

# 300X400 Functional DNA Report

Health Report

REPORT CATEGORIES



COGNITION



NUTRITION



HEART & BLOOD  
VESSELS



ENERGY & FATIGUE



DETOX



JOINT & TENDON  
HEALTH

Sample Client

Report date: 30 April 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.

Viewing this medical test requires a medical doctor or use one of our contracted genetic counselors. By accessing these results, you acknowledge and agree that you will consult with a licensed physician or one of our contracted genetic counselors to review and interpret the results, and you agree not to rely on this information as a substitute for professional medical advice, diagnosis, or treatment.

## Personal information

NAME

**Sample Client**

SEX AT BIRTH

**Male**

HEIGHT

**5ft 10" 178cm**

WEIGHT

**215lb 97.5kg**

REPORT PROVIDED BY

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# Summary

Understanding your genetic makeup provides a window into how your body responds to various factors, from diet and exercise to environmental exposures and stress. Each person's unique genetic profile influences how efficiently their body processes nutrients, responds to physical activity, manages energy, and maintains cellular and cardiovascular health.

By examining key genetic variants within critical pathways, we can gain valuable personal insights. This report delves into six key health categories—Cellular Health, Systems, Heart & Blood Vessels, Energy & Metabolism, Activity & Fitness, and Nutrition—each with genetic pathways that play a crucial role in optimizing wellness.

Genomic insights enable a personalized approach to health, empowering you to make informed choices that align with your genetic predispositions. By understanding your genetic tendencies, you can tailor your lifestyle to enhance strengths and address areas that may benefit from targeted support.

## This summary report contains:

**56** Genetic Results

**15** Recommendations

**4** Lifestyle Assessments


# Overview of Your Results

## Cellular Health

 **LOWER ABILITY**  
**Methylation**


---

Predisposed to lower methylation ability

 **TYPICAL**  
**Oxidative Stress**


---

Likely typical oxidative stress

 **TYPICAL ABILITY**  
**Detox**

---


Predisposed to typical detox ability

 **TYPICAL LEVELS**  
**Inflammation (CRP)**

---


Predisposed to typical CRP levels

## Systems

 **MORE LIKELY**  
**Low Mood**


---

More likely to have chronically low mood

 **WORSE**  
**Hormone Balance (Functional)**


---

More likely to have hormone imbalances

 **WORSE**  
**Bone Health (Functional)**


---

Predisposed to worse bone health

 **TYPICAL LEVELS**  
**Fasting Glucose**


---

Predisposed to typical fasting glucose levels

 **TYPICAL LEVELS**  
**Insulin**


---

Predisposed to typical insulin levels

 **TYPICAL**  
**Insulin Resistance**


---

Predisposed to typical insulin resistance

 **LIKELY TYPICAL**  
**Memory & Brain Health (Functional)**


---

Likely typical memory and brain health

 **TYPICAL**  
**Memory Performance**










---

Predisposed to typical memory performance






 **TYPICAL**  
**Cognitive Function**

---









Predisposed to typical cognition

|  |  |   |
|--|--|---|
| <p> <b>LIKELY TYPICAL</b><br/><b>Collagen &amp; Joints (Functional)</b></p> <p>Likely typical collagen and joint health</p> | <p> <b>LIKELY TYPICAL</b><br/><b>Mood &amp; Behavior (Functional)</b></p> <p>Likely typical mood and behavior</p>     | <p> <b>TYPICAL LIKELIHOOD</b><br/><b>Anxiety</b></p> <p>Typical likelihood of anxiety</p>              |
| <p> <b>TYPICAL LEVELS</b><br/><b>Estradiol (M)</b></p> <p>Predisposed to typical estradiol levels</p>                       | <p> <b>TYPICAL LIKELIHOOD</b><br/><b>Histamine Intolerance</b></p> <p>Typical likelihood of histamine intolerance</p> | <p> <b>LESS LIKELY</b><br/><b>Joint Pain</b></p> <p>Less likely to have osteoarthritis</p>             |
| <p> <b>LESS LIKELY</b><br/><b>Tendon Injury</b></p> <p>Less likely to have tendinopathy</p>                                | <p> <b>LESS LIKELY</b><br/><b>Addiction</b></p> <p>Less likely to have addictions</p>                                | <p> <b>HIGHER LEVELS</b><br/><b>Testosterone</b></p> <p>Predisposed to higher testosterone levels</p> |







## Heart & Blood Vessels

|   |   |  |
|---|---|--|
| <p> <b>TYPICAL</b><br/><b>Vascular Health (Functional)</b></p> <p>Likely typical vascular health</p>       | <p> <b>TYPICAL LIKELIHOOD</b><br/><b>Artery Hardening</b></p> <p>Typical likelihood of atherosclerosis</p> | <p> <b>TYPICAL LEVELS</b><br/><b>Total Cholesterol</b></p> <p>Predisposed to typical cholesterol levels</p> |
| <p> <b>TYPICAL LIKELIHOOD</b><br/><b>Blood Clotting</b></p> <p>Typical likelihood of having thrombosis</p> | <p> <b>TYPICAL</b><br/><b>Blood Pressure (Functional)</b></p> <p>Likely typical blood pressure</p>         |  |

## Energy & Metabolism













|  |   |   |
|--|---|---|
| <p> <b>TYPICAL</b></p> <p><b>Adipogenesis (Functional)</b></p> <hr/> <p>Likely typical adipogenesis</p>           | <p> <b>TYPICAL</b></p> <p><b>Exercise Response (Metabolic)</b></p> <hr/> <p>Higher potential for fat burning from exercise</p> | <p> <b>LOWER</b></p> <p><b>Metabolic Rate</b></p> <hr/> <p>Predisposed to lower metabolic rate</p>     |
| <p> <b>TYPICAL LIKELIHOOD</b></p> <p><b>Tendency to Overeat</b></p> <hr/> <p>Typical likelihood of overeating</p> | <p> <b>LOWER</b></p> <p><b>Pro-Inflammatory Fat (Functional)</b></p> <hr/> <p>Predisposed to lower fat cell inflammation</p>   | <p> <b>LESS LIKELY</b></p> <p><b>Overweight</b></p> <hr/> <p>Less likely to be overweight or obese</p> |
| <p> <b>LOWER</b></p> <p><b>Fat Mass</b></p> <hr/> <p>Likely lower fat mass</p>                                  | <p> <b>BETTER</b></p> <p><b>FTO (Overeating)</b></p> <hr/> <p>Likely better FTO genetics</p>                                 |   |

## Activity & Fitness

|  |  |   |
|--|--|---|
| <p> <b>LOWER</b></p> <p><b>Training Response (Fitness)</b></p> <hr/> <p>Lower potential for fitness improvement from training</p> | <p> <b>TYPICAL LIKELIHOOD</b></p> <p><b>Injuries (Functional)</b></p> <hr/> <p>Typical likelihood of injuries</p> | <p> <b>TYPICAL LIKELIHOOD</b></p> <p><b>ACL Injury</b></p> <hr/> <p>Typical likelihood of tearing an ACL</p> |
| <p> <b>TYPICAL</b></p> <p><b>Exercise Recovery</b></p> <hr/> <p>Predisposed to typical recovery after exercise</p>                | <p> <b>TYPICAL</b></p> <p><b>Power</b></p> <hr/> <p>Likely typical power performance</p>                          | <p> <b>TYPICAL ACTIVITY</b></p> <p><b>ACTN3 (Power)</b></p> <hr/> <p>Likely typical ACTN3 activity</p>       |

|   |  |  |
|---|--|--|
|  <p><b>TYPICAL</b><br/><b>Aerobic Capacity (VO2 Max)</b></p> <p>Predisposed to typical VO2 max</p> |  <p><b>LESS LIKELY</b><br/><b>Ankle Injury</b></p> <p>Less likely to have an ankle injury</p> |  <p><b>HIGHER</b><br/><b>Endurance</b></p> <p>Predisposed to higher endurance</p> |
|---|--|--|

## Nutrition

|   |  |  |
|---|--|--|
|  <p><b>INCREASED NEED</b><br/><b>Folate (Functional)</b></p> <p>Predisposed to increased need for folate</p> |  <p><b>INCREASED NEED</b><br/><b>Folate (Vitamin B9)</b></p> <p>Likely increased need for folate</p>            |  <p><b>TYPICAL NEED</b><br/><b>Vitamin B12</b></p> <p>Likely typical need for vitamin B12</p>           |
|  <p><b>TYPICAL</b><br/><b>Salt Sensitivity</b></p> <p>Likely typical sensitivity to salt</p>               |  <p><b>TYPICAL NEED</b><br/><b>Vitamin D</b></p> <p>Likely typical need for vitamin D</p>                     |  <p><b>TYPICAL NEED</b><br/><b>Choline</b></p> <p>Likely typical need for choline</p>                 |
|  <p><b>TYPICAL NEED</b><br/><b>Omega-3</b></p> <p>Likely typical need for omega-3s</p>                     |  <p><b>TYPICAL RESPONSE</b><br/><b>Saturated Fat</b></p> <p>Predisposed to typical saturated fat response</p> |  <p><b>TYPICAL NEED</b><br/><b>Vitamin C</b></p> <p>Likely typical need for vitamin C</p>             |
|  <p><b>TYPICAL GENETICS</b><br/><b>HLA-DQ (Gluten)</b></p> <p>Likely typical HLA-DQ genetics</p>           |  <p><b>TYPICAL LIKELIHOOD</b><br/><b>Iron Overload</b></p> <p>Typical likelihood of iron overload</p>         |  <p><b>LOWER</b><br/><b>Caffeine Sensitivity</b></p> <p>Predisposed to lower caffeine sensitivity</p> |

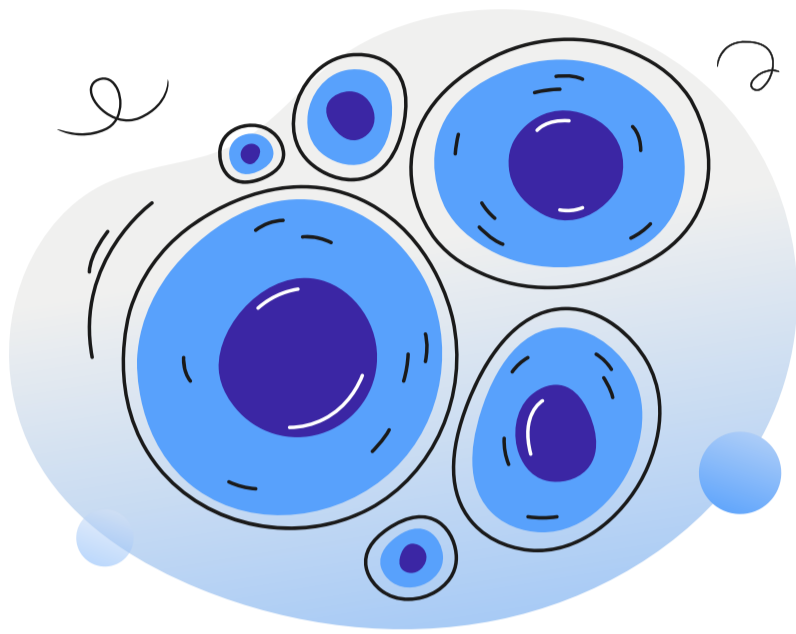
# Recommendations Overview

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  | Strength Training                       | 1 hour     | 2      | Aerobic Exercise (Cardio) | 1 hour     |
| 3  | Cognitive-Behavioral Therapy (CBT)      |            | 4      | Psychotherapy             | 1 hour     |
| 5  | Probiotics                              | 10 billion | 6      | Curcumin                  | 500 mg     |
| 7  | Relaxation Techniques                   | 30 minutes | 8      | Meditation                | 30 minutes |
| 9  | Yoga                                    | 30 minutes | 10     | Omega-3 (Fish Oil)        | 500 mg     |
| 11 | Acceptance and Commitment Therapy (ACT) |            | 12     | Tai Chi                   | 1 hour     |
| 13 | Progressive Muscle Relaxation           | 10 minutes | 14     | Green Tea                 | 400 mg     |
| 15 | Pilates                                 | 30 minutes |        |                           |            |

# Your Results in Details



## Cellular Health

Cellular health is the foundation of overall wellness, as each cell performs essential functions to keep the body operating efficiently. Genetic factors influence key cellular processes such as detox, inflammation, methylation, and oxidative stress management. This affects how well cells adapt to challenges and repair themselves.

