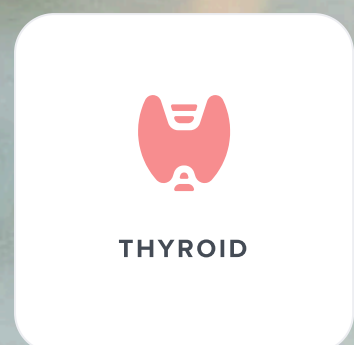


Underactive Thyroid

DNA Health Report

REPORT CATEGORY —



Sample Client

Report date: 15 January 2026

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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

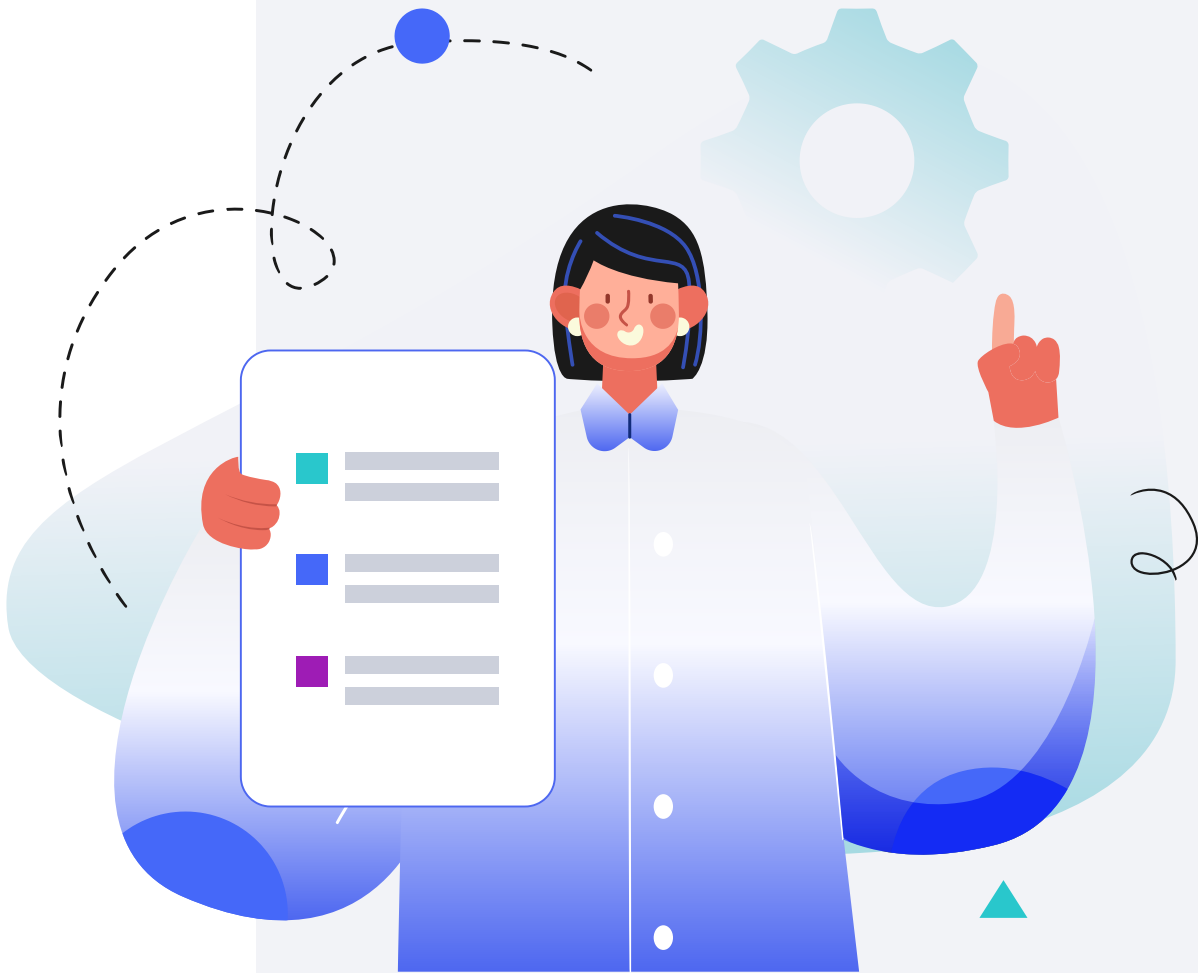
Male

HEIGHT

5ft 5" 165cm

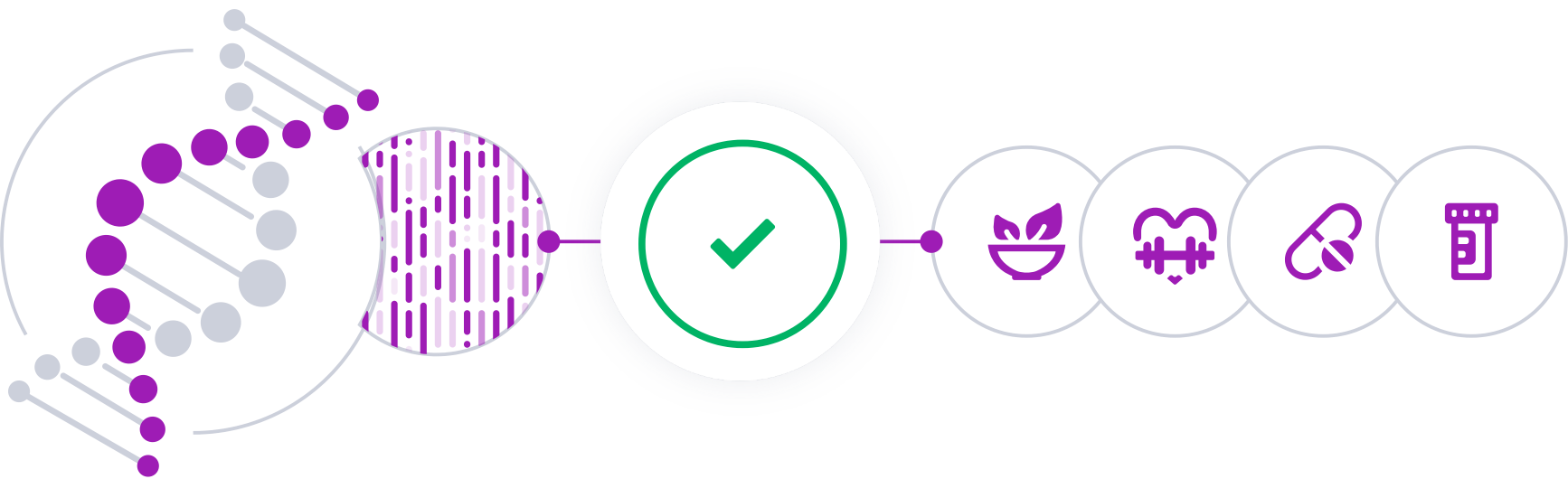
WEIGHT

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.

