophan may raise plasma serotonin, and may improve certain cognitive, motor, or gut issues in those who are deficient [\[R, R\]](#).

6



Vitamin B12

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Take a 50 mcg vitamin B12 supplement daily, preferably with a meal to enhance absorption.

TYPICAL STARTING DOSE

100 mcg

Description

Vitamin B12 is a water-soluble vitamin primarily found in animal-based foods like meat, fish, and dairy products. It plays a crucial role in maintaining healthy nerve cells, DNA synthesis, and red blood cell formation. Vitamin B12 deficiency can lead to anemia, neurological issues, and fatigue.

[Vitamin B12](#) is important for [\[R\]](#), [\[R\]](#):

- Building DNA
- Nervous system function
- Energy production

You can get vitamin B12 from [\[R\]](#):

- Animal products (meat, fish, eggs, and dairy)
- Fortified foods
- Supplements

Adults should be getting **2.4 micrograms** of vitamin B12 every day [\[R\]](#).

How it helps

Vitamin B12 and folate (vitamin B9) are each necessary for the *folate cycle*, which helps convert tryptophan into serotonin (by producing and recycling essential cofactors) [\[R\]](#).

A high dietary intake of vitamin B12 may be protective against depression, while a low intake may increase the risk. Adding vitamin B12 to antidepressant therapy, both alone and combined with folate, may reduce the severity and recurrence of depression symptoms [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

In a cohort study of 549 community-dwelling seniors, those with vitamin B12 and B9 deficiencies were reported to be relatively more likely to show signs of “irreversible” problems with cognition (such as deficits in memory and attention) [\[R\]](#).

7



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

In the body, serotonin is made from 5-HTP, and 5-HTP is made from L-tryptophan. Therefore, increasing the levels of either of these “building blocks” (*metabolic precursors*) can, in theory, lead to increased overall levels of serotonin.

Limited research suggests that taking L-tryptophan may raise plasma serotonin, and may improve certain cognitive, motor, or gut issues in those who are deficient [\[R, R\]](#).

8



Pranayama (Yoga Breathing)

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Practice pranayama for 10 to 15 minutes daily. Choose a quiet, comfortable spot where you won't be disturbed. Begin with simple techniques like Ujjayi (Ocean Breath) or Anulom Vilom (Alternate Nostril Breathing), gradually working your way up to more advanced techniques. Consistency is key for observing benefits.

TYPICAL STARTING DOSE

15 minutes

Description

Pranayama is a yogic practice involving controlled and mindful breathing techniques. It is believed to enhance mental clarity, reduce stress, and improve respiratory health by optimizing the flow of life force energy (prana) in the body.

How it helps

A 12-week yoga program with Pranayama significantly increased serotonin levels in a non-placebo-controlled trial of 25 healthy volunteers [\[R\]](#).

9



Chromium

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Take a 200 mcg chromium supplement daily, preferably with a meal to enhance absorption.

TYPICAL STARTING DOSE

200 mcg

Description

Chromium is a trace mineral that plays a role in insulin sensitivity and glucose metabolism. Adequate chromium intake through diet or supplements may help support blood sugar control and overall metabolic health.

[Chromium](#) (Cr) is a trace element. It helps regulate carb, fat, and protein breakdown [\[R\]](#).

Women need 20-25 micrograms (mcg) of chromium per day, while men need 30-35 mcg [\[R\]](#).

It’s easy to get chromium from your diet. Good sources include [\[R\]](#):

- Grape and orange juice
- Ham
- Beef
- Lettuce

You can also get chromium from supplements [\[R\]](#).

How it helps

The study evaluated chromium picolinate's effects on diabetic rats. CrPic supplementation improved carbohydrate metabolism and serotonergic properties, increasing insulin, tryptophan, and serotonin levels while decreasing cortisol. It was well-tolerated without adverse effects, supporting its use in diabetes [\[R\]](#).

10



5-HTP

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Take 100 mg of 5-HTP as a supplement daily, ideally with a glass of water. It can be taken at any time of the day but taking it at the same time each day may help establish a routine.

TYPICAL STARTING DOSE
100 mg

Description

5-HTP is a building block for serotonin. 5-HTP and serotonin help make melatonin, a hormone that promotes sleep. People mainly use 5-HTP as a mood-boosting supplement. It may also help reduce appetite, help with chronic pain and fatigue, and improve sleep quality.