When cellular pathways function optimally, they enhance resilience, longevity, and vitality. Insights into your genetic tendencies can help identify areas where cellular support may be beneficial. This enables you to make lifestyle choices that protect and strengthen cellular function for long-term health.



LOWER ABILITY

### Methylation

Predisposed to lower methylation ability



TYPICAL

### Oxidative Stress

Likely typical oxidative stress



TYPICAL ABILITY

### Detox

Predisposed to typical detox ability



TYPICAL LEVELS

### Inflammation (CRP)

Predisposed to typical CRP levels

# Methylation

Optimal function of the pathways discussed above depends on a number of enzymes that enable chemical reactions. Gene variants in some of those enzymes can alter their function and potentially compromise methylation.

**Please note:** Methylation is a complex process that goes way beyond the pathways and enzymes discussed in this report. There is insufficient evidence that any of the gene variants analyzed in this report impair methylation and its vital roles in the human body.

Image source: [Pan S, et al. 2020](#)

## MTHFR

The [MTHFR](#) gene helps make an enzyme called methylenetetrahydrofolate reductase (MTHFR). It produces the active form of folate, [methylfolate](#) [R].

The whole methylation cycle depends on MTHFR, which is why it is called a “rate-limiting enzyme”. Low MTHFR activity can make methylation as a whole much less productive [R].

Two of the most widely studied variants—[rs1801133](#) and [rs1801131](#)—reduce MTHFR enzyme activity [R, R, R, R].

Studies found links between these variants, higher homocysteine, and [R, R, R, R, R]:

- [Cognitive problems](#)
- Heart disease and stroke
- [Asthma and allergies](#)
- Fertility and pregnancy issues
- Mental health issues
- [Migraines](#)

Read [this blog post](#) for more details about MTHFR variants and potential ways to reduce their impact.

## Other Genes

The [PEMT](#) gene encodes an enzyme that produces phosphatidylcholine (PC) in the liver. This pathway supplies choline and thus plays a key role in the methylation cycle [R, R].

[PEMT](#) gene variants like [rs7946](#) and [rs12325817](#) are linked to:

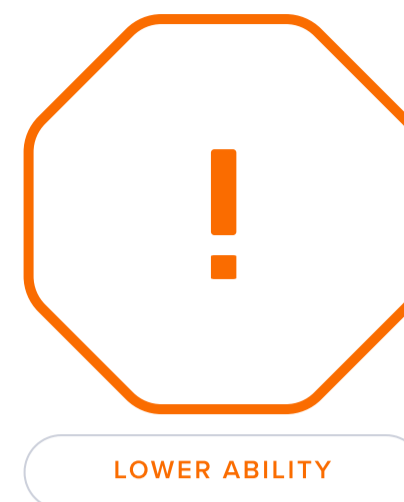
- [Choline deficiency](#)
- [Fatty liver](#)
- [Heart disease](#)

The [MTHFD1](#) gene encodes an enzyme that helps produce active folate and supports homocysteine methylation. A variant in this gene, [rs2236225](#), is linked to increased [choline and folate needs](#) [R, R, R].

The [MTRR](#) gene encodes an enzyme that helps turn homocysteine into methionine, using [vitamin B12](#) and [riboflavin](#). [MTRR](#) variants like [rs1801394](#) have been linked to [R, R]:

- [Higher homocysteine levels](#)
- Congenital disorders (mixed evidence) [R, R, R]
- Some types of cancer [R, R]
- Male fertility issues (mostly in Asians) [R, R]
- ADHD in children [R]

The [CHDH](#) codes for choline dehydrogenase, an enzyme that turns choline into betaine or TMG. Betaine then supplies a methyl group needed for homocysteine clearance. CHDH gene



## Predisposed to lower methylation ability based on 45 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

| GENE    | SNP                        | GENOTYPE |
|---------|----------------------------|----------|
| MTHFR   | <a href="#">rs1801133</a>  | AA       |
| MTHFR   | <a href="#">rs2066470</a>  | GG       |
| BHMT    | <a href="#">rs3733890</a>  | AG       |
| GNMT    | <a href="#">rs9296404</a>  | TT       |
| SHMT1   | <a href="#">rs1979277</a>  | AA       |
| MTR     | <a href="#">rs2275565</a>  | GG       |
| COMT    | <a href="#">rs4680</a>     | GA       |
| JMY     | <a href="#">rs3797546</a>  | TC       |
| MTRR    | <a href="#">rs1801394</a>  | GA       |
| PEMT    | <a href="#">rs7946</a>     | CT       |
| MTHFD1  | <a href="#">rs2236225</a>  | GA       |
| BHMT    | <a href="#">rs651852</a>   | CT       |
| CBS     | <a href="#">rs234706</a>   | GA       |
| CHDH    | <a href="#">rs9001</a>     | TT       |
| MTR     | <a href="#">rs1805087</a>  | AA       |
| FOLH1   | <a href="#">rs61886492</a> | GG       |
| CPS1    | <a href="#">rs1047891</a>  | AC       |
| MTRR    | <a href="#">rs1532268</a>  | TC       |
| MAT1A   | <a href="#">rs3851059</a>  | AG       |
| TRDMT1  | <a href="#">rs12780845</a> | GA       |
| BHMT2   | <a href="#">rs625879</a>   | AC       |
| SLC19A1 | <a href="#">rs1051266</a>  | TC       |
| PEMT    | <a href="#">rs4646343</a>  | GT       |
| PEMT    | <a href="#">rs12936587</a> | GA       |
| MAT1A   | <a href="#">rs7087728</a>  | GA       |
| MS4A6A  | <a href="#">rs558660</a>   | GG       |
| MAT1A   | <a href="#">rs2993763</a>  | AA       |
| FOLR3   | <a href="#">rs651933</a>   | GA       |
| MTRR    | <a href="#">rs1802059</a>  | AG       |

variants like [rs9001](#) are linked to [choline deficiency](#) and may thus affect methylation [R, R].

Variants in the following genes may also affect methylation and play a role in related health issues:

- [CBS](#): a key component of the transsulfuration pathway [R, R, R]
- [BHMT](#): helps turn homocysteine into methionine (betaine pathway)
- [COMT](#): methylates important chemicals with the help of SAM-e [R]
- [SHMT1](#), [DHFR](#), and [FOLH1](#): involved in folate metabolism [R, R, R, R]
- [GNMT](#) and [DNMT3B](#): play a role in SAM-e metabolism [R, R]
- [MTR](#): helps turn homocysteine into methionine (folate pathway) [R]
- [MAT1A](#): helps turn methionine into SAM-e [R]
- [TRDMT1](#): plays a role in DNA methylation [R]
- [PDXK](#): plays a role in vitamin B6 metabolism [R]
- [AHCY](#): involved in homocysteine and SAM-e metabolism [R, R].
- [TYMS](#): supports DNA methylation with the help of methyl-folate [R, R]

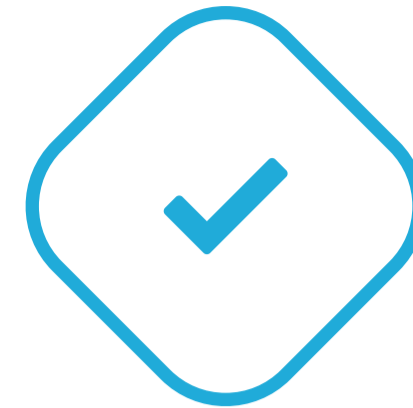
| GENE    | SNP                         | GENOTYPE |
|---------|-----------------------------|----------|
| TCN1    | <a href="#">rs526934</a>    | AG       |
| COMT    | <a href="#">rs4633</a>      | CT       |
| BHMT    | <a href="#">rs567754</a>    | CT       |
| MTHFD1L | <a href="#">rs17349743</a>  | CT       |
| MMAB    | <a href="#">rs7134594</a>   | CT       |
| CBS     | <a href="#">rs2851391</a>   | CT       |
| MAT1A   | <a href="#">rs4934028</a>   | GA       |
| MTHFR   | <a href="#">rs1801131</a>   | TT       |
| CHMP4B  | <a href="#">rs819171</a>    | TT       |
| ITCH    | <a href="#">rs819147</a>    | TT       |
| MTHFR   | <a href="#">rs3737965</a>   | GG       |
| FOLH1   | <a href="#">rs202676</a>    | AA       |
| PDXK    | <a href="#">rs147242481</a> | GG       |
| TYMS    | <a href="#">rs2853533</a>   | GG       |
| DHFR    | <a href="#">rs1643649</a>   | TT       |
| AHCY    | <a href="#">rs13043752</a>  | GG       |
| PEMT    | <a href="#">rs12325817</a>  | CC       |
| GNMT    | <a href="#">rs10948059</a>  | CC       |
| NQO1    | <a href="#">rs1800566</a>   | GG       |
| OGG1    | <a href="#">rs1052133</a>   | CC       |
| MTHFD1L | <a href="#">rs6922269</a>   | GG       |

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

# Oxidative Stress

The causes of oxidative stress can be multifaceted, including environmental factors such as pollution, radiation, and toxins, as well as lifestyle factors like dietary choices, smoking, alcohol consumption, and chronic stress. The body's metabolism also naturally produces free radicals as byproducts. Oxidative stress is implicated in the pathogenesis of numerous diseases, including neurodegenerative diseases like Alzheimer's and Parkinson's, cardiovascular diseases, diabetes, and inflammatory conditions.

It is also involved in the aging process itself. Therefore, maintaining a balance between oxidative stress and antioxidants is critical for health, and enhancing antioxidant defenses through diet and lifestyle changes is often suggested as a preventive strategy.



TYPICAL

## Likely typical oxidative stress based on 60 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

| GENE     | SNP        | GENOTYPE |
|----------|------------|----------|
| SOD2     | rs4880     | GG       |
| SOD3     | rs2536512  | AA       |
| CAT      | rs769217   | CC       |
| FOXO3    | rs12212067 | TT       |
| FOXO3    | rs4946936  | CC       |
| PON1     | rs662      | TT       |
| FOXO3    | rs12202234 | CC       |
| FOXO3    | rs17069665 | AA       |
| FOXO3    | rs9398171  | TT       |
| FOXO3    | rs3800230  | TT       |
| FOXO3    | rs9400239  | CC       |
| FOXO3    | rs479744   | GG       |
| SIRT1    | rs7895833  | AA       |
| CAT      | rs7943316  | AT       |
| GPX4     | rs713041   | CT       |
| CAT      | rs1001179  | CT       |
| APEX1    | rs1130409  | GG       |
| NOS3     | rs2070744  | CT       |
| GCLC     | rs1555903  | CT       |
| UGT1A6   | rs1105879  | AA       |
| NOS1     | rs1879417  | TC       |
| SIRT1    | rs12778366 | TC       |
| GSTO2    | rs156697   | GA       |
| UCP2     | rs659366   | TC       |
| TFAM     | rs1937     | GC       |
| PPARGC1A | rs8192678  | CT       |
| CDKN2A   | rs10811661 | TT       |
| UCP1     | rs1800592  | TC       |
| HNRNPA3  | rs13001694 | GG       |

| GENE    | SNP        | GENOTYPE |
|---------|------------|----------|
| GPX1    | rs1050450  | GG       |
| MVD     | rs9932581  | CT       |
| SOD1    | rs2234694  | AA       |
| NQO1    | rs1800566  | GG       |
| GSTP1   | rs1695     | AA       |
| PON1    | rs854560   | TA       |
| ARMC2   | rs6911407  | AA       |
| MRPS31  | rs4581585  | CC       |
| GCLM    | rs41303970 | GG       |
| FOXO3   | rs2802292  | GG       |
| MPO     | rs2333227  | CC       |
| TOM1    | rs2071746  | AA       |
| OGG1    | rs1052133  | CC       |
| ARMC2   | rs768023   | GG       |
| ALDH2   | rs671      | GG       |
| APOE    | rs429358   | TT       |
| SLC23A1 | rs33972313 | CC       |
| FOXO3   | rs2802288  | AA       |
| NOS2    | rs2297518  | GG       |
| FOXO3   | rs2253310  | CC       |
| FOXO3   | rs1935952  | CC       |

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

# Detox

Some people might have genetics that make crucial detox components work differently. Recognizing that each of us might detoxify differently because of our unique genetic makeup is an important step towards personalized healthcare and keeping ourselves healthy.