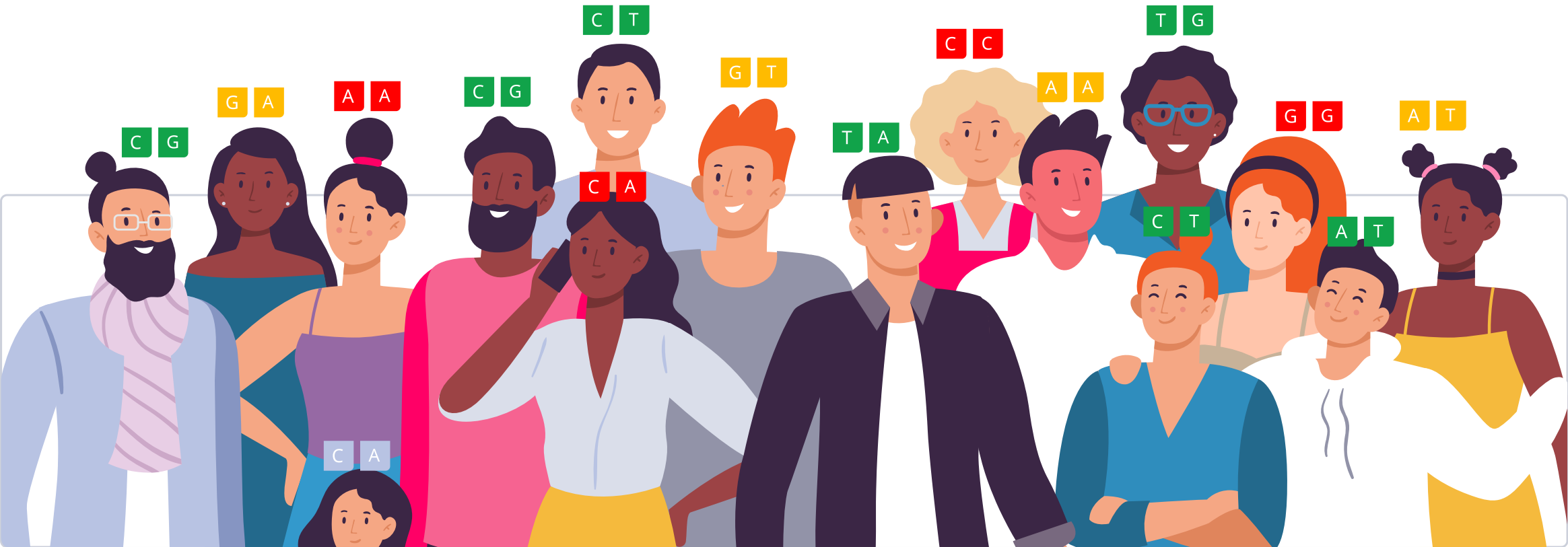


Similarly, our Trait Reports look at how your DNA influences your traits.



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

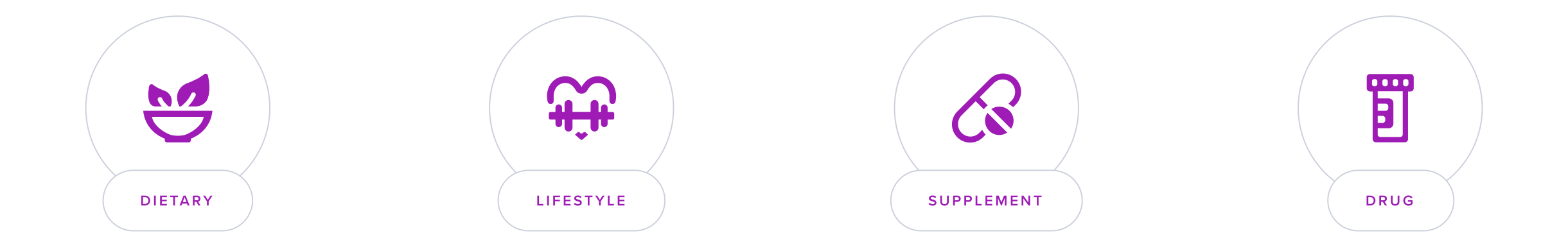
You have 2 risk alleles

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

How much do you know about the butterfly-shaped organ located in your lower neck?

If you don't already know, we're talking about the **thyroid gland**. The thyroid is responsible for maintaining many bodily functions. It also plays a role in growth and development. So if you have a thyroid disorder, it can have a pretty big impact on your health [R].

Thyroid disorders generally occur if your gland is over- or underactive. Underactive thyroid is called **hypothyroidism**. It's a fairly common disorder, affecting around **20 million Americans**. The main drug for this condition, levothyroxine, is the **second most prescribed drug in the US** [R, R]!

(Side note: If you'd like to read more about an overactive thyroid, check out our Overactive Thyroid Report.)

If you're concerned you may have an underactive thyroid, then it's crucial to consult a medical professional.

The key take-home is that you want to do everything possible to optimize your thyroid health. **One strategy that may give you an edge over your thyroid health is using information contained in your genes.**

For example, take the [FTO](#) gene. Certain variants of this gene may increase your risk of being overweight. Being overweight may decrease your thyroid activity. If you're at an increased risk of weight gain, your thyroid activity may particularly benefit from better weight management [R, R, R].

Alternatively, low thyroid activity may be linked to iron deficiency. Carrying a particular variant of the [TMPRSS6](#) gene may increase your risk of iron deficiency. In this instance, you may benefit from getting more iron [R, R].

Understanding your genetics definitely has the potential to improve your thyroid health.

Ultimately, the best course of action for improving your thyroid health should be discussed with your doctor.

Read on to find out more about:

- **How your genetics play a role in thyroid health**
- **Your genetic risk score based on over 700 genetic variants**
- **Personalized recommendations based on your genetics**

About Underactive Thyroid

Key Takeaways:

- Up to **65%** of differences in thyroid hormone levels may be due to genetics.
- Other risk factors for underactive thyroid include: autoimmune conditions, too much/little iodine, and radiation treatment.
- It can cause fatigue, sensitivity to cold, constipation, goiter, weight gain, voice changes, dry skin, and puffy face.
- Up to **1 in 10** people may have an underactive thyroid, and half of those don't know they have it.
- Be aware of the factors and symptoms, even if your genetic risk is low.
- Click the **Recommendations** tab for potential dietary and lifestyle changes and **next steps** for relevant labs.

The thyroid is a gland found in the front of the neck. It produces hormones T3 and T4, which affect [\[R\]](#):

- Heart function
- Energy production
- Breathing rate
- Bone growth
- Alertness
- Reproductive health

If the thyroid does not produce enough of these hormones, the whole body may suffer ill effects. This condition is known as *hypothyroidism* (underactive thyroid) [\[R\]](#), [\[R\]](#), [\[R\]](#).

Up to 10% of people may have an underactive thyroid. Of these, about half don't know they have it [\[R\]](#).

Hypothyroidism can have a number of causes. These include [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Autoimmune conditions like *Hashimoto's disease*



TYPICAL LIKELIHOOD

Typical likelihood of hypothyroidism based on 875 genetic variants we looked at



Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
CTLA4	rs3087243	GG
PDE8B	rs4704397	AG
TPO	rs11675434	CT
VAV3	rs7537605	AG
FCRL3	rs7522061	CT
TSHR	rs12101261	CT
SH2B3	rs653178	CT
MICB	rs2517532	GA
TYK2	rs34536443	GG
/	rs9271365	GT
RASGRP1	rs12593201	AA
TPO	rs732609	AC
SESN3	rs4409785	TC
CLECL1	rs370475698	DEL(A)T
PDE8B	rs1479565	AG
ARID5B	rs71508903	CT
TPO	rs11675342	CT
SESN1	rs1364450	CA
PLGRKT	rs911760	CA
SASH1	rs9497965	CT
FAP	rs2111485	GA
IL2RA	rs3118469	TA
TRMO	rs925489	CC
NBL1	rs10917477	AA

- Too much or too little iodine
- Thyroid inflammation (*thyroiditis*)
- Surgery that removes all or part of the thyroid gland
- Radiation treatment
- Some medications
- **Genetics**

If your doctor suspects hypothyroidism, they may look for signs and symptoms like [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Fatigue
- Sensitivity to cold
- Constipation
- Enlarged thyroid gland (*goiter*)
- Weight gain
- Voice changes
- Dry skin
- Puffy face

Diagnosis is confirmed with blood tests. These tests check for hormone levels that indicate the thyroid is not as active as it should be [\[R\]](#).

If you have an underactive thyroid (hypothyroidism), treatment will depend on your hormone levels, medical history, and your signs and symptoms.