5-HTP is a building block for the “happiness hormone” serotonin. 5-HTP and serotonin help make melatonin, a hormone that promotes sleep [R].

People mainly use 5-HTP as a mood-boosting supplement [R, R]. According to early research, it may also:

- Reduce appetite [R, R, R]
- Help with chronic pain and fatigue [R, R, R]
- Improve sleep quality [R, R]

Please note: 5-HTP can interact with SAM-e, St. John’s wort, and different medications. Combining it with antidepressants can be dangerous and even life-threatening. Never take 5-HTP without consulting your doctor [R, R, R].

How it helps

5-HTP is a precursor to serotonin and can support the body's production of this neurotransmitter, thereby influencing mood and behavior.

11



Swimming

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Incorporate swimming into your routine for at least 30 minutes, 3 times a week. Choose a pace and stroke that keeps your heart rate elevated yet allows you to breathe comfortably. Continue this practice regularly for long-term health benefits.

TYPICAL STARTING DOSE

30 minutes

Description

Swimming is a whole-body workout that engages various muscle groups, promoting strength and endurance. It helps keep the heart and lungs healthy, improves flexibility, and can even help reduce stress. Regular swimming is a great way to maintain a balanced, fit, and healthy lifestyle.

How it helps

Swimming is an exercise that can lead to the release of endorphins and benefit mental well-being, which might include serotonin modulation.

12



Acceptance and Commitment Therapy (ACT)

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Participate in Acceptance and Commitment Therapy (ACT) sessions with a licensed therapist weekly for a minimum of 8 to 12 weeks. During this period, engage in daily ACT exercises at home as recommended by your therapist, such as mindfulness practices and writing exercises that help you connect with your values and accept your thoughts without judgment.

Description

ACT is a type of psychotherapy that focuses on accepting one's thoughts and feelings while committing to actions that align with personal values. It is used to improve mental well-being and treat conditions like anxiety and depression.

How it helps

ACT is a form of psychotherapy that helps individuals align their actions with their personal values, potentially reducing stress and improving overall mental well-being.

13

Mindfulness-Based Stress Reduction (MBSR)

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Enroll in an 8-week MBSR course, which includes a weekly 2.5-hour class, one all-day class after the sixth week, and 45 minutes of daily home practice guided by assignments and instructional recordings.

TYPICAL STARTING DOSE

2 hours

Description

Mindfulness-Based Stress Reduction (MBSR) is a structured program that teaches mindfulness techniques to reduce stress and improve overall mental and emotional health. MBSR has been shown to help individuals cope with chronic pain, anxiety, and other stress-related conditions.

How it helps

MBSR promotes mindfulness, which can decrease stress and potentially impact serotonin regulation.

14

Listen to Music

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Select music that aligns with your preference and listen for at least 30 minutes per day. This can be done while engaging in other activities or as a standalone activity to relax or energize yourself, depending on the genre chosen.

TYPICAL STARTING DOSE

30 minutes

Description

Listening to music can have a positive impact on mental and emotional well-being, reducing stress, improving mood, and even enhancing cognitive performance. Music therapy is used in various healthcare settings to support mental health and overall quality of life.

How it helps

Listening to music can elevate mood and reduce stress, which might influence serotonin neurotransmission in the brain.

15



Social Activity

IMPACT

0 / 5

EVIDENCE

0 / 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

Engaging in meaningful social interactions can boost mood and counteract stress, which may have a beneficial effect on serotonin regulation.

16



Morning Bright Light Therapy

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Expose yourself to a light therapy box, which mimics natural sunlight, for about 20-30 minutes each morning within the first hour of waking up. It's important to do this daily, especially during months with less natural sunlight, to help manage symptoms of Seasonal Affective Disorder (SAD) or other conditions influenced by light exposure.

TYPICAL STARTING DOSE

20 minutes

Description

Bright light therapy, often used to treat conditions like seasonal affective disorder (SAD) and certain sleep disorders, involves exposure to specific wavelengths of light. It can help regulate sleep patterns, improve mood, and alleviate symptoms associated with mood disorders.

[Bright light therapy](#) involves exposing people to artificial indoor light via a “light box.” This box is often placed nearby for 30 minutes each morning. A light therapy box should [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Provide 10,000 lux of light
- Filter out UV light

Light therapy may improve mood and help with certain mental health conditions [\[R\]](#), [\[R\]](#).