Variants in the genes encoding different **CYP enzymes** can greatly influence [phase I](#) detox ability. Examples include [CYP1A1](#), [CYP2E1](#), [CYP1B1](#), [CYP2A6](#), [CYP2B6](#) and [CYP2D6](#). Variants in these genes are linked to:

- Harmful effects of cigarette smoke [\[R, R, R, R, R\]](#)
- Pesticide sensitivity [\[R, R, R\]](#)
- Air pollution sensitivity [\[R\]](#)

A variant in the [CYP1A2](#) gene may impair **caffeine metabolism** and contribute to its adverse effects [\[R\]](#).

The [GSTP1](#) gene codes for a [phase II](#) detox enzyme that helps eliminate toxins using the “master antioxidant” [glutathione](#). Studies have linked its variants to harmful effects of **air pollution, cigarette smoke, mercury**, and more [\[R, R, R, R, R\]](#).

The UGT enzymes encoded by genes like [UGT1A1](#) and [UGT2A1](#) are also vital for [phase II](#) detox. They help produce glutathione and remove toxins found in **plastics, cigarette smoke**, and more [\[R, R\]](#).

Other genes that help make glutathione and support its detox function include [GCLC](#), [GSTA1](#), and [GPX1](#). Variants in these genes may influence the detox of **mercury, mold**, and more [\[R, R, R\]](#).

The [NAT2](#) codes for another major enzyme in phase II detox. Due to the variants in this gene, people can be “**slow acetylators**”, which means they may have a harder time detoxing **cigarette smoke and some chemicals and drugs** [\[R, R, R, R\]](#).

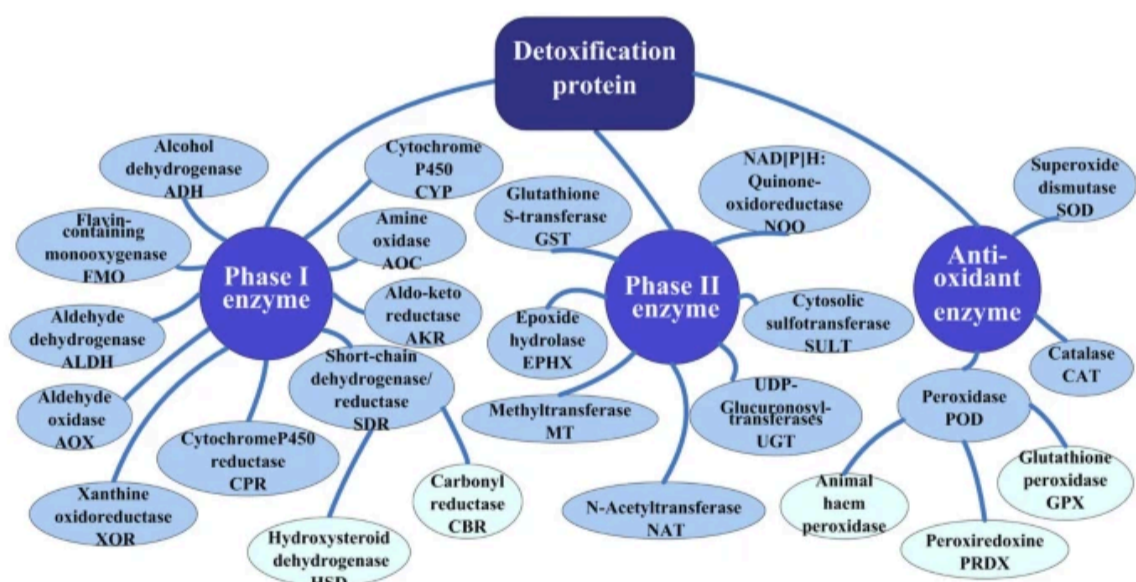


Image source: [Yang et al. 2011](#)

The [NFE2L2](#) gene helps make **NRF2**, a “master” protein that activates a range of antioxidant and detox genes. Its variants may affect the toxicity of alcohol, heavy metals, drugs, and more [\[R, R, R, R\]](#).

**Alcohol detox** is crucial to minimize its side effects, especially if consumed in higher amounts. Two genes, [ADH1B](#) and [ALDH2](#), help make enzymes that process alcohol, and their variants can greatly affect detox potential [\[R\]](#).

Variants in the following genes also play a role in detox:

- [NQO1](#): fighting oxidative stress, DNA damage, and **benzene** toxicity [\[R, R, R\]](#)



TYPICAL ABILITY

## Predisposed to typical detox ability based on 61 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

| GENE   | SNP        | GENOTYPE |
|--------|------------|----------|
| PON1   | rs662      | TT       |
| SOD2   | rs4880     | GG       |
| XPC    | rs2228001  | GT       |
| UGT2A1 | rs10518065 | GA       |
| ADH1B  | rs1229984  | CT       |
| NFE2L2 | rs35652124 | TT       |
| MTHFR  | rs1801133  | AA       |
| CYP1B1 | rs1056836  | GG       |
| NAT2   | rs1495741  | AG       |
| PON1   | rs854560   | TA       |
| GSTA1  | rs3957357  | AA       |
| CYP1B1 | rs1800440  | CT       |
| GSTO2  | rs156697   | GA       |
| /      | rs72547513 | CC       |
| COMT   | rs4680     | GA       |
| BORCS7 | rs743572   | AG       |
| NAT2   | rs1041983  | TC       |
| NAT2   | rs1799930  | AG       |
| ASAH1  | rs4271002  | GC       |
| /      | rs366631   | AG       |
| XRCC1  | rs1799782  | GG       |
| PTGS2  | rs5277     | CC       |
| /      | rs12228069 | GG       |
| MLLT3  | rs76878079 | GG       |
| MTG1   | rs2031920  | CC       |
| EGLN2  | rs28399433 | AA       |
| CYP2D6 | rs16947    | AG       |
| /      | rs2279343  | AG       |
| CYP2E1 | rs2070673  | AT       |

- [SULT1A1](#): processing toxins found in **cigarette smoke and well-done meat** [R, R, R]
- [PON1](#): detoxing **pesticides** and other toxins [R, R]
- [SOD2](#) and [CAT](#): reducing oxidative stress and detoxing **BPA and pesticides** [R, R]
- [COMT](#): detoxing **endocrine disruptors** by methylation [R]
- [MTHFR](#): supporting methylation and influencing **air pollution** sensitivity [R]
- [XPC](#), [XRCC1](#), [XRCC4](#): repairing DNA damage caused by **pesticides, air pollution, and mold** [R, R, R, R]

| GENE   | SNP                       | GENOTYPE |
|--------|---------------------------|----------|
| GSDMB  | <a href="#">rs7216389</a> | TC       |
| CSK    | <a href="#">rs2606345</a> | AC       |
| UGT2B7 | <a href="#">rs7439366</a> | CT       |
| CYP1B1 | <a href="#">rs1056827</a> | CA       |
| ITCH   | <a href="#">rs819147</a>  | TT       |
| GSTM1  | <a href="#">rs1056806</a> | CT       |
| CTH    | <a href="#">rs1021737</a> | TG       |
| GSTP1  | <a href="#">rs1695</a>    | AA       |
| ALDH2  | <a href="#">rs671</a>     | GG       |
| GSTP1  | <a href="#">rs1138272</a> | CC       |
| CYP1A1 | <a href="#">rs1048943</a> | TT       |
| COX15  | <a href="#">rs717620</a>  | CC       |
| NFE2L2 | <a href="#">rs6721961</a> | GG       |
| NAT1   | <a href="#">rs4986782</a> | GG       |
| CYP2D6 | <a href="#">rs3892097</a> | CC       |
| TRIM4  | <a href="#">rs2740574</a> | TT       |
| NQO1   | <a href="#">rs1800566</a> | GG       |
| NQO1   | <a href="#">rs1131341</a> | GG       |
| EPHX1  | <a href="#">rs1051740</a> | TT       |
| GPX1   | <a href="#">rs1050450</a> | GG       |
| CYP1A2 | <a href="#">rs762551</a>  | AA       |

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

# Inflammation (CRP)

## Key Takeaways:

- Chronic inflammatory diseases like diabetes and heart disease are responsible for **3 in 5** deaths worldwide.
- About **40-50%** of the differences in people's hs-CRP (inflammatory protein) levels may be due to genetics.
- Other factors are equally important. They include diet, exercise, and life satisfaction.
- Click the **next steps** tab for relevant labs.

**Inflammation is an important biological process. It protects the body from disease and damage.** When germs or other foreign substances enter the body, white blood cells rush to the site. The area then gets red, swollen, and warm. These changes help kill pathogens and prepare the tissue to heal [\[R, R\]](#).

A common marker that helps measure inflammation is **C-reactive protein (CRP)**. **High sensitivity CRP (hs-CRP)** in particular helps measure low-grade inflammation.

**CRP** is produced in the liver. It helps recognize disease-causing microbes and damaged cells that need to be removed from the body. However, it may also play a role in autoimmune disease [\[R, R\]](#).

**Short-term inflammation is helpful. However, too much inflammation can be a bad thing** [\[R, R, R, R\]](#).

Chronic inflammation is linked to many diseases, including:

- Autoimmune conditions [\[R, R\]](#)
- Heart disease [\[R, R, R\]](#)
- Obesity [\[R, R\]](#)
- Type 2 diabetes [\[R, R\]](#)
- Fibromyalgia [\[R, R\]](#)
- Mental health conditions [\[R, R, R, R\]](#)
- Cancer [\[R, R, R, R, R\]](#)

In 2014, an estimated **60%** of Americans were living with at least one chronic inflammatory condition [\[R\]](#).

Factors that may influence chronic inflammation include [\[R, R, R\]](#):

- Diet
- Exercise
- Life satisfaction
- **Genetics**

Common strategies for reducing low-grade inflammation include [\[R, R, R, R, R\]](#):

- Lifestyle changes
- Diet changes
- Weight management
- Drugs targeting the underlying condition

Genetics may play an important role in inflammatory conditions. Genes involved in inflammation may influence [\[R, R, R, R, R\]](#):

- Immune messengers ([STAT3](#), [IL6](#), [IL10](#))
- Immune cell function ([HLA-DRB1](#), [PTPN22](#))
- [Histamine](#) levels ([AOC1](#), [HNMT](#))

Genetically high free testosterone levels may be causally associated with lower C-reactive protein [\[R\]](#).