The standard treatment involves a daily dose of synthetic thyroid hormone medication that can restore thyroid hormone levels and reverse the signs and symptoms. But keep in mind that it may take some time to adjust the dosage of thyroid hormones so they are right for you [\[R\]](#).

It is extremely important to treat hypothyroidism according to your doctor's instructions. Left untreated, hypothyroidism can lead to *myxedema coma*. This condition is a medical emergency. Even with treatment at a hospital, up to 60% of these cases can lead to death [\[R\]](#).

Up to 67% of differences in thyroid hormone levels may be attributed to genetics. Genes that may affect thyroid function include [\[R\]](#), [\[R\]](#):

- [PDE8B](#)
- [DIO1](#)
- [CAPZB](#)
- [TSHR](#)
- [FOXE1](#)

GENE	SNP	GENOTYPE
PTPN22	rs6679677	CC
PTPN22	rs2476601	GG
FOXE1	rs1867277	AA
TNF	rs1800629	GG
DPH5	rs77046277	CC
ADCY7	rs78534766	CC
FLT3	rs76428106	TT
/	rs187707293	TT
TRMO	rs7030280	CC
BACH2	rs6908626	GG
ACAP1	rs61759532	CC
C1QTNF6	rs229528	CC
CD44	rs736374	GG
CBLB	rs13090803	GG
TNFRSF14	rs2234167	GG
RAB5C	rs9902341	CC
RBPJ	rs7441808	AA
DIO1	rs2235544	CC

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	Thyroid Extract	2	Balance Iodine Intake
3	Avoid Organochlorine Pesticide Exposure	4	Vitamin B1210 mcg
5	Low-Goitrogenic Diet	6	Zinc10 mg
7	Avoid Food Triggers	8	Avoid Organophosphate Pesticide Exposure
9	Maintain Optimal Iron Levels10 mg	10	Selenium Supplements50 mcg
11	Dietary Iron	12	Aerobic Exercise (Cardio)1 hour
13	Sleep for 7+ Hours	14	Strength Training1 hour
15	Maintain Optimal Vitamin D Levels1000 iu	16	Exercise At Least One Hour a Day1 hour
17	Gluten-Free Diet	18	Vitamin A700 mcg
19	Limit Soy Intake	20	Relaxation Techniques30 minutes
21	Anatabine1 mg	22	Avoid L-Carnitine Supplements500 mg
23	Retinyl Palmitate	24	Black Seed (Black Cumin)1000 mg
25	Low-Level Laser Therapy (LLLT)30 seconds	26	Lactose-Free Diet
27	Aromatherapy30 minutes	28	Ashwagandha120 mg
29	Low-Carbohydrate Diet	30	Autoimmune Protocol (AIP) Diet

1



Thyroid Extract

IMPACT

4 / 5

EVIDENCE

5 / 5

How to implement

Thyroid extract, a drug prescribed for hypothyroidism, is typically taken orally once daily, preferably on an empty stomach, 30 minutes to 1 hour before breakfast. Your healthcare provider will determine the exact dosage based on your condition and response to treatment. It's important to take this medication consistently at the same time each day.

Description

thyroid extract is a medication derived from the thyroid glands of animals, primarily used to treat thyroid hormone deficiencies. It provides essential thyroid hormones like T3 and T4, helping regulate metabolism, energy production, and overall body function.

How it helps

Desiccated thyroid extract is a mix containing both T3 and T4. In a 16-week non-placebo-controlled trial of 70 people with hypothyroidism, this extract was as effective as LT4 alone at improving the symptoms. An advantage was that people on this therapy tended to be more satisfied, possibly because it made them lose weight. The higher satisfaction was confirmed in a survey on 12,146 patients [\[R, R\]](#).

Nevertheless, physicians recommend levothyroxine (LT4 alone) over combinations of T3 and T4, as seen in 4 meta-analyses (the most recent one with 12 trials) [\[R, R, R, R\]](#).

However, the combination may be preferred in people with reduced T3 production. This includes those with mutated variants of the enzyme that breaks down T4 into T3 (type 2 deiodinase), thyroid cancer, or who have undergone thyroid removal. A meta-analysis of 25 studies and 1,735 patients concluded that the T4 and T3 combination increases free T3 and decreases TSH levels better than T4 alone in people with overt hypothyroidism [\[R, R, R, R, R\]](#).

2



Balance Iodine Intake

IMPACT3 / 5

EVIDENCE4 / 5

How to implement

To balance iodine intake, consume foods rich in iodine such as fish, dairy, and eggs, aiming for about 150 micrograms per day for adults. Consider using iodized salt in cooking, but be mindful not to exceed the daily limit. Regularly assess iodine levels, especially if you are pregnant, lactating, or have thyroid issues.

Description

Iodine intake is essential for thyroid function and is obtained through iodized salt and foods like seafood and dairy products. Balanced iodine intake is necessary to prevent thyroid disorders.

[Iodine](#) is an element that helps make thyroid hormones. It’s important for [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Thyroid function
- Healthy pregnancy
- Cognitive function

Iodine can be found in foods like [\[R\]](#):

- Seaweed
- Enriched bread
- Fish (cod)
- Dairy
- Iodized salt

Adults should be getting **150 micrograms** of iodine per day. People who are deficient can take iodine as a supplement. However, most people in the US and other developed countries don’t need to take extra iodine. Excess iodine can be harmful [\[R\]](#), [\[R\]](#).

How it helps

Iodine helps make thyroid hormones [\[R\]](#).

In line with this, low iodine levels are linked to an underactive thyroid [\[R\]](#), [\[R\]](#), [\[R\]](#).

Getting enough iodine from food or supplements may support normal thyroid function. However, a sudden increase in iodine intake may be harmful to people who are iodine-deficient [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

Too much iodine is also linked to an underactive thyroid. The human body can normally adapt to high levels of iodine. This adaptation prevents excess thyroid hormones from being made. In some people, the thyroid can remain underactive when iodine intake drops [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

It is thus important to balance iodine intake [\[R\]](#), [\[R\]](#), [\[R\]](#).

Experts don’t recommend iodine supplements unless iodine deficiency is confirmed [\[R\]](#), [\[R\]](#).

Please note: *Iodine supplementation can be harmful and may make hypothyroidism worse. Supplement only if deficient and instructed by your doctor.*

3



Avoid Organochlorine Pesticide Exposure

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Minimize exposure by choosing organic fruits and vegetables, thoroughly washing produce before consumption, and avoiding areas where organochlorine pesticides are applied. Consider using air purifiers in homes close to agricultural areas to reduce indoor pesticide levels.

Description

Reducing organochlorine pesticide exposure involves minimizing contact with pesticides like DDT, which can accumulate in the body and potentially lead to adverse health effects, including disruption of hormonal functions and carcinogenicity.

How it helps

A meta-analysis of 9 studies concluded that exposure to organochlorines increases the risk of hypothyroidism by 33% [\[R\]](#).

Another meta-analysis (32 studies) associated prenatal organochlorine exposure with lower total T4 levels [\[R\]](#).

4



Vitamin B12

IMPACT3 / 5

EVIDENCE3 / 5

How to implement

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

TYPICAL STARTING DOSE

10 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 can help with symptoms of an underactive thyroid, as a deficiency is commonly found in people with this condition, causing symptoms like fatigue and weakness. However, it doesn't directly treat the underactive thyroid, it merely aids in managing the associated symptoms.

A [meta-analysis of 6 studies](#) found a prevalence of vitamin B12 deficiency of **10-40.5% in people with hypothyroidism and 6.3-55.5% in those with autoimmune thyroid disease** [\[R\]](#).

In line with this, a [meta-analysis of 64 studies and 28,597 participants](#) found that patients with hypothyroidism have **60.67 pg/mL lower vitamin B12 and 27% of them are deficient** [\[R\]](#).