How it helps

Exposure to bright light, especially in the morning, can regulate mood and circadian rhythms, which are closely linked with serotonin production.

17



SAM-e

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Take 400-1600 mg of SAM-e as a supplement daily, preferably on an empty stomach to enhance absorption. It is often recommended to start with low dosage and observe how your body responds over a few weeks, adjusting as necessary under the guidance of a healthcare provider.

TYPICAL STARTING DOSE

400 mg

Description

SAM-e is a chemical that helps maintain liver and brain health. Your body makes SAM-e from the amino acid *methionine*, but it’s also available as a supplement [\[R\]](#).

SAM-e supplementation may help with:

- Joint pain [\[R\]](#)
- Liver disease [\[R\]](#)
- Depression [\[R\]](#)

Please note: SAM-e may not be safe for people with a bipolar disorder. It may also interact with 5-HTP, St. John’s wort, and different medications. Combining it with antidepressants can be dangerous and even life-threatening. Never take SAM-e supplements without consulting your doctor [\[R\]](#), [\[R\]](#), [\[R\]](#).

How it helps

SAM-e participates in the creation of essential brain compounds like neurotransmitters, including serotonin, which can be beneficial for mood support.

18



Mindfulness Meditation

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Practice mindfulness meditation for 10-20 minutes daily. Find a quiet, comfortable place to sit or lie down, then focus on your breath, observing thoughts and sensations without judgment. Consistency is key, so try to incorporate it into your daily routine, perhaps in the morning or before bed.

TYPICAL STARTING DOSE

30 minutes

Description

Mindfulness meditation involves focused attention on the breath or a specific point of focus to cultivate mindfulness and reduce stress. Regular meditation practice is associated with improved mental clarity, emotional regulation, and overall well-being.

How it helps

Mindfulness meditation can improve mental health by reducing stress and anxiety, which can help regulate serotonin levels.

19



Spend Time in Nature

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Aim to spend at least 120 minutes per week in natural environments, such as parks, forests, or beaches. This can be divided into short durations throughout the week, for example, 17 minutes per day or longer sessions on weekends.

TYPICAL STARTING DOSE

2 hours

Description

Spending time in nature, also known as ecotherapy or forest bathing, is a wellness practice that involves immersing oneself in natural environments. It offers mental and physical health benefits, including reduced stress, improved mood and eye health, healthier weight, and blood sugar control.

Spending over 2 hours in nature every week is linked to better health and well-being [R].

Spending more time in nature or in urban green areas may help support [R, R, R, R, R]:

- Healthy weight
- Blood sugar control
- Heart health
- Mental health
- Eye health

To get in touch with nature, you can [R, R]:

- Go on a walk
- Go biking or camping
- Garden
- Visit a park

How it helps

Being outdoors and spending time in nature has been shown to decrease stress and improve mood, positively impacting serotonin levels.

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Exercise At Least One Hour a Day

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Dedicate a minimum of 60 minutes to moderate-intensity activities such as brisk walking, swimming, or cycling. Do this most days of the week, aiming for at least 5 days to optimize benefits.

TYPICAL STARTING DOSE

1 hour

Description

[Exercise](#) can do wonders for your health. It can help you lose weight, improve your heart health, boost your mood, and more [\[R\]](#).

There are many ways you can be active. You can walk, run, swim, dance, or play team sports. **Everything counts, and it's never too late to start!**

Try to get at least **60 minutes of moderate physical activity on most days**, including walking. **Getting a mix of cardio (min 150 min/day) and strength training (min 2 times a week) may be optimal.**

How it helps

Engaging in physical exercise can enhance mood, decrease stress, and stimulate the release of neurotransmitters, including serotonin.

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Fish

IMPACT

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EVIDENCE

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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

Fish is high in omega-3 fatty acids which are beneficial for brain health and can support serotonin regulation.

Next Steps

Remember, your genes only tell one important part of your health story!

Now that you've seen your DNA-based results for this health topic, let's take a look at other contributing factors.

Your lab results

Your lab results are impacted by the combined effect of your genes, environment and lifestyle.

Lab tests will give you the best picture of your current health status, while your genes provide insight into your health predispositions and which recommendations are best for you.