TYPICAL LEVELS

**Predisposed to typical CRP levels based on 8,937 genetic variants we looked at**



**Your top variants that most likely impact your genetic predisposition:**

| GENE    | SNP        | GENOTYPE |
|---------|------------|----------|
| CRP     | rs1205     | CC       |
| IL6R    | rs2228145  | CC       |
| FUT2    | rs601338   | GA       |
| IL1B    | rs16944    | GA       |
| CTLA4   | rs231775   | GA       |
| IL19    | rs1800872  | GG       |
| IL19    | rs3024505  | AG       |
| IL4R    | rs1805011  | AA       |
| IL1RN   | rs419598   | TT       |
| ATG16L1 | rs10210302 | TT       |
| ATG16L1 | rs2241880  | GG       |
| STEAP1B | rs1554606  | GG       |
| IL13    | rs20541    | GG       |
| KLC1    | rs8702     | GG       |
| STAT4   | rs10181656 | GC       |
| ADRB2   | rs1042713  | AG       |
| IL19    | rs1800896  | CT       |
| CYP1B1  | rs1056836  | GG       |
| TIMP4   | rs3755724  | CC       |
| AOC1    | rs1049793  | CG       |
| IFIH1   | rs1990760  | CT       |

| GENE     | SNP        | GENOTYPE |
|----------|------------|----------|
| IL21     | rs6822844  | GT       |
| IL6      | rs1524107  | CT       |
| IL6      | rs2066992  | GT       |
| LRP6     | rs2160525  | AG       |
| LRP6     | rs2302685  | CT       |
| FUT2     | rs492602   | AG       |
| FUT2     | rs281377   | TC       |
| FUT2     | rs602662   | GA       |
| LEPR     | rs4394621  | AA       |
| SIRT1    | rs12778366 | TC       |
| MICB     | rs361525   | GG       |
| CRP      | rs3093059  | AA       |
| RAD50    | rs2069812  | AA       |
| SLC22A5  | rs1800925  | CC       |
| TNF      | rs1800629  | GG       |
| HLA-DQA1 | rs2187668  | CC       |
| APOE     | rs429358   | TT       |
| SRA1     | rs2569191  | TT       |
| IL6      | rs1800795  | GG       |
| SLC20A1  | rs1800587  | GG       |
| IL1A     | rs17561    | CC       |
| FADS2    | rs174546   | CC       |
| IL1B     | rs1143634  | GG       |
| CRP      | rs10494326 | CC       |
| CFH      | rs6677604  | GG       |
| TLR4     | rs4986790  | AA       |
| SOD2     | rs4880     | GG       |
| LGALS9   | rs2248814  | AA       |
| TOM1     | rs2071746  | AA       |


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



## Systems


The body's physiological processes rely on a network of complex systems working in harmony to maintain balance. From glucose regulation and hormone balance to joint health and cognitive function, these interconnected pathways are influenced by genetics and impact everyday well-being.

By understanding your genetic profile in relation to these systems, you can make targeted choices to support optimal function and prevent potential imbalances. Focusing on your unique genetic needs can promote a healthier, more efficient network of physiological processes, enhancing both physical and mental health.

 **MORE LIKELY**  
**Low Mood**


---

More likely to have chronically low mood

 **WORSE**  
**Hormone Balance (Functional)**


---

More likely to have hormone imbalances

 **WORSE**  
**Bone Health (Functional)**


---

Predisposed to worse bone health

 **TYPICAL LEVELS**  
**Fasting Glucose**


---

Predisposed to typical fasting glucose levels

 **TYPICAL LEVELS**  
**Insulin**


---

Predisposed to typical insulin levels

 **TYPICAL**  
**Insulin Resistance**


---

Predisposed to typical insulin resistance

 **LIKELY TYPICAL**  
**Memory & Brain Health (Functional)**


---

Likely typical memory and brain health

 **TYPICAL**  
**Memory Performance**


---

Predisposed to typical memory performance

 **TYPICAL**  
**Cognitive Function**


---

Predisposed to typical cognition

 **LIKELY TYPICAL**  
**Collagen & Joints (Functional)**


---

Likely typical collagen and joint health

 **LIKELY TYPICAL**  
**Mood & Behavior (Functional)**

---

Likely typical mood and behavior

 **TYPICAL LIKELIHOOD**  
**Anxiety**


---

Typical likelihood of anxiety

 **TYPICAL LEVELS**  
**Estradiol (M)**

---

Predisposed to typical estradiol levels

 **TYPICAL LIKELIHOOD**  
**Histamine Intolerance**

---

Typical likelihood of histamine intolerance

 **LESS LIKELY**  
**Joint Pain**


---

Less likely to have osteoarthritis

 **LESS LIKELY**  
**Tendon Injury**


---

Less likely to have tendinopathy

 **LESS LIKELY**  
**Addiction**

---

Less likely to have addictions

 **HIGHER LEVELS**  
**Testosterone**

---

Predisposed to higher testosterone levels

# Low Mood

## Key Takeaways:

- About 40% of differences in people's odds of developing depression may be due to genetics.
- It is more likely for young adults and the elderly but can affect people of all ages.
- Other risk factors include traumatic and stressful events, serious medical conditions, and substance use problems.
- If you have high genetic risk, you may want to consider optimizing your stress management.
- Click the **next steps** tab for relevant labs and lifestyle factors.

**Depression is more than just a low mood.** People with depression tend to have [\[R\]](#):

- Low motivation
- Problems with concentration
- Changes in appetite
- Poor sleep quality
- Aches and pains
- Thoughts of self-harm or suicide

If any of these symptoms resonate with you, you can work with your doctor to improve them. **Psychotherapy and medication are the most effective treatments for depression.** Strategies such as [exercise](#) may also boost your mood [\[R\]](#), [\[R\]](#).

**The strategies most likely to work for you may depend on your genetics. This is because genetic factors account for roughly 40% of differences in depression** [\[R\]](#).

Gene variants linked to this condition may cause [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- An exaggerated stress response ([CRHR1](#), [COMT](#))
- Low levels or activity of brain chemicals ([COMT](#), [OPRM1](#), [SLC6A4](#), [DRD2](#))
- Impaired brain function ([BDNF](#), [VRK2](#))
- Inflammation ([IL6](#), [VRK2](#))
- Sleep disturbances ([CLOCK](#), [TIMELESS](#))

Genetically high white blood cell count and testosterone and low DHA may be causally associated with a higher risk of depression. Moreover, depression may also lead to increased white blood cells [\[R\]](#), [\[R\]](#), [\[R\]](#).

It's important to note that **genetics is only one piece of the puzzle.** Other risk factors for depression include [\[R\]](#):

- Stressful or traumatic events
- Serious medical conditions, such as cancer
- Heavy drug and alcohol use



MORE LIKELY

**More likely to have chronically low mood based on 84,172 genetic variants we looked at**

85<sup>th</sup>

PERCENTILE



Your risk is greater than 85% of the population and lower than 15% of the population.

**Your top variants that most likely impact your genetic predisposition:**

| GENE   | SNP        | GENOTYPE |
|--------|------------|----------|
| MTHFR  | rs1801133  | AA       |
| NEGR1  | rs1993709  | GG       |
| MICB   | rs1150757  | GG       |
| MEF2C  | rs409645   | GG       |
| TCF4   | rs1452787  | GA       |
| TTC12  | rs1554929  | CC       |
| NOX4   | rs10047486 | AA       |
| ZCCHC7 | rs6476606  | GG       |
| FKBP4  | rs2302729  | CC       |
| RNF180 | rs878567   | GG       |
| TULP1  | rs9296158  | GG       |
| FAM53B | rs35936514 | CC       |
| ANKK1  | rs1800497  | GA       |
| OXTR   | rs2254298  | AG       |
| TERT   | rs2736100  | CA       |
| SH3YL1 | rs6548238  | TC       |
| FAAH   | rs324420   | AC       |
| TPH1   | rs1799913  | TG       |
| PUM3   | rs7044150  | CT       |
| MAOA   | rs909525   | C        |
| TTC12  | rs2283265  | CA       |

| GENE     | SNP        | GENOTYPE |
|----------|------------|----------|
| CES1     | rs1566652  | TG       |
| TTC12    | rs1079727  | TC       |
| TTC12    | rs1079597  | CT       |
| TTC12    | rs1076560  | CA       |
| ANK3     | rs10761482 | CT       |
| CRHR2    | rs3779250  | TC       |
| CNR1     | rs806371   | TT       |
| CNR1     | rs1049353  | TT       |
| SLC25A21 | rs17105696 | AA       |
| PTPRR    | rs4760933  | AA       |
| UGT2B4   | rs6832167  | AA       |
| ARNTL    | rs7107287  | TT       |
| CHRM2    | rs1824024  | CC       |
| ATG9A    | rs7596956  | TT       |
| HCN4     | rs12905211 | TT       |
| TMEM263  | rs10861683 | TA       |
| BHLHE40  | rs9311395  | AA       |
| TPH2     | rs1843809  | TT       |
| CHRM2    | rs2061174  | GG       |
| EHD3     | rs590557   | GA       |
| CNIH4    | rs11579964 | CC       |
| GNB3     | rs5443     | CT       |
| VPS8     | rs7647854  | GG       |
| VGLL4    | rs6781822  | TC       |
| GYPE     | rs7676614  | AG       |
| CHST11   | rs1344677  | CT       |
| PHACTR3  | rs8122984  | GA       |
| UGGT2    | rs17767562 | CT       |
| LHFPL2   | rs12651937 | TC       |

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

# Hormone Balance (Functional)

**CYP1B1 (rs1056836, Leu432Val C>G):** This gene is involved in estrogen metabolism. The rs1056836 variant (Leu432Val C>G) may affect the breakdown of estrogen, potentially influencing estrogen levels and associated risks.

**COMT (rs4680, Val158Met G>A):** COMT is responsible for breaking down catecholamines, including estrogen metabolites. The rs4680 variant (Val158Met G>A) can affect estrogen metabolism, impacting hormonal balance and potentially influencing mood and stress response.

**MnSOD (rs4880, Val16Ala T>C):** This gene encodes an enzyme that protects cells from oxidative stress. The rs4880 variant (Val16Ala T>C) can impact antioxidant capacity, indirectly affecting hormone metabolism and balance.

**CYP17A1 (rs743572, 34 T>C):** The *CYP17A1* gene is involved in the production of steroid hormones, including androgens and estrogens. The rs743572 variant (34 T>C) can influence levels of these hormones, affecting hormone-related health outcomes.

**MTHFR (rs1801133, 677 C>T):** MTHFR is essential for folate metabolism and methylation, which impacts hormone detoxification pathways. The rs1801133 variant (677 C>T) can influence hormone metabolism and methylation efficiency, potentially affecting hormonal balance.

**NQO1 (rs1800566, Pro187Ser C>T):** This gene is involved in detoxification processes. The rs1800566 variant (Pro187Ser C>T) can affect the elimination of hormone-related oxidative byproducts, impacting hormone balance.

**CYP19A1 (rs10046):** CYP19A1 encodes aromatase, an enzyme that converts androgens to estrogens. The rs10046 variant can influence estrogen production, impacting hormone levels and balance.

**CYP1A1 (rs1048943, Ile462Val A>G):** This gene is involved in estrogen metabolism. The rs1048943 variant (Ile462Val A>G) can affect the conversion of estrogens, influencing hormonal balance and related health outcomes.

**GSTP1 (rs1695, Ile105Val A>G):** GSTP1 plays a role in detoxification. The rs1695 variant (Ile105Val A>G) can impact the body's capacity to manage oxidative stress, indirectly affecting hormone metabolism.

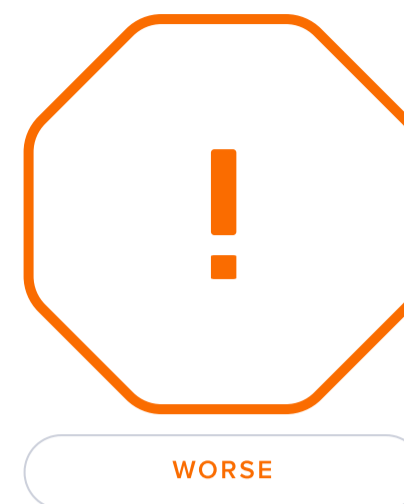
**CYP2C19 (rs4244285, \*1/\*2/\*17):** This gene variant affects the metabolism of certain hormones and drugs. Different alleles can lead to variable enzyme activity, impacting hormone processing.

**CYP3A4 (rs2740574, -392 A>G):** CYP3A4 is involved in metabolizing estrogens and other hormones. The rs2740574 variant (-392 A>G) can influence hormone breakdown, affecting overall balance.

**EPHX1 (rs1051740, Tyr113His T>C):** *EPHX1* encodes an enzyme that metabolizes various compounds, including hormones. The rs1051740 variant (Tyr113His T>C) can impact hormone-related metabolic pathways.

**SHBG (rs6258, -68 G>A):** SHBG encodes sex hormone-binding globulin, which regulates the availability of sex hormones like testosterone and estrogen. The rs1799941 variant (-68 G>A) can influence hormone levels and bioavailability.

**SRD5A1 (rs3822430, A>G):** This gene encodes an enzyme that converts testosterone to dihydrotestosterone (DHT). The rs3822430 variant (A>G) affects androgen metabolism, impacting hormone balance.