A more recent [study of 130 patients with autoimmune thyroid disease](#) associated this condition with **vitamin B12 deficiency** and found a **negative correlation between vitamin B12 and anti-TPO levels** [\[R\]](#).

5



Low-Goitrogenic Diet

IMPACT3 / 5

EVIDENCE3 / 5

How to implement

Consume fewer goitrogenic foods, such as broccoli, Brussels sprouts, cabbage, and cauliflower, particularly in their raw form. If these are to be included in your diet, prefer cooking them as it reduces their goitrogenic effect. Aim for a balanced intake of non-goitrogenic fruits and vegetables daily.

Description

A low-goitrogenic diet may be recommended for individuals with thyroid conditions to minimize the impact of goitrogens on thyroid function, supporting better thyroid health and hormone regulation.

How it helps

Goitrogens are substances that reduce iodine uptake by the thyroid gland, resulting in reduced production of thyroid hormones [\[R\]](#), [\[R\]](#).

Foods rich in goitrogens include [\[R\]](#):

- Cruciferous vegetables (cabbage, broccoli, cauliflower, turnip)
- Root vegetables (cassava)
- Cereals (sorghum, millet, maize)
- Legumes (soybean, Lima bean)

Note, however, that most of them will only interfere with your thyroid function if you have iodine deficiency or eat high amounts, and cooking these vegetables may inactivate the goitrogenic compounds [\[R\]](#).

In the case of pearl millet, its consumption has been associated with goiter and hypothyroidism even despite dietary iodine sufficiency in 3 studies of 2,326 children. Combining dietary millet with iodine deficiency further increased the risk [\[R\]](#), [\[R\]](#), [\[R\]](#).

While collards, Brussels sprouts, and some Russian kale contain sufficient amounts of goitrin to inhibit iodine uptake, turnip tops, commercial broccoli, broccoli rabe, and kale belonging to *Brassica oleracea* can be considered of minimal risk. In line with this, consuming a broccoli sprout beverage for 84 days had no effects on TSH, free T4, and thyroglobulin in a placebo-controlled trial of 45 women [\[R\]](#), [\[R\]](#).

Consuming 200 g/day of boiled cassava leaves 2x/day for 12 days lowered T3 and T4 levels while increasing urinary iodine excretion in an uncontrolled trial of 20 healthy volunteers. However, milling or sufficient iodine intake reduced the goitrogenic potential of cassava in 2 studies of 493 people [\[R\]](#), [\[R\]](#), [\[R\]](#).

A study of 767 Ethiopian children associated a high intake of cabbage (normal and Abyssinian), taro root, and banana with lower urinary iodine concentrations [\[R\]](#).

Goitrogen compounds include:

- Goitrin (found in cruciferous vegetables) [\[R\]](#)
- Isothiocyanates (found in cruciferous vegetables, cassava, and sorghum) [\[R\]](#), [\[R\]](#), [\[R\]](#)
- C-glycosylflavones (found in pearl millet) [\[R\]](#)
- Isoflavones (found in soy) [\[R\]](#)

6



Zinc

IMPACT

3 / 5

EVIDENCE

2 / 5

How to implement

Take a 15 mg zinc supplement daily, ideally with a meal to enhance absorption.

TYPICAL STARTING DOSE

10 mg

Description

Zinc is an essential mineral found in various foods, including meat, dairy, and nuts. It is crucial for immune function, wound healing, DNA synthesis, and maintaining healthy skin and nails. Zinc supplements are sometimes used to support immune health and manage zinc deficiencies.

[Zinc](#) is an essential mineral. Your body needs it to [\[R\]](#), [\[R\]](#):

- Defend against disease
- Protect DNA from damage
- Heal wounds
- Control blood sugar

Some of the best sources of zinc include **shellfish, pork, beef, and beans**. It is also available as a supplement [\[R\]](#).

Adults should get **8-11 mg of zinc** per day [\[R\]](#).

How it helps

Low blood zinc levels are linked to an underactive thyroid. This is likely because zinc supports the normal release of thyroid hormones [\[R\]](#), [\[R\]](#), [\[R\]](#).

Thyroid hormones also help the body absorb zinc. Thus, an underactive thyroid may lead to low zinc levels as well [\[R\]](#).

Zinc (30 mg/day for 12 weeks) may help increase levels of thyroid hormones in people with an underactive thyroid. However, not all studies found a clear benefit [\[R\]](#), [\[R\]](#).

Please note: *A high intake of zinc may cause stomach pain and gut irritation. Adults should not ingest more than **40 mg** of zinc per day* [\[R\]](#), [\[R\]](#).

7



Avoid Food Triggers

IMPACT

3 / 5

EVIDENCE

2 / 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

There seems to be a link between celiac disease and autoimmune thyroid diseases. People with one disorder may be at higher risk of the other [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

In line with this, a gluten-free diet may improve thyroid function in people with autoimmune disease. However, some studies didn't find these benefits [\[R\]](#), [\[R\]](#), [\[R\]](#).

Lactose intolerance is also common in people with autoimmune thyroid disease. People with lactose intolerance may have trouble absorbing prescribed thyroid medication. This may impair their ability to achieve normal thyroid function [\[R\]](#), [\[R\]](#), [\[R\]](#).

Avoiding lactose may help improve thyroid activity in these people [\[R\]](#).

Please note: *Avoiding food triggers may only help people who have been diagnosed with a food sensitivity. Please talk to your doctor if you suspect any food triggers* [\[R\]](#), [\[R\]](#).

 PERSONALIZED TO YOUR GENES

Your **CTLA4** gene variant is linked to gluten intolerance and autoimmune thyroid disease [\[R\]](#), [\[R\]](#). If you are gluten intolerant, consider a gluten-free diet to potentially support thyroid health.

YOUR GENETIC VARIANTS			
GENE	SNP	GENOTYPE	EVIDENCE
CTLA4	rs3087243	GG	

8

Avoid Organophosphate Pesticide Exposure

IMPACT

2 / 5

EVIDENCE

3 / 5

How to implement

To reduce organophosphate pesticide exposure, buy organic produce when possible, thoroughly wash and peel fruits and vegetables, avoid using chemical pesticides in your home and garden, and wear protective clothing and a mask if you must handle pesticides for agricultural or landscaping work.

Description

Reducing organophosphate exposure involves minimizing contact with pesticides and insecticides containing these chemicals, which can protect against potential health risks such as neurotoxicity and respiratory issues, particularly for individuals working in agriculture or pest control.

Organophosphates (OP) are the most widely used pesticides worldwide. They include [\[R\]](#):

- Parathion
- Malathion
- Chlorpyrifos
- Diazinon
- Phosmet

Chronic exposure to OPs has been linked to [\[R\]](#), [\[R\]](#):

- Fertility problems
- Cognitive problems
- Nerve damage
- Cancer and gene damage

How it helps

Reducing exposure to organophosphate pesticides can help prevent underactive thyroid as these chemicals can disrupt thyroid function. They interfere with iodine absorption, affecting the production of thyroid hormones, leading to hypothyroidism.

A [meta-analysis of 9 studies](#) concluded that exposure to organophosphates **increases the risk of hypothyroidism by 12%** [\[R\]](#).

A [study of 1089 participants](#) associated **urinary organophosphate metabolites with higher TSH, particularly in men** [\[R\]](#).

However, a [study of 3249 participants](#) associated urinary levels of the chlorpyrifos metabolite 3,5,6-trichloro-2-pyridinol with **higher levels of T4 and lower levels of TSH in men** Another [study \(413 pregnant women\)](#) associated a **high sum of DMP, DMTP, DEP, and DETP in urine with higher T4 and lower TSH levels** [\[R\]](#), [\[R\]](#).

Higher DMP levels were associated with increased T4 and TSH but decreased T3 in as [study of 136 men](#) [\[R\]](#).

9



Maintain Optimal Iron Levels

IMPACT

2 / 5

EVIDENCE

3 / 5

How to implement

Check your iron levels. If they are below optimal, take a 10 mg iron supplement daily, preferably with a meal to enhance absorption and reduce stomach upset.

TYPICAL STARTING DOSE

10 mg

Description

Iron (Fe) is an essential mineral. It helps make [hemoglobin](#), a protein that carries oxygen to cells. In this way, iron **increases energy** and supports **brain and immune system function** [\[R\]](#), [\[R\]](#), [\[R\]](#).

Foods rich in iron include [\[R\]](#):

- Oysters
- White beans
- Beef
- Chocolate
- Spinach
- Fortified cereals

Women should be getting **8-18 mg** of iron per day, while **men** should be getting **8 mg** [\[R\]](#).

Groups at risk of iron deficiency include [\[R\]](#):

- Women
- Children
- Vegetarians
- Routine blood donors

Iron supplements are available for people who can't meet their needs through a balanced diet, but they should not be taken without consulting a doctor.

How it helps

A study of 7,672 participants associated the combination of low iron and low iodine levels with increased TSH and decreased free T3 levels [\[R\]](#).

However, a study of 330 iodine-deficient children found no association between iron levels and thyroid function [\[R\]](#).

In a placebo-controlled trial of 103 iron-deficient adolescent girls, supplementation with iron (300 mg ferrous sulfate) plus iodine 5x/week for 12 weeks increased thyroid indices total T3, total T4, and T3RU while decreasing reverse RT3 [\[R\]](#).

A non-placebo-controlled trial of 109 goitrous children found that iron deficiency impaired the response to iodine supplementation. In line with this, supplementation with iron (7-60 mg ferrous sulfate) and iodine for up to 40 weeks reduced thyroid volume and goiter prevalence better than iodine alone in 3 placebo-controlled trials of 647 goitrous, iron-deficient children [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

Iron is needed for thyroid peroxidase function, which is important in the synthesis of thyroid hormone [\[R\]](#).

10



Selenium Supplements

IMPACT

2 / 5

EVIDENCE

3 / 5

How to implement

Take 50 mcg of selenium supplements once daily, preferably with a meal to enhance absorption.

TYPICAL STARTING DOSE

50 mcg

Description

Selenium is a trace mineral found in Brazil nuts and many other foods as well as supplements. It is an essential nutrient that plays a crucial role in maintaining the body's antioxidant defenses and supporting thyroid function.

[Selenium](#) supports [\[R\]](#):

- Reproduction
- Thyroid function
- DNA production
- Immune response

Adults should be getting **55 micrograms** of selenium per day. Selenium supplements are available for people who can't meet their needs with a balanced diet [\[R\]](#).

How it helps

People with underactive thyroid may have lower selenium levels. Healthy levels may support normal thyroid function. They may also help reduce the risk of thyroid problems [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

Selenium supplements (80-200 micrograms/day for 3-12 months) may help on their own or in combination with other nutrients. However, not all studies found a clear benefit [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

Some experts recommend against supplementing with selenium [\[R\]](#).

Please note: *High intake and levels of selenium are linked to type 2 diabetes. Selenium is not a replacement for thyroid medication.Talk to your doctor before taking selenium or any supplements for thyroid issues* [\[R\]](#).

11



Dietary Iron

IMPACT

2 / 5

EVIDENCE

3 / 5

How to implement

Incorporate iron-rich foods into your daily meals, such as red meat, chicken, turkey, fish, beans, lentils, tofu, cooked spinach, and fortified cereals. Aim for at least 18 mg of iron per day for adult women and 8 mg per day for adult men. It's also beneficial to pair these foods with vitamin C-rich foods like oranges, strawberries, or bell peppers to enhance iron absorption.

Description

Iron (Fe) is an essential mineral. It helps make [hemoglobin](#), a protein that carries oxygen to cells. In this way, iron **increases energy** and supports **brain and immune system function** [\[R, R, R\]](#).

Foods rich in iron include [\[R\]](#):

- Oysters
- White beans
- Beef
- Chocolate
- Spinach
- Fortified cereals

Women should be getting **8-18 mg** of iron per day, while **men** should be getting **8 mg** [\[R\]](#).

Groups at risk of iron deficiency include [\[R\]](#):

- Menstruating women
- Children
- Vegetarians
- Routine blood donors

How it helps

There is a two-way relationship between iron and thyroid hormones.

Iron plays a role in the metabolism of thyroid hormones and may help the body use iodine [\[R, R, R\]](#).

In turn, thyroid hormones help the body absorb iron [\[R, R\]](#).

In line with this, **low iron levels are linked to lower thyroid hormone levels**. However, one study didn't find this link [\[R, R, R\]](#).

Please note: *Increased iron intake from meat is linked to higher odds of diabetes and heart disease. Try to find a balance between plant and animal iron sources* [\[R, R, R, R\]](#).

In people who lack iron, supplementing with iron may help improve thyroid function [\[R\]](#).

Iron supplementation may also improve the body's response to iodine [\[R, R, R, R\]](#).

Please note: *A high dose of iron can be toxic. If you are not deficient, it is best to get iron from food. Iron is not a replacement for thyroid medication. Talk to your doctor before taking iron or any supplements for thyroid issues* [\[R\]](#).

12



Aerobic Exercise (Cardio)

IMPACT

2 / 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 may help increase levels of thyroid hormones. However, some studies didn't note this effect. Both aerobic and resistance training may help [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

Exercise may improve thyroid health by:

- Supporting a healthy weight [\[R\]](#), [\[R\]](#), [\[R\]](#)
- Reducing insulin resistance [\[R\]](#)

Please note: *Exhaustive exercise may decrease thyroid hormone. If you have thyroid issues, take care not to over-exercise and always speak with your doctor before starting a new exercise program* [\[R\]](#), [\[R\]](#).

13



Sleep for 7+ Hours

IMPACT

2 / 5

EVIDENCE

2 / 5

How to implement

Ensure you allocate enough time in your schedule to achieve a minimum of 7 hours of sleep each night. This might involve going to bed earlier or adjusting your evening routine to promote relaxation and make it easier to fall asleep.

Description

Optimizing sleep involves adopting healthy sleep habits and creating a sleep-conducive environment to ensure restorative and sufficient sleep duration. It supports cognitive function, mood stability, and overall physical health. Most experts recommend getting **at least 7 hours of good-quality sleep each night**.

[Sleep](#) supports your body and mind [\[R\]](#) [\[R\]](#). More precisely, sleep helps:

- Support brain health [\[R\]](#) [\[R\]](#)
- Maintain a healthy weight and appetite [\[R\]](#) [\[R\]](#) [\[R\]](#)
- Regulate blood pressure [\[R\]](#) [\[R\]](#)
- Balance blood sugar [\[R\]](#) [\[R\]](#)

Ways to sleep better include [\[R\]](#):

- Reducing your bright light exposure (screen time) in the evenings
- Sticking to a regular sleep schedule
- Avoiding hunger or large meals before bed
- Avoiding nicotine, caffeine, and alcohol before bed
- Maintaining a sleep area that’s cool, dark, and quiet

How it helps

Poor sleep is linked to an underactive thyroid. Some potential issues include:

- Sleep apnea (interrupted breathing during sleep) [\[R\]](#) [\[R\]](#) [\[R\]](#)
- Getting too much sleep [\[R\]](#)
- Night shift work [\[R\]](#)
- Poor sleep quality [\[R\]](#)

Optimizing your sleep may help improve thyroid function [\[R\]](#).

14



Strength Training

IMPACT

2 / 5

EVIDENCE

2 / 5

How to implement

Engage in strength training exercises, such as weight lifting or bodyweight exercises, for 60 minutes per session, 2 to 3 times per week. Ensure you work all major muscle groups and rest each muscle group for at least 48 hours before exercising it again.