**More likely to have hormone imbalances based on 18 genetic variants we looked at**

Your top variants that most likely impact your genetic predisposition:

| GENE    | SNP       | GENOTYPE |
|---------|-----------|----------|
| CYP1B1  | rs1056836 | GG       |
| CYP19A1 | rs10046   | AA       |
| MTHFR   | rs1801133 | AA       |
| SOD2    | rs4880    | GG       |
| BORCS7  | rs743572  | AG       |
| CYP1B1  | rs1800440 | CT       |
| COMT    | rs4680    | GA       |
| SRD5A1  | rs3822430 | AG       |
| UGT2B15 | rs1902023 | AC       |
| /       | rs366631  | AG       |
| TRIM4   | rs2740574 | TT       |
| TNFSF12 | rs1799941 | GG       |
| CYP1A1  | rs1048943 | TT       |
| TNFSF12 | rs6259    | GG       |
| CYP2C19 | rs4986893 | GG       |
| CYP2C19 | rs4244285 | GG       |
| NQO1    | rs1800566 | GG       |
| GSTP1   | rs1695    | AA       |
| EPHX1   | rs1051740 | TT       |

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

**CYP1B1 (rs1800440, Asn453Ser A>G):** The CYP1B1 gene is involved in estrogen metabolism. The rs1800440 variant (Asn453Ser A>G) can affect estrogen breakdown efficiency, potentially influencing estrogen levels and impacting hormone-related health risks.

**SHBG (rs6259, Pro185Leu C>T):** SHBG encodes sex hormone-binding globulin, which regulates the availability of hormones like testosterone and estrogen. The rs6259 variant (Pro185Leu C>T) can influence SHBG levels, affecting hormone bioavailability and overall hormonal balance.

**SULT1A1 (rs1412288244, Arg213His G>A):** The SULT1A1 gene is involved in the sulfation and detoxification of hormones and drugs. The rs1412288244 variant (Arg213His G>A) can alter enzyme activity, affecting hormone metabolism and impacting hormone balance and detoxification capacity.

**UGT2B15 (rs1902023, T>G):** UGT2B15 is involved in the detoxification of steroid hormones. The rs1902023 variant (T>G) can influence hormone clearance rates, affecting balance.

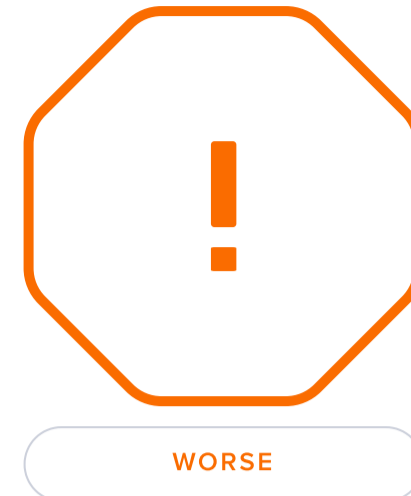
These genetic factors, along with lifestyle and environmental influences, play a crucial role in hormone metabolism and balance. By understanding these genetic predispositions, individuals can adopt lifestyle and dietary strategies to support hormonal health and reduce the risk of hormone-related conditions.

## Bone Health (Functional)

Functional variants that shape your genetic predisposition for bone health include:

- **CYP2R1 (rs10741657, A>G)**: This gene plays a role in the metabolism of vitamin D, which is essential for calcium absorption and bone health. The rs10741657 variant can influence how effectively vitamin D is activated in the body, impacting bone density and strength.
- **GDF5 (rs143383, 5'UTR C>T)**: GDF5 is involved in joint and bone development. Variants like rs143383 can affect the production of proteins that support bone formation and repair, influencing bone structure and resilience.
- **DIO2 (rs225014, Thr92Ala T>C)**: This gene regulates thyroid hormone activity, which affects bone turnover. The rs225014 variant (Thr92Ala T>C) can influence the balance between bone formation and resorption, potentially impacting bone density.
- **VDR (rs1544410, BsmI G>A)**: The VDR gene encodes the vitamin D receptor, which is crucial for calcium regulation and bone metabolism. The rs1544410 variant (BsmI G>A) can affect how the body responds to vitamin D, influencing bone mineral density.
- **COL1A1 (rs1800012, 1546 G>T)**: COL1A1 encodes collagen, a key structural protein in bones. The rs1800012 variant (1546 G>T) is associated with differences in bone strength and susceptibility to fractures.
- **VDR (rs2228570, FokI T>C)**: Another variant in the VDR gene, rs2228570 (FokI T>C), impacts the activity of the vitamin D receptor, influencing calcium metabolism and bone density.
- **VDR (rs731236, TaqI T>C)**: This variant in the VDR gene affects vitamin D receptor function. The rs731236 variant (TaqI T>C) can alter bone mineralization efficiency and contribute to variations in bone health.

These genetic insights can provide a deeper understanding of individual bone health needs, allowing for tailored dietary, supplement, and lifestyle strategies to optimize bone strength and reduce the risk of bone-related conditions.



### Predisposed to worse bone health based on 9 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

| GENE      | SNP        | GENOTYPE |
|-----------|------------|----------|
| COPB1     | rs10741657 | GG       |
| CPNE1     | rs143383   | AA       |
| COL1A1    | rs1800012  | AC       |
| VDR       | rs2228570  | GA       |
| ALDH7A1   | rs13182402 | AG       |
| TNFRSF11B | rs2073618  | GC       |
| VDR       | rs1544410  | CT       |
| VDR       | rs731236   | AG       |
| DIO2      | rs225014   | TT       |

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

# Fasting Glucose

Glucose is a type of sugar. **Fasting glucose –or fasting blood sugar – is the measurement of one’s blood sugar level after 8-12 hours of avoiding food and drinks.** Fasting glucose levels help show how your body deals with dietary sugar. Doctors may order a fasting glucose test to check if someone is diabetic [R, R].

Your fasting glucose levels are partly dependent on your genes! Up to 65% of differences in people’s fasting glucose levels may be attributed to genetics. Genes involved in fasting glucose may influence [R, R]:

- Pancreas development and function
- Insulin activity
- Glucose breakdown

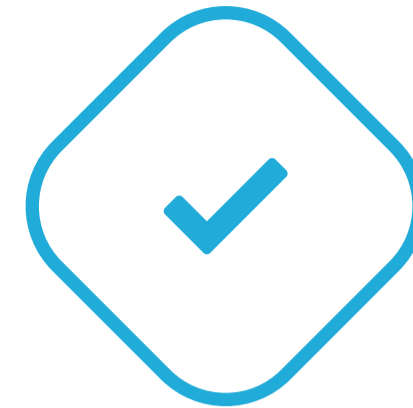
Genetically high bioavailable testosterone levels may be causally associated with lower fasting glucose in men [R].

However, keep in mind that your diet and lifestyle may also contribute to your fasting glucose levels. If you have a genetic predisposition for higher fasting glucose levels, the following lifestyle changes may help [R]:

- Exercising
- Maintaining a healthy weight
- Avoiding cigarette smoke and alcohol
- Following a healthy diet

Genetically higher glucose levels may play a role in [R, R, R, R, R, R, R, R, R, R, R, R]:

- Glaucoma
- Gum disease
- High blood sugar
- Heart health
- Heart attack
- Alzheimer’s



TYPICAL LEVELS

**Predisposed to typical fasting glucose levels based on 954,309 genetic variants we looked at**

Your top variants that most likely impact your genetic predisposition:

| GENE     | SNP        | GENOTYPE |
|----------|------------|----------|
| TCF7L2   | rs7903146  | TC       |
| SLC30A8  | rs13266634 | CC       |
| GCKR     | rs780093   | CC       |
| CDKN2A   | rs10811661 | TT       |
| CETP     | rs708272   | AA       |
| FOXO3    | rs2802292  | GG       |
| PPARG    | rs1801282  | CC       |
| PPARA    | rs1800206  | CC       |
| RFC4     | rs17300539 | GG       |
| MRPS31   | rs10507486 | GG       |
| ADCY5    | rs11708067 | AA       |
| BCL2     | rs12454712 | TT       |
| HMGA2    | rs2261181  | CT       |
| IMPDH1   | rs791595   | AG       |
| TNF      | rs2857605  | CT       |
| SLC38A11 | rs10195252 | CT       |
| TSPAN3   | rs7177055  | GA       |
| DGKB     | rs2191349  | GT       |
| PPARGC1A | rs8192678  | CT       |
| UCP2     | rs659366   | TC       |
| ADRB2    | rs1042714  | CG       |
| ADRB2    | rs1042713  | AG       |
| CRY2     | rs11605924 | CA       |
| IGF2BP2  | rs1470579  | CA       |
| CCND2    | rs76895963 | TT       |
| CDKAL1   | rs7756992  | AA       |
| FTO      | rs9939609  | TT       |
| MC4R     | rs12970134 | GG       |
| JAZF1    | rs1635852  | CC       |

| GENE     | SNP         | GENOTYPE |
|----------|-------------|----------|
| TAP2     | rs2071479   | CC       |
| SLC2A2   | rs5400      | GG       |
| FCER1G   | rs5082      | AA       |
| IRS1     | rs2943641   | TC       |
| DIO2     | rs225014    | TT       |
| IRS1     | rs1801278   | CC       |
| TNF      | rs1800629   | GG       |
| FABP2    | rs1799883   | CC       |
| GIPR     | rs10423928  | TT       |
| KCNJ11   | rs5215      | TT       |
| /        | rs184660829 | TT       |
| /        | rs569511541 | AA       |
| /        | rs562386202 | AA       |
| /        | rs543786825 | CC       |
| /        | rs759111467 | GG       |
| CCDC68   | rs76197067  | AA       |
| RNASEH2A | rs755734872 | CC       |
| NEDD1    | rs557027608 | GG       |
| /        | rs533172266 | CC       |
| QSER1    | rs528122639 | GG       |
| BPTF     | rs558308082 | GG       |

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

# Insulin

## Key Takeaways:

- Insulin is the key hormone for blood sugar control.
- High insulin levels may play a role in diabetes, obesity, heart disease, and cancer.
- Low insulin levels may result from type 1 diabetes and pancreas conditions.
- Up to 55% of differences in people's insulin levels may be due to genetics.

Insulin is a hormone that increases the uptake and storage of sugar in muscles, liver, and fat cells for energy production. By doing this, insulin lowers blood sugar levels [R, R, R, R, R].

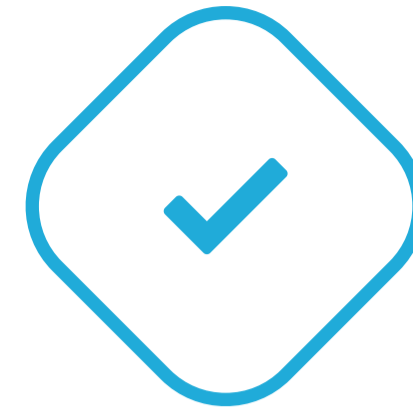
Between **30%-55%** of differences in people's insulin levels may be due to genetics [R, R, R].

Besides genetics, factors linked to **high insulin levels** include:

- Insulin resistance [R]
- Type 2 Diabetes [R]
- Weight change and obesity [R, R, R, R]
- Insulinomas (usually benign pancreatic tumors) [R, R]

## Low insulin levels may result from:

- Type 1 diabetes [R, R]
- Inflammation of the pancreas (pancreatitis) [R]
- Pancreas removal [R]



TYPICAL LEVELS

## Predisposed to typical insulin levels based on 462 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

| GENE     | SNP         | GENOTYPE |
|----------|-------------|----------|
| HDAC7    | rs111264094 | CC       |
| PPARG    | rs11712037  | CC       |
| PPARG    | rs1801282   | CC       |
| RFC4     | rs17300539  | GG       |
| CETP     | rs708272    | AA       |
| MRPS31   | rs10507486  | GG       |
| FOXO3    | rs2802292   | GG       |
| PPARA    | rs1800206   | CC       |
| IGF1     | rs860598    | AA       |
| SPX      | rs6487237   | AA       |
| BCL2     | rs12454712  | TT       |
| /        | rs200678953 | TT       |
| BMP2     | rs979012    | TT       |
| PPARGC1A | rs8192678   | CT       |
| TCF7L2   | rs7903146   | TC       |
| ADRB2    | rs1042713   | AG       |
| ADRB2    | rs1042714   | CG       |
| UCP2     | rs659366    | TC       |
| TMEM60   | rs848494    | AA       |
| ZC3H11B  | rs6674544   | GA       |
| ARL15    | rs4865796   | AG       |
| /        | rs77935490  | AT       |
| CDHR4    | rs9819511   | TC       |
| STC1     | rs13258890  | CT       |
| PDGFC    | rs6855363   | TC       |
| VEGFA    | rs998584    | CA       |
| CHRDL1   | rs12007422  | T        |
| PDE3A    | rs12369443  | AG       |
| EVI5L    | rs4804833   | AG       |

| GENE    | SNP         | GENOTYPE |
|---------|-------------|----------|
| GLIS3   | rs4339696   | GT       |
| HMGA1   | rs116141873 | GG       |
| INSR    | rs1799815   | GG       |
| TSC22D2 | rs62271373  | TT       |
| FTO     | rs9939609   | TT       |
| SLC2A2  | rs5400      | GG       |
| FCER1G  | rs5082      | AA       |
| DIO2    | rs225014    | TT       |
| IRS1    | rs1801278   | CC       |
| TNF     | rs1800629   | GG       |
| FABP2   | rs1799883   | CC       |
| IRS1    | rs17508368  | CC       |
| DPYSL5  | rs61007968  | GG       |
| BLK     | rs12541800  | GG       |
| RBL2    | rs2024449   | CC       |

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

# Insulin Resistance

Insulin resistance is the reduction of the body’s ability to control blood sugar levels. It happens when the muscles, liver, and fat cells no longer respond to insulin and have trouble taking sugar up [R].

In response, the pancreas is forced to produce more insulin than normal to keep blood sugar in balance. Hence, people with insulin resistance may have high insulin levels. Blood sugar levels may also rise eventually, paving the way for diabetes [R, R].

Homeostatic model assessment ([HOMA-IR](#)) helps measure insulin resistance. It is calculated using your fasting glucose and fasting insulin. The higher your HOMA-IR, the more insulin resistant you are [R, R].

Insulin resistance is commonly caused by two factors: **overeating and lack of physical activity**. These can cause a buildup of fat in the liver and muscles that lead to insulin resistance [R, R, R].

**Insulin resistance is associated with overweight and obesity**, especially due to the accumulation of belly fat. However, normal-weight people may also have insulin resistance. Other health conditions may also lead to insulin resistance, including [R]:

- Sleep apnea [R]
- Thyroid disorders [R, R, R]
- Polycystic ovary syndrome (PCOS) [R, R]
- Pancreas disease [R, R]
- Acromegaly (too much growth hormone) [R]
- Cushing’s syndrome (excess of cortisol) [R]
- Rare genetic diseases [R, R, R, R]

**Keep in mind that this report is not about the rare genetic disorders mentioned above.** They are very rare and usually diagnosed in infancy.

The risk of insulin resistance may also increase due to:

- Aging [R, R]
- Stress [R, R]
- Fasting [R, R, R]
- Western diet [R]
- Too little sleep [R, R, R, R]
- Pregnancy [R]
- Exposure to toxins (e.g., herbicides) [R, R, R]
- Some drugs (e.g., corticosteroids) [R, R]

**Genetics also influences insulin resistance.** Up to **65%** of differences in people’s insulin resistance may be due to genetics [R, R].

Insulin resistance may increase the risk of:

- Diabetes
- Liver disease
- Metabolic syndrome

Interestingly, insulin resistance may occur up to 15 years before diabetes develops. Read [this post](#) for a detailed list of tips to reduce insulin resistance [R].



TYPICAL

**Predisposed to typical insulin resistance based on 2,420 genetic variants we looked at**



**Your top variants that most likely impact your genetic predisposition:**

| GENE    | SNP        | GENOTYPE |
|---------|------------|----------|
| GAS1    | rs9792548  | AA       |
| PPARG   | rs1801282  | CC       |
| IRS1    | rs2943641  | TC       |
| PPARG   | rs3856806  | CC       |
| FOXO3   | rs13217795 | TT       |
| FOXO3   | rs2802288  | AA       |
| IGF1    | rs35767    | GG       |
| NAT2    | rs1208     | AA       |
| TIMP4   | rs13081389 | AA       |
| KLHL2   | rs17046216 | AA       |
| LEPR    | rs1137101  | AG       |
| MRPS31  | rs4581585  | CC       |
| ZC3H12C | rs475338   | AA       |
| FBXO21  | rs2036313  | GG       |
| HAPLN1  | rs1457105  | CC       |
| /       | rs12969333 | AA       |
| DAAM2   | rs4345393  | GG       |
| ME1     | rs11967452 | CC       |
| KCNK17  | rs10456469 | GG       |
| ORMDL3  | rs939345   | CC       |
| ZIC2    | rs7338383  | GG       |

| GENE    | SNP        | GENOTYPE |
|---------|------------|----------|
| CSNK2A1 | rs6053042  | CC       |
| RAB28   | rs1197712  | AA       |
| ATP8B1  | rs10439020 | AA       |
| MPC1    | rs2281056  | AA       |
| MROH8   | rs11698899 | GG       |
| RUNX3   | rs803323   | AA       |
| TLR4    | rs13290714 | CC       |
| SORCS1  | rs7088188  | CT       |
| MDGA1   | rs17589516 | AA       |
| CACNA1D | rs1401492  | CC       |
| SLC10A2 | rs16962638 | AA       |
| ATP10A  | rs6576507  | TT       |
| /       | rs7043482  | AC       |
| CSMD1   | rs2407314  | CC       |
| FTO     | rs9939609  | TT       |
| TCERG1L | rs7077836  | GG       |
| ADRB3   | rs4994     | AA       |
| FABP2   | rs1799883  | CC       |
| FTO     | rs1421085  | TT       |
| FTO     | rs1121980  | GG       |
| BRD1    | rs13057821 | CC       |
| KL      | rs9535766  | TT       |
| UBR1    | rs17776090 | AA       |
| BMP8A   | rs710912   | CC       |
| /       | rs2873975  | GG       |
| POLL    | rs3730464  | AA       |
| RUNX1   | rs17227476 | GG       |
| NINL    | rs11698267 | GG       |
| FAM135B | rs10088248 | CC       |

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

# Memory & Brain Health (Functional)

Various genetic factors are linked to cognitive function and brain health, influencing aspects such as memory retention, neuroplasticity, and resistance to oxidative stress. These variants can impact how well the brain ages and how effectively it manages cognitive demands.

**NOS3 (rs1799983, Glu298Asp G>T):** The *NOS3* gene is associated with nitric oxide production, which plays a role in blood flow to the brain. The rs1799983 variant (Glu298Asp G>T) may affect cerebral blood flow, potentially impacting memory and cognitive function due to altered oxygen delivery.

**SOD2 (rs4880, Val16Ala T>C):** The *SOD2* gene encodes an antioxidant enzyme that protects brain cells from oxidative stress. The rs4880 variant (Val16Ala T>C) can influence the brain's resilience to oxidative damage, which may affect cognitive health over time.

**MTHFR (rs1801133, 1298 A>C) and MTHFR (rs1801131, 677 C>T):** The *MTHFR* gene variants rs1801133 (1298 A>C) and rs1801131 (677 C>T) impact folate metabolism, which is essential for brain function and cognitive health. These variants can affect homocysteine levels, which, when elevated, are associated with a greater risk of cognitive decline.

**MTR (rs1805087, 2756 A>G):** The *MTR* gene, which plays a role in homocysteine metabolism, can influence cognitive function. The rs1805087 variant (2756 A>G) may increase susceptibility to cognitive decline by affecting homocysteine levels and neural health.

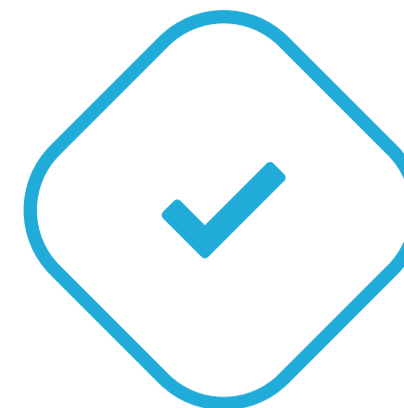
**NQO1 (rs1800566, Pro187Ser C>T):** NQO1 is involved in cellular defense against oxidative stress. The rs1800566 variant (Pro187Ser C>T) can affect the brain's protection against oxidative damage, potentially impacting cognitive performance and memory with age.

**BDNF (rs6265, Val66Met G>A):** The *BDNF* gene is crucial for neuroplasticity, which supports learning and memory. The rs6265 variant (Val66Met G>A) may influence memory and cognitive flexibility, with the Met allele associated with reduced BDNF activity and potentially slower cognitive processing.

**IL6R (rs2228145, Asp358Ala A>C):** The *IL6R* gene variant rs2228145 (Asp358Ala A>C) is associated with inflammation, which can impact brain health. Chronic inflammation is linked to neurodegeneration, and this variant may increase susceptibility to inflammatory effects on cognitive function.

**APOE (rs429358):** The *APOE* gene is one of the most well-studied genes related to Alzheimer's disease and cognitive aging. The ε4 allele ('C' at rs429358) is associated with a higher risk of cognitive decline. Individuals with this variant might benefit from preventive lifestyle strategies to support brain health.

**COMT (rs4680, Val158Met G>A):** The *COMT* gene variant rs4680 (Val158Met G>A) affects dopamine metabolism, impacting memory, attention, and stress response. The Met allele is associated with slower dopamine breakdown, which can influence cognitive performance, particularly under stress.



LIKELY TYPICAL

## Likely typical memory and brain health based on 8 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

| GENE  | SNP       | GENOTYPE |
|-------|-----------|----------|
| MTHFR | rs1801133 | AA       |
| SOD2  | rs4880    | GG       |
| IL6R  | rs2228145 | CC       |
| BDNF  | rs6265    | CT       |
| COMT  | rs4680    | GA       |
| APOE  | rs429358  | TT       |
| MTHFR | rs1801131 | TT       |
| MTR   | rs1805087 | AA       |
| NQO1  | rs1800566 | GG       |

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

# Memory Performance

**Memory performance** refers to how good your brain is at storing and recalling information [R, R, R].

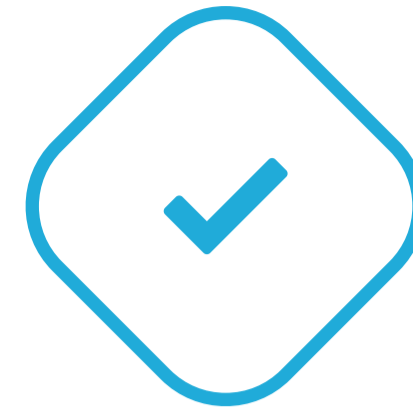
About 30-70% of differences in people’s memory performance may be due to genetics. Genes involved in memory may influence [R, R, R, R]:

- The way brain cells grow and develop
- Brain cell communication

Ways to boost your memory performance include [R, R, R, R]:

- Being physically active
- Getting 7-9 hours of good-quality sleep every night
- Eating a healthy diet
- Spending time with family and friends
- Engaging your mind (e.g, reading, solving puzzles, learning new skills)

If you want to go the extra mile, there are specific techniques you can use to train your memory (e.g. mind palace). There is even a world memory championship!