TYPICAL STARTING DOSE

1 hour

Description

Strength training, also called resistance or *anaerobic* training, contracts the muscles against an external resistance for short periods of time. This helps gain muscle strength, tone, and mass. This can include activities like weight lifting, pushups, and crunches.

Strength training, also known as resistance training, is a type of physical exercise that uses resistance to build strength, anaerobic endurance, and size [\[R\]](#). Some of the most common strength training methods include [\[R\]](#):

- Weight lifting
- Bodyweight exercises like push-ups, pull-ups, squats, and lunges.
- Resistance bands
- Plyometrics or explosive force exercises

The benefits of strength training are numerous, and include [\[R\]](#):

- Increased muscle strength
- Improved bone health
- Reduced risk of injury
- Improved balance and coordination
- Enhanced mood
- Boost metabolism

Consult with a doctor before starting any new exercise program, especially if you have any health conditions.

How it helps

Exercise may help increase levels of thyroid hormones. However, some studies didn’t note this effect [\[R, R, R, R\]](#).

In people with mildly underactive thyroid, it may improve the quality of life [\[R\]](#).

Exercise may improve thyroid health by:

- Supporting a healthy weight [\[R, R, R\]](#)
- Reducing insulin resistance [\[R\]](#)

Please note: Exhaustive exercise may decrease thyroid hormone. If you have thyroid issues, take care not to over-exercise and always speak with your doctor before starting a new exercise program [\[R, R\]](#).

15

Maintain Optimal Vitamin D Levels

IMPACT

2 / 5

EVIDENCE

2 / 5

How to implement

Check your vitamin D levels, they should ideally be in the 30-66 ng/mL range. If your levels are lower than that, take a vitamin D supplement, 1000-4000 IU daily, to reach an optimal range.

TYPICAL STARTING DOSE

1000 iu

Description

Vitamin D, often referred to as the "sunshine vitamin," can be synthesized by the skin when exposed to sunlight, as well as being found in fish, eggs, and fortified milk. It helps regulate calcium absorption, promoting strong bones and a healthy immune system. Vitamin D deficiency can lead to conditions like rickets in children and osteoporosis in adults.

Your body needs [vitamin D](#) for strong bones. Vitamin D also plays a role in [\[R\]](#):

- Mood
- Immunity
- Heart health
- Blood sugar control

[Sunlight](#) is our main source of vitamin D. Experts recommend getting at least **5-15 minutes of midday sun, 2-3 times per week**. People with darker skin and those living at high latitudes may need longer periods of sun exposure [\[R, R\]](#).

Foods like fish, eggs, and fortified milk provide small amounts of vitamin D. **People lacking vitamin D should consider taking a supplement** [\[R\]](#).

How it helps

People with autoimmune thyroid conditions tend to have lower vitamin D levels [\[R, R\]](#).

In people with these conditions, vitamin D supplements may help balance the immune response. However, not all studies found this benefit [\[R, R, R\]](#).

Please note: *Experts recommend getting 600-800 IU of vitamin D per day. Medical bodies recommend against taking more than 4,000 IU per day. Vitamin D is not a replacement for thyroid medication.*Talk to your doctor before using any supplements for thyroid issues [\[R\]](#).

16



Exercise At Least One Hour a Day

IMPACT

2 / 5

EVIDENCE

2 / 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

Exercise may help increase levels of thyroid hormones. However, some studies didn’t note this effect [\[R, R, R, R\]](#).

In people with mildly underactive thyroid, it may improve the quality of life [\[R\]](#).

Exercise may improve thyroid health by:

- Supporting a healthy weight [\[R, R, R\]](#)
- Reducing insulin resistance [\[R\]](#)

Please note: Exhaustive exercise may decrease thyroid hormone. If you have thyroid issues, take care not to over-exercise and always speak with your doctor before starting a new exercise program [\[R, R\]](#).

17



Gluten-Free Diet

IMPACT

2 / 5

EVIDENCE

2 / 5

How to implement

Remove all foods containing wheat, barley, and rye from your diet. This includes obvious sources like bread and pasta, as well as hidden sources in sauces, soups, and processed foods. Check labels for gluten-free certification, and aim to maintain this diet consistently, as even small amounts of gluten can cause symptoms to recur in sensitive individuals.

Description

A gluten-free diet is essential for individuals with celiac disease or gluten sensitivity. It helps prevent digestive issues and promotes overall health by avoiding foods containing gluten, a protein found in wheat, barley, and rye.

Gluten is a protein found in wheat and some other grains. **People with celiac disease have to follow a gluten-free diet to prevent gut damage.** A gluten-free diet eliminates all foods containing [\[R\]](#), [\[R\]](#):

- Wheat
- Barley
- Rye
- Malt
- [Brewer’s yeast](#)

How it helps

Two meta-analyses (the most recent one with 13 studies and almost 95k participants) associated celiac disease with 3-fold higher risk of thyroid disease. The prevalence of celiac disease was highest in children with autoimmune thyroid disease (6.2%) [\[R\]](#), [\[R\]](#).

In a non-placebo-controlled trial of 34 women with autoimmune thyroiditis, adopting a gluten-free diet for 6 months reduced thyroid antibody titers while slightly increasing vitamin D levels and the SPINA-GT index. However, a gluten-free diet failed to prevent the progression of autoimmune thyroiditis in an uncontrolled trial of 27 patients [\[R\]](#), [\[R\]](#).

The association of celiac disease and autoimmune thyroiditis may be explained by shared genetic factors for these autoimmune disorders such as the *HLA-DQ* and *CTLA4* genes [\[R\]](#), [\[R\]](#), [\[R\]](#).

18



Vitamin A

IMPACT2 / 5

EVIDENCE2 / 5

How to implement

Take a vitamin A supplement daily with a fat-containing meal to enhance absorption. The recommended daily allowance (RDA) for most adults is 700-900 micrograms (mcg) for men and women, respectively. Ensure not to exceed the upper intake level (UL) of 3000 mcg per day to avoid toxicity.

TYPICAL STARTING DOSE

700 mcg

Description

Vitamin A is a fat-soluble vitamin essential for various bodily functions, including vision, immune system support, and skin health. It is found in foods like carrots, sweet potatoes, and spinach and is important for maintaining overall health.

Vitamin A is a nutrient important for [R](#), [R](#):

- Vision
- Immunity
- Gut health
- Skin health

Foods rich in vitamin A include [R](#):

- Beef liver
- Sweet potato
- Spinach
- Carrots
- Cheese

Vitamin A is also available in supplement form.

Women should be getting 700 micrograms of vitamin A per day, while men should be getting 900 micrograms [R](#).

How it helps

In a placebo-controlled trial of 138 iodine- and vitamin A-deficient children, low levels of this vitamin were associated with 6.5-fold higher risk of goiter, greater thyroid volume, and high TSH levels. Supplementation with vitamin A (200,000 IU at 0 and 5 months) and iodized salt reduced mean thyroglobulin, median TSH, and goiter rate. Similarly, supplementation with the same dose of vitamin A increased RBP while reducing TSH, thyroglobulin, and thyroid volume in a placebo-controlled trial of 404 iodine- and vitamin A-deficient children [R](#), [R](#).

Supplementation with vitamin A (25,000 IU, 2x/week), zinc gluconate (30 mg, 1x/day), and magnesium oxide (250 mg, 1x/day) for 10 weeks increased T4 levels, lowered hs-CRP, and improved anthropometric measurements in a placebo-controlled trial of 86 hypothyroidism patients [R](#).

In a placebo-controlled trial of 84 healthy women, supplementation with vitamin A (25,000 IU/day) for 4 months reduced blood TSH and RBP while increasing T3 [R](#). However, vitamin A (50,000 IU/day) had no effects on TSH secretion in a placebo-controlled trial of 20 healthy people [R](#).