TYPICAL

**Predisposed to typical memory performance based on 7,166,380 genetic variants we looked at**

Your top variants that most likely impact your genetic predisposition:

| GENE    | SNP        | GENOTYPE |
|---------|------------|----------|
| HDGFL1  | rs9466427  | GG       |
| HDGFL1  | rs9348530  | AA       |
| HDGFL1  | rs9358578  | GG       |
| HTATIP2 | rs10741845 | AT       |
| /       | rs9345419  | TT       |
| TMEM63A | rs6426075  | AG       |
| NT5DC2  | rs4687625  | CT       |
| NT5DC2  | rs2015971  | CT       |
| NT5DC2  | rs11711421 | CT       |
| ITIH1   | rs3774354  | GA       |
| ITIH1   | rs1961958  | AG       |
| ITIH1   | rs3774355  | GA       |
| ITIH1   | rs6778844  | TC       |
| ITIH1   | rs12487445 | AC       |
| ITIH1   | rs6798246  | GA       |
| ITIH1   | rs1961959  | GC       |
| PBRM1   | rs17264436 | TA       |
| ITIH1   | rs2289249  | GA       |
| GNL3    | rs11177    | GA       |
| ITIH1   | rs10865973 | AT       |
| ITIH1   | rs2118540  | TC       |
| ITIH1   | rs11717836 | AG       |
| ITIH1   | rs6976     | CT       |
| ITIH1   | rs2268027  | GA       |
| ITIH1   | rs2239551  | GA       |
| CGGBP1  | rs12492805 | GT       |
| ITIH1   | rs2268025  | AT       |
| NEK4    | rs1029871  | GC       |
| ITIH1   | rs2286798  | AC       |

| GENE    | SNP        | GENOTYPE |
|---------|------------|----------|
| TDRD3   | rs4886229  | TC       |
| TEK     | rs10757641 | TC       |
| TEK     | rs633903   | TG       |
| TEK     | rs581724   | GT       |
| MAT1A   | rs4933327  | GG       |
| ZNF804A | rs1344706  | CA       |
| STARD3  | rs879606   | GG       |
| COMT    | rs4680     | GA       |
| DTNBP1  | rs2619522  | CA       |
| TTC12   | rs1076560  | CA       |
| SLC19A1 | rs1051266  | TC       |
| SYNJ2   | rs10945973 | AG       |
| LMX1A   | rs4657412  | AG       |
| SYNJ2   | rs2502601  | AG       |
| MAT1A   | rs3851059  | AG       |
| SYNJ2   | rs9356200  | CT       |
| SORL1   | rs3824968  | AT       |
| COL4A2  | rs4773144  | AA       |
| SYNJ2   | rs10455935 | GA       |
| UBE2Z   | rs15563    | AA       |
| WWC1    | rs17070145 | TT       |

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

# Cognitive Function

Some people are really good at math, but bad at memorizing facts. Others excel at learning languages, but lack spatial awareness and get easily lost. Everyone’s brain works differently.

Your strengths and your weaknesses depend on your education, your life experiences and your genes. Up to **50-80%** of differences in cognitive ability may be due to **genetics**. Genes that affect our cognitive function tend to influence **brain development, structure and function** [R, R, R, R, R].

Other factors that affect our cognitive function include [R, R, R, R, R, R]:

- Lifestyle (e.g. physical activity, sleep quality)
- Education
- Physical and mental health
- Sensory loss (e.g. vision or hearing loss)
- Aging
- Social connectedness
- Environment (e.g. air pollution)
- Being cognitively active (e.g. reading, having intellectual-stimulating jobs)

To improve cognitive function focus on:

- Staying physically active [R, R, R]
- Getting enough good quality sleep [R, R]
- Staying social (in person) [R, R, R]
- Eating a healthy, balanced diet [R, R]
- Keeping the mind active (e.g., with puzzles, games of strategy or learning new skills) [R, R, R, R]



TYPICAL

**Predisposed to typical cognition based on 7,159,700 genetic variants we looked at**

Your top variants that most likely impact your genetic predisposition:

| GENE    | SNP        | GENOTYPE |
|---------|------------|----------|
| SNAP25  | rs363043   | CC       |
| ARMC2   | rs9384679  | TT       |
| CHRM2   | rs8191992  | TT       |
| MAPRE1  | rs406193   | CC       |
| CABP5   | rs3936340  | TT       |
| PAM     | rs35658696 | AA       |
| MTHFR   | rs1801133  | AA       |
| GYPC    | rs1550404  | TT       |
| PRMT6   | rs12125971 | CC       |
| /       | rs17813294 | CC       |
| TET2    | rs2454205  | TT       |
| NEGR1   | rs7531118  | TT       |
| /       | rs2478286  | CC       |
| SCMH1   | rs12035012 | AA       |
| UBA7    | rs7613360  | TT       |
| CNR1    | rs1049353  | TT       |
| UBA7    | rs9855505  | TT       |
| BCL2    | rs956572   | GG       |
| /       | rs9388349  | TT       |
| ST8SIA6 | rs7897269  | TT       |
| CHRM2   | rs7799047  | GG       |
| REC114  | rs7171755  | GA       |
| CLSTN2  | rs6439886  | AA       |
| NR2F2   | rs4984541  | AA       |
| SNAP25  | rs363016   | TC       |
| CHRM2   | rs2350786  | AA       |
| DPP4    | rs1913808  | GG       |
| ST8SIA6 | rs17141089 | GG       |
| PKN2    | rs17130578 | GG       |

| GENE    | SNP        | GENOTYPE |
|---------|------------|----------|
| DPYD    | rs1702294  | CC       |
| SLC10A7 | rs11737630 | CC       |
| SBNO1   | rs1060105  | CC       |
| PPA2    | rs2726491  | AG       |
| /       | rs9320747  | GT       |
| AKR1C3  | rs9423406  | GA       |
| BDNF    | rs6265     | CT       |
| COMT    | rs4680     | GA       |
| SNAP25  | rs363050   | AG       |
| SNAP25  | rs363039   | GA       |
| PLXNB2  | rs28379706 | TC       |
| CHRM2   | rs2350780  | AG       |
| TFAM    | rs1937     | GC       |
| ARVCF   | rs165599   | GA       |
| SCN2A   | rs10174400 | CT       |
| NEGR1   | rs12128707 | AG       |
| RBM6    | rs13100903 | CT       |
| /       | rs12211582 | GT       |
| NR1D2   | rs6550835  | AG       |
| NEGR1   | rs1486091  | TC       |
| ELAVL2  | rs10733389 | GA       |

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

# Collagen & Joints (Functional)

Several genetic variants are linked to collagen synthesis, tendon strength, and tissue repair. These genes influence the structure and function of collagen and other connective tissues, affecting individual susceptibility to tissue wear, injury, and recovery.

**GDF5 (rs143383, 5'UTR C>T):** The *GDF5* gene plays a role in joint and tendon formation. The rs143383 variant (5'UTR C>T) is associated with increased susceptibility to joint issues and may affect the quality of collagen in tendons, impacting resilience and recovery.

**COL12A1 (rs970547, AluI A>G):** The *COL12A1* gene encodes a type of collagen important for tendon and ligament structure. The rs970547 variant (AluI A>G) can influence the mechanical properties of tendons, potentially increasing the risk of injuries due to weakened collagen fibers.

**VEGFA (rs699947, -2578 C>A):** The *VEGFA* gene is involved in vascularization and tissue repair. The rs699947 variant (-2578 C>A) affects blood flow and nutrient supply to collagen-rich tissues, impacting the body's ability to repair damaged collagen and maintain tendon health.

**COL1A1 (rs1800012, 1546 G>T):** The *COL1A1* gene encodes type I collagen, a major component of connective tissues. The rs1800012 variant (1546 G>T) can affect collagen structure and strength, influencing susceptibility to tendon injuries and other collagen-related issues.

**COL3A1 (rs1800255, Ala698Thr G>A):** The *COL3A1* gene encodes type III collagen, which contributes to the elasticity of connective tissues. The rs1800255 variant (Ala698Thr G>A) may decrease tissue flexibility and resilience, making tendons and other collagen-rich structures more prone to wear and tear.

**MMP1 (rs1799750, -1607 1G/2G):** The *MMP1* gene encodes an enzyme involved in collagen breakdown. The rs1799750 variant (-1607 1G/2G) can influence the rate of collagen degradation, affecting tissue renewal and potentially increasing susceptibility to tissue degeneration.

**MMP3 (rs679620, A>G):** Another matrix metalloproteinase gene, *MMP3*, also plays a role in collagen remodeling. The rs679620 variant (A>G) can impact the balance between collagen synthesis and degradation, influencing the long-term integrity of connective tissues.



LIKELY TYPICAL

## Likely typical collagen and joint health based on 7 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

| GENE    | SNP       | GENOTYPE |
|---------|-----------|----------|
| CPNE1   | rs143383  | AA       |
| MMP3    | rs679620  | CC       |
| COL3A1  | rs1800255 | GA       |
| COL1A1  | rs1800012 | AC       |
| VEGFA   | rs699947  | AC       |
| COL12A1 | rs970547  | CC       |
| MMP1    | rs1799750 | TT       |

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

# Mood & Behavior (Functional)

Various genetic variants are linked to mood regulation and behavior, influencing neurotransmitter activity, stress response, and emotional stability. These genes play a role in the brain's chemistry, affecting how individuals respond to stress, process emotions, and manage mood.

**MAOA (rs6323, Arg297Arg G>T):** The *MAOA* gene, often called the "warrior gene," affects the breakdown of neurotransmitters like serotonin and dopamine. The rs6323 variant (Arg297Arg G>T) is linked to emotional regulation and may impact aggression, anxiety, and impulsivity.

**DRD1 (rs4532, -48 G>A):** The *DRD1* gene encodes a dopamine receptor involved in motivation and reward pathways. The rs4532 variant (-48 G>A) can influence dopamine signaling, affecting mood stability and motivation.

**DRD2 (rs1800497, Taq1A C>T):** The *DRD2* gene variant rs1800497 (Taq1A C>T) affects dopamine receptor activity and is linked to reward-seeking behavior, addiction, and mood regulation. This variant can impact dopamine availability, influencing emotional resilience, motivation, and susceptibility to mood disorders.

**DRD3 (rs6280, Ser9Gly T>C):** The *DRD3* gene variant rs6280 (Ser9Gly T>C) is associated with dopamine function, influencing mood and emotional responses. This variant has been linked to susceptibility to mood disorders and addiction behaviors.

**DRD4 (rs1800955, -521 C>T):** The *DRD4* gene variant rs1800955 (-521 C>T) impacts dopamine receptor activity, affecting novelty-seeking behavior and emotional regulation.

**COMT (rs4680, Val158Met G>A):** The *COMT* gene variant rs4680 (Val158Met G>A) affects dopamine breakdown in the prefrontal cortex, influencing cognitive performance, stress response, and mood regulation, especially in stressful situations.

**MTHFR (rs1801131, 1298 A>C) and MTHFR (rs1801133, 677 C>T):** Variants in the *MTHFR* gene, rs1801131 (1298 A>C) and rs1801133 (677 C>T), influence folate metabolism, which is crucial for neurotransmitter production. These variants can impact mood, increasing susceptibility to mood disorders.

**MTR (rs1805087, 2756 A>G) and MTR (rs5326, G>A):** The *MTR* gene variants rs1805087 (2756 A>G) and rs5326 (G>A) affect homocysteine metabolism, which plays a role in brain health. Elevated homocysteine levels due to these variants may increase the risk of mood disorders.

**ANK3 (rs2494732, C>T) and ANK3 (rs10994336, 318473 C>T):** The *ANK3* gene, associated with mood regulation and neural stability, includes the rs2494732 (C>T) and rs10994336 (C>T) variants, which have been linked to mood disorders and may influence susceptibility to bipolar disorder and emotional regulation challenges.

**BDNF (rs6265, Val66Met G>A):** The *BDNF* gene variant rs6265 (Val66Met G>A) influences brain-derived neurotrophic factor, essential for neuroplasticity and mood regulation. The Met allele is associated with a reduced ability to cope with stress and a greater risk of anxiety.

**OXTR (rs2254298, A>G):** The *OXTR* gene variant rs2254298 (A>G) affects the oxytocin receptor, which influences social bonding and stress resilience. This variant may affect emotional sensitivity and social behavior.