The antioxidant activity of vitamin A may reduce oxidative damage to the thyroid [R](#). Moreover, vitamin A deficiency may directly affect the HPA axis through a reduction in iodine uptake, thyroid hypertrophy, impaired thyroglobulin synthesis, and pairing of iodotyrosine residues to form T4 and T3 [R](#).

Please note: *A high dose of vitamin A or taking high amounts of vitamin A long-term can be harmful, especially in women planning pregnancy or already pregnant. Vitamin A may cause harm to the fetus Vitamin A may also interact with some medications. Talk to your doctor before supplementing with vitamin A* [R](#), [R](#).

19



Limit Soy Intake

IMPACT

1 / 5

EVIDENCE

3 / 5

How to implement

Reduce your consumption of soy and soy-based products to no more than 1-2 servings per week. This includes foods like tofu, soy milk, soy sauce, and edamame. Ensure to read labels on packaged foods to check for hidden soy ingredients.

Description

For individuals with specific allergies or sensitivities, limiting soy intake can help prevent uncomfortable symptoms and digestive issues.

Soy is a common food in many cuisines around the world, especially Asian cuisines [\[R\]](#).

It’s a great source of [\[R\]](#), [\[R\]](#):

- Plant-based protein
- Fiber
- Omega-3 fats
- Antioxidants (isoflavones)

However, eating too much soy over a long period of time is linked to uterine fibroids [\[R\]](#).

How it helps

Goitrogens are substances that reduce iodine uptake by the thyroid gland, resulting in reduced production of thyroid hormones [\[R\]](#), [\[R\]](#).

Foods rich in goitrogens include legumes such as soy [\[R\]](#).

Nevertheless, soy intake has no effects on T3 and T4 levels and only slightly increases TSH (by 0.248 mIU/L) according to a meta-analysis of 18 studies [\[R\]](#).

A study of 78 infants with congenital hypothyroidism reported increased TSH after being fed a soy-based formula. The authors suggested closer monitoring and possibly increasing levothyroxine dose in infants fed soy formula. Similarly, a 45-year-old woman showed reduced levothyroxine absorption when using a soy protein supplement. However, this wasn’t the case in 12 post-menopausal women on levothyroxine and consuming soy protein supplements [\[R\]](#), [\[R\]](#), [\[R\]](#).

20



Relaxation Techniques

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Incorporate relaxation techniques such as deep breathing exercises, meditation, or yoga into your daily routine. Spend at least 15-30 minutes each day practicing one of these techniques, preferably in a quiet, comfortable space without interruptions.

TYPICAL STARTING DOSE

30 minutes

Description

Relaxation techniques encompass various methods like deep breathing, yoga, meditation, and progressive muscle relaxation, aimed at reducing stress and promoting mental and physical relaxation. Practicing these techniques regularly can help manage stress, improve mental clarity, and enhance overall emotional well-being.

We all get stressed from time to time.

[Stress](#) can help you deal with a challenge or avoid danger. However, **it’s not healthy to be stressed for a long time** [\[R, R\]](#).

Relaxation techniques such as [yoga](#) and [meditation](#) can relieve stress in different ways. Most of them focus on breathing and help you get rid of negative thoughts and emotions [\[R\]](#).

People use relaxation techniques to improve conditions like [\[R, R, R\]](#):

- Anxiety
- Depression
- Chronic pain

Progressive muscle relaxation is another relaxation technique. In this technique, you focus on tensing and relaxing different parts of your body. It is common to start with the toes and slowly work your way up to the neck and head [\[R, R\]](#).

Autogenic training is a relaxation technique that a person may carry out on their own. It uses exercises that take the mind’s attention to bodily sensations such as warmth and heaviness [\[R, R\]](#).

How it helps

Stress may affect thyroid function. It may reduce or increase levels of thyroid hormones [\[R, R\]](#).

However, some studies found no clear link between stress and an underactive thyroid [\[R, R\]](#).

21



Anatabine

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take an anatabine supplement as directed on the product label, typically ranging from 1-3 milligrams per day, divided into two or three doses. Consult with a healthcare provider before starting to ensure it is appropriate for you, especially if you have existing health conditions or are taking other medications.

TYPICAL STARTING DOSE

1 mg

Description

Anatabine is a naturally occurring compound found in certain plants, like tobacco and tomatoes. It has anti-inflammatory properties, which means it can calm inflammation in the body. This is important for overall health as chronic inflammation can lead to a host of serious diseases like diabetes and heart disease.

How it helps

In a placebo-controlled trial of 146 patients with Hashimoto’s thyroiditis, supplementation with anatabine lozenges (9-24 mg/day) for 3 months lowered serum TgAb levels [\[R\]](#).

22



Avoid L-Carnitine Supplements

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Do not purchase or consume supplements that list L-carnitine as an ingredient. This includes checking the labels on all vitamin and supplement products you currently use or consider buying in the future.

TYPICAL STARTING DOSE

500 mg

Description

[L-carnitine](#) is a compound that helps your body get energy from fat. It also prevents toxic substances from building up in cells [\[R\]](#).

Your body can usually make enough carnitine. You can also get it from **meat and dairy products** [\[R\]](#).

Excessive supplementation with L-carnitine may cause health issues, such as nausea, diarrhea, and a “fishy” body odor [\[R\]](#).

L-carnitine may also reduce T4 levels. [\[R\]](#)

How it helps

L-carnitine may **inhibit thyroid hormone action**. It may act as a peripheral blocker of thyroid hormones, inhibiting their entry into cell nuclei. In clinical trials, 2-4 grams of oral L-carnitine reversed hyperthyroid symptoms and prevented their onset [\[R\]](#).

23



Retinyl Palmitate

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take retinyl palmitate as a dietary supplement, usually found in capsule or liquid form. For general health and to support Vitamin A levels, adults can take 2500 to 5000 IU daily with a meal that contains fat (for better absorption). Do not exceed the recommended dose without medical advice, especially if pregnant or planning to become pregnant.

Description

Retinyl palmitate is a fat-soluble form of vitamin A that is essential for good vision, skin, and immune function. It has also been shown to have some anticancer properties.

How it helps

A 4-month randomized, double-blind controlled trial investigated the effects of retinyl palmitate (vitamin A, 25,000 IU of retinyl palmitate daily for 12 weeks) on thyroid function in 75 healthy adults. Retinyl palmitate increased total T3 levels by 61% but decreased TSH and T4 levels. The researchers believe that retinyl palmitate may increase T3 levels by increasing the conversion of T4 to T3. They also believe that retinyl palmitate may decrease TSH levels by inhibiting the secretion of TSH from the pituitary gland [\[R\]](#).

24



Black Seed (Black Cumin)

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Take 1000 mg of black seed (black cumin) supplement daily, preferably split into two doses of 500 mg each, one in the morning and one in the evening.

TYPICAL STARTING DOSE

1000 mg

Description

Black seed, also known as black cumin or *Nigella sativa*, has been used for its potential health benefits in traditional medicine. It is believed to have anti-inflammatory, antioxidant, and immune-boosting properties.

[Black seed](#) (black cumin) and its oil are used in cooking and traditional medicine [\[R\]](#).

People use black seed for [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Asthma
- Allergies
- High blood sugar
- High blood pressure
- Joint pain

How it helps

According to a single study, **powdered black seed (2 g for 8 weeks)** may help increase thyroid hormones in people with autoimmune thyroid disease [\[R\]](#).

Black seed may support thyroid function by [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Reducing oxidative stress
- Supporting a healthy weight

Please note: *Black seed is not a replacement for thyroid medication. Talk to your doctor before using any supplements for thyroid issues.*

25



Low-Level Laser Therapy (LLLT)

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Use a low-level laser therapy device, as directed by its manual or a healthcare professional, on the affected area. Generally, treatment involves applying the laser for a specified duration, often between 30 seconds to several minutes, per treatment area. Sessions can be conducted 2-3 times per week for a period of 4-12 weeks, depending on the condition being treated and the device used.

TYPICAL STARTING DOSE

30 seconds

Description

Low-level laser therapy (LLLT), also known as photobiomodulation, is a type of light therapy that uses low-intensity lasers to promote healing. It has been shown to be effective in treating a variety of conditions, including pain, inflammation, and wound healing.

How it helps

In a placebo-controlled trial with 43 patients treated for autoimmune thyroiditis-induced hypothyroidism, low-level laser therapy (LLLT) increased TGF-β1 levels significantly compared to the placebo group 30 days post-intervention. Further research is needed to validate these findings and explore LLLT's effect on TGF-β1 gene expression in thyroid tissue [\[R\]](#).

26



Lactose-Free Diet

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Eliminate all food and drinks containing lactose from your diet. This includes milk, cheese, yogurt, and products with milk-based ingredients. Read labels to check for lactose and opt for lactose-free versions of these products or use alternatives like almond, soy, or oat milk and their derived products.

Description

A lactose-free diet is essential for individuals with lactose intolerance, as it helps prevent digestive discomfort, bloating, and diarrhea that can occur after consuming dairy products.

How it helps

A study of 34 patients with Hashimoto's thyroiditis found that those who were lactose-intolerant had higher LT4 requirements (1.81 µg/kg/d versus 1.31 in those without lactose intolerance) to achieve desirable TSH levels [\[R\]](#).

In an uncontrolled trial of 38 patients with Hashimoto's thyroiditis and lactose intolerance, adopting a lactose-free diet for 8 weeks reduced TSH levels [\[R\]](#).

Lactose intolerance may impair the intestinal absorption of LT4 [\[R\]](#).

27



Aromatherapy

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Select essential oils like lavender, peppermint, or eucalyptus. Use a diffuser to disperse the scent into your room for 30-60 minutes at a time, up to 3 times a day. Alternatively, apply a few drops diluted in a carrier oil directly to your skin, such as on your temples or wrists, twice a day.

TYPICAL STARTING DOSE

30 minutes

Description

Aromatherapy is a holistic practice that uses the scents and aromas of essential oils to promote physical, mental, and emotional well-being. It is often used for relaxation, stress reduction, and to address various health concerns through inhalation or topical application of essential oils.

Aromatherapy uses concentrated plant extracts known as **essential oils**. They can be inhaled using a diffuser (a device that releases small amounts of oil into the air) or applied to the skin using a roller [\[R\]](#).

[Lavender](#) is a decorative flower and a calming herb and its essential oil is commonly used in aromatherapy. People use it to [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Reduce anxiety [\[R\]](#)
- Improve sleep quality [\[R\]](#), [\[R\]](#)
- Relieve pain [\[R\]](#), [\[R\]](#)

Essential oils can be harmful if not used properly. Tips for using them safely include [\[R\]](#), [\[R\]](#):

- Diluting them properly using a plant-based carrier oil (such as olive oil or almond oil)
- Using diffusers in a well-ventilated area for a maximum of 1 hour
- If using on the skin, testing a small area first and waiting a day before using more
- Keeping essential oils away from candles or other heat sources

How it helps

In a placebo-controlled trial of 54 women with hypothyroidism, aromatherapy improved fatigue [\[R\]](#).

28



Ashwagandha

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 250-600 mg of ashwagandha supplement daily. It can be consumed with water or a meal, depending on your preference or as advised by a healthcare provider.

TYPICAL STARTING DOSE
120 mg

Description

[Ashwagandha](#) (*Withania somnifera*) is an herb used in traditional Indian medicine. This herb is known as an *adaptogen* because it helps people adapt to stress.

This herb is known as an *adaptogen* because it helps people adapt to stress [\[R\]](#), [\[R\]](#).

How it helps

According to a single study, ashwagandha root extract (600 mg/day for 8 weeks) may help balance thyroid hormones in people with mildly underactive thyroid [\[R\]](#).

It may help by reducing stress. Stress may have a negative impact on thyroid function [\[R\]](#), [\[R\]](#).

Please note: *Ashwagandha is not a replacement for thyroid medication. Talk to your doctor before using any supplements for thyroid issues.*

29



Low-Carbohydrate Diet

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Limit your daily intake of carbohydrates to less than 26% of your total daily calories. For a standard 2000-calorie diet, this means consuming no more than 130 grams of carbohydrates per day. Focus on including non-starchy vegetables, lean proteins, and healthy fats in your meals while minimizing the intake of sugars, bread, pasta, and other high-carb foods.

Description

Low-carbohydrate diets can promote weight loss, improve blood sugar control, and support heart health. They may also be beneficial for individuals with certain medical conditions, such as epilepsy or metabolic syndrome.

How it helps

In a non-placebo-controlled trial of 108 people with Hashimoto's thyroiditis, adopting a low-carbohydrate (12-15%) diet for 3 weeks reduced thyroid antibody production by 40% [\[R\]](#).

In a non-placebo-controlled trial of 12 obese women, adopting a low-carbohydrate very-low-calorie diet for 28 days lowered T3 levels by 34% [\[R\]](#).

Importantly, a high-fiber diet may reduce the absorption of levothyroxine through the on-specific adsorption of this medication to dietary fiber, as reported in 4 cases [\[R\]](#).

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Autoimmune Protocol (AIP) Diet

IMPACT

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EVIDENCE

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How to implement

Eliminate grains, legumes, nuts, seeds, nightshades, dairy, eggs, coffee, alcohol, refined sugars, refined oils, food additives, and processed foods from your diet for a minimum of 30 days. After this elimination period, gradually reintroduce foods one at a time, every 5-7 days, to identify any that trigger symptoms.

Description

The Autoimmune Protocol (AIP) diet is a dietary approach designed to help individuals with autoimmune diseases identify and eliminate foods that may trigger inflammation and autoimmune responses. It focuses on nutrient-dense, anti-inflammatory foods while avoiding potential allergens and irritants.

How it helps

A 10-week online health coaching program using an elimination diet (AIP) resulted in improved quality of life, reduced clinical symptoms, and decreased inflammation in an uncontrolled trial of 17 women with Hashimoto's thyroiditis. However, thyroid function remained unchanged [\[R\]](#).

The AIP diet eliminates foods that may cause inflammation or harm to the gut, which plays a crucial role in thyroid health.

Next Steps

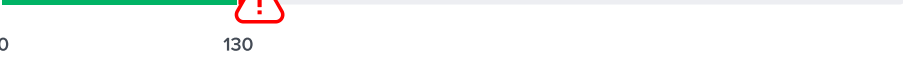
Remember, your genes only tell one important part of your health story!

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.

	T4 Free (FT4)	1.26 ng/dL		9 Nov 2025
	TSH	2.76 mIU/mL		9 Nov 2025
	SHBG	39.3 nmol/L		9 Nov 2025
	Non-HDL Cholesterol	140 mg/dL		9 Nov 2025
	T4 (Thyroxine), Total	7.27 mcg/dL		9 Nov 2025
	T3, Free (FT3)	3.34 pg/mL		9 Nov 2025
	Creatine Kinase	173 IU/L		9 Nov 2025
	Thyroglobulin Antibodies	49 IU/mL		9 Nov 2025
	T3 Total	0.95 ng/mL		9 Nov 2025

✓	Thyroid Peroxidase Antibodies (TPO)	3.03 IU/mL	09	9 Nov 2025
✓	Cholesterol, Total	182 mg/dL	0200240	9 Nov 2025
!	Iron	228 mcg/dL	405070140180350	9 Nov 2025