**CACNA1C (rs41283526, G>A) and CACNA1C (rs1006737, G>A):** The *CACNA1C* gene, which encodes a calcium channel involved in neurotransmission, includes the rs41283526 (G>A)



LIKELY TYPICAL

## Likely typical mood and behavior based on 19 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

| GENE    | SNP        | GENOTYPE |
|---------|------------|----------|
| MTHFR   | rs1801133  | AA       |
| ANK3    | rs41283526 | TT       |
| ANK3    | rs10994336 | CC       |
| MAOA    | rs6323     | G        |
| BDNF    | rs6265     | CT       |
| SFXN1   | rs5326     | CT       |
| ANKK1   | rs1800497  | GA       |
| DRD1    | rs4532     | CT       |
| CDHR5   | rs1800955  | CT       |
| COMT    | rs4680     | GA       |
| OXTR    | rs2254298  | AG       |
| CHRNA5  | rs16969968 | AG       |
| GABRA2  | rs279858   | CT       |
| CHRNA5  | rs588765   | CT       |
| FAAH    | rs324420   | AC       |
| OPRM1   | rs1799971  | AG       |
| CACNA1C | rs1006737  | GG       |
| RNF180  | rs6295     | GG       |
| DRD3    | rs6280     | TT       |
| AKT1    | rs2494732  | TT       |
| MTHFR   | rs1801131  | TT       |
| MTR     | rs1805087  | AA       |

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

and rs1006737 variants (G>A). These variants have been associated with mood regulation and increased susceptibility to mood disorders such as bipolar disorder and depression, affecting emotional resilience and stress response.

**CHRNA5 (rs16969968, Asp398Asn G>A) and CHRNA5 (rs588765, C>T)::** The *CHRNA5* gene variants rs16969968 (Asp398Asn G>A) and rs588765 (C>T) influence nicotine receptor sensitivity, affecting addiction risk and reward-seeking behavior, which can impact mood regulation.

**FAAH (rs324420, Pro129Thr C>A):** The *FAAH* gene variant rs324420 (Pro129Thr C>A) is linked to the endocannabinoid system, which affects stress response and emotional resilience. This variant may influence mood and stress coping mechanisms.

**GABRA2 (rs279858, Lys132Lys A>G):** The *GABRA2* gene variant rs279858 (Lys132Lys A>G) affects the GABA receptor, influencing anxiety levels and mood stability.

**HTR1A (rs6295, -1019 C>G):** The *HTR1A* gene variant rs6295 (-1019 C>G) influences serotonin receptor function, impacting anxiety, depression, and mood stability.

**OPRM1 (rs1799971, Asn40Asp A>G):** The *OPRM1* gene variant rs1799971 (Asn40Asp A>G) affects the opioid receptor, influencing pain sensitivity, stress response, and reward pathways, all of which are related to mood and behavior.

# Anxiety

## Key Takeaways:

- Up to **65%** of the differences in people's risk of getting anxiety may be due to genetics.
- Other risk factors include traumatic and stressful events, thyroid problems, heart problems, and substance use problems.
- If your genetic risk is high, managing stress and substance use may help reduce overall risk.
- Anxiety can cause issues with sleep, fatigue, the gut, stress, focus, and mood.
- Click the **Recommendations** tab for potential dietary and lifestyle changes and **next steps** for relevant labs.

### It's completely normal to feel anxious about things from time to time.

Occasional anxiety can help us solve problems and make better life decisions. However, people with *anxiety disorders* often worry about normal activities, which impacts their daily life [\[R, R\]](#).

Two parts of your brain process threats [\[R, R, R\]](#):

- The *amygdala* helps activate the "fight or flight" response
- Frontal areas of your brain override the amygdala and help you respond logically

People experience anxiety when they have too much activity in their amygdala or too little in frontal brain areas [\[R, R\]](#).

If you're anxious, you may experience [\[R\]](#):

- Restlessness
- Fatigue
- Problems concentrating
- Short temper
- Muscle tension
- Heavy sweating
- Trembling
- Gut problems
- Heart rate changes
- Sleep problems

People are more likely to have these symptoms if they experience [\[R\]](#):

- Traumatic or stressful events
- Thyroid problems
- Heart problems
- Substance use problems

**Another important risk factor for anxiety is genetics.** About 30-65% of the differences in people's chances of getting anxiety can be attributed to genetics. Genes linked to anxiety may influence the levels and activity of different brain chemicals, such as [\[R, R, R, R, R, R, R\]](#):

- [Serotonin](#) and [dopamine](#), which make you feel happy ([SLC6A4](#), [HTR1A](#), [TPH2](#), [MAOA](#))
- [GABA](#), which calms the mind ([GABRG2](#))
- Stress hormones such as [cortisol](#) ([MC4R](#), [MAOA](#))
- Substances that promote new brain cell growth ([BDNF](#), [NGF](#))



TYPICAL LIKELIHOOD

## Typical likelihood of anxiety based on 806,651 genetic variants we looked at



### Your top variants that most likely impact your genetic predisposition:

| GENE     | SNP        | GENOTYPE |
|----------|------------|----------|
| ATP8B4   | rs2413998  | AA       |
| /        | rs16838980 | GG       |
| DNAH8    | rs4714177  | AA       |
| NUP107   | rs11177321 | GG       |
| FKBP4    | rs2302729  | CC       |
| PREPL    | rs1067327  | CC       |
| RNF180   | rs6295     | GG       |
| IL20RB   | rs17374749 | GG       |
| PID1     | rs10498237 | GG       |
| /        | rs10092548 | AA       |
| C6ORF118 | rs9295300  | AA       |
| NOX4     | rs17221829 | CC       |
| NOX4     | rs10830352 | GG       |
| GABRG2   | rs211037   | TT       |
| MARCHF4  | rs955816   | GG       |
| IRX6     | rs2397376  | TT       |
| HTR2A    | rs12584920 | GG       |
| COMT     | rs4680     | GA       |
| ERCC6L2  | rs7867155  | CC       |
| COMT     | rs4633     | CT       |
| SLC6A2   | rs3785151  | GC       |

| GENE   | SNP        | GENOTYPE |
|--------|------------|----------|
| CES1   | rs1566652  | TG       |
| GAD1   | rs3828275  | CT       |
| GAD1   | rs701492   | TC       |
| GAD1   | rs769407   | CG       |
| GAD1   | rs3791878  | TG       |
| IL18R1 | rs2058622  | AG       |
| GAD1   | rs3791851  | CT       |
| ZPLD1  | rs1709393  | CT       |
| DMD    | rs921896   | C        |
| CAMTA1 | rs11120917 | TC       |
| OR5P3  | rs7112002  | AC       |
| SRBD1  | rs2344662  | CA       |
| ADRB1  | rs1034258  | AG       |
| SSH2   | rs6354     | TT       |
| ESR1   | rs9340799  | AG       |
| ESR1   | rs2234693  | TC       |
| AKAP6  | rs17406568 | GG       |
| OSCP1  | rs906228   | CA       |
| AGPAT4 | rs3798943  | CC       |
| CCNY   | rs2086153  | CT       |
| COX7B2 | rs6447514  | TT       |
| DDT    | rs755622   | GG       |
| TULP1  | rs3800373  | AA       |
| RGS2   | rs10801153 | GG       |
| RNF220 | rs12138940 | GA       |
| MC4R   | rs10871777 | AA       |
| TBL1X  | rs5934574  | T        |
| TACR1  | rs3771841  | GA       |
| DSCAM  | rs1040315  | AG       |

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

# Estradiol (M)

**Estradiol is a type of estrogen. Estrogens are sex hormones that maintain sexual and reproductive health.** In males, estradiol impacts sex drive, sperm production, and the ability to get an erection. The main sources of estradiol in men are the testes and the adrenal glands [R, R, R, R].

Your estradiol levels partially depend on your genetics, but factors other than genetics also influence your hormones [R].

The following lifestyle changes can help balance your estradiol [R]:

- Getting enough sleep
- Managing your stress
- Exercise
- Limiting alcohol
- Eating a healthy diet, low in sugar and processed foods, and high in healthy fats and fiber

Estradiol levels that are consistently low or consistently high can signal an underlying condition that may need medical attention. If you are concerned about your hormone levels, talk to your doctor.



TYPICAL LEVELS

**Predisposed to typical estradiol levels based on 86 genetic variants we looked at**

Your top variants that most likely impact your genetic predisposition:

| GENE     | SNP         | GENOTYPE |
|----------|-------------|----------|
| CYP19A1  | rs727479    | AA       |
| CYP19A1  | rs28892005  | AA       |
| ABO      | rs657152    | AA       |
| ESR1     | rs728524    | AA       |
| ESR1     | rs9340799   | AG       |
| ESR1     | rs2234693   | TC       |
| ESR1     | rs2077647   | TC       |
| CYP19A1  | rs7173595   | TT       |
| /        | rs34019140  | GG       |
| /        | rs201687269 | TT       |
| XDH      | rs559555    | TT       |
| GCKR     | rs1260326   | CT       |
| EDA2R    | rs12850857  | G        |
| SRD5A2   | rs112881196 | CC       |
| FKBP4    | rs56196860  | CC       |
| CYP3A7   | rs45446698  | TT       |
| RBBP8    | rs113047993 | CC       |
| AR       | rs776715248 | T        |
| IGHV3-11 | rs11160915  | GG       |
| FAM9A    | rs5933688   | A        |
| BCL7B    | rs188982745 | GG       |
| KCNV1    | rs570754094 | AA       |
| TNP1     | rs13387042  | GG       |
| ESR2     | rs1256049   | CC       |
| UGT2B7   | rs7662029   | AA       |
| SULT2A1  | rs62129966  | CC       |
| IL7R     | rs1073548   | TT       |
| AR       | rs114255570 | G        |
| TNFSF12  | rs62059839  | CC       |

| GENE    | SNP         | GENOTYPE |
|---------|-------------|----------|
| CELSR1  | rs117826558 | CC       |
| TMOD2   | rs3751591   | AA       |
| SULT2A1 | rs10425629  | TT       |
| TNFSF12 | rs727428    | TT       |

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

# Histamine Intolerance

Histamine is broken down by two enzymes called **DAO** and **HNMT**. DAO is the main enzyme that breaks down histamine in the gut. HNMT deactivates histamine within cells [R, R].

Scientists currently think that DAO deficiency likely plays a more significant role in histamine intolerance related to dietary histamine. The gene that helps make DAO is called **AOC1** [R, R].

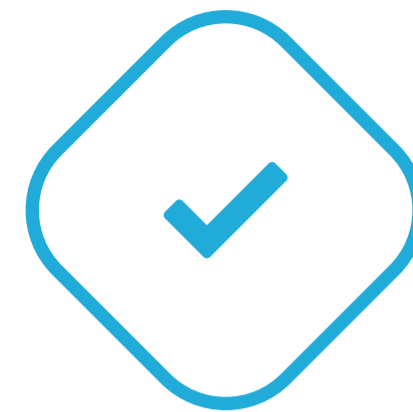
On the other hand, HNMT is more responsible for breaking down the histamine created by our body. Different **HNMT** gene variants have been linked to histamine-related conditions, such as [R, R, R, R, R]:

- Allergies
- Asthma
- Eczema
- Migraines
- ADHD

While genetic variants can influence histamine levels, research suggests that variants alone are probably **not sufficient** to cause full-blown histamine intolerance. Various environmental factors also play a key role [R].

Some of the factors that may contribute to histamine intolerance include [R, R, R, R, R, R, R, R]:

- Gut damage and inflammation (e.g., due to inflammatory bowel disease (IBD), gluten sensitivity, lactose intolerance, chemotherapy, etc.)
- Alcohol consumption
- Certain medications, such as some antibiotics and stomach acid blockers
- Underlying imbalances in the gut bacteria
- Consumption of foods containing high levels of biological *amines*, chemicals similar to histamine



TYPICAL LIKELIHOOD

## Typical likelihood of histamine intolerance based on 11 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

| GENE | SNP        | GENOTYPE |
|------|------------|----------|
| AOC1 | rs1049793  | CG       |
| AOC1 | rs1049748  | TC       |
| AOC1 | rs2071517  | GA       |
| AOC1 | rs2071514  | GA       |
| HNMT | rs1050891  | AG       |
| HNMT | rs2071048  | TC       |
| AOC1 | rs10156191 | CC       |
| AOC1 | rs2268999  | AA       |
| AOC1 | rs2052129  | GG       |
| HNMT | rs11558538 | CC       |
| AOC1 | rs1049742  | CC       |
| HNMT | rs16840064 | GG       |
| HRH4 | rs11662595 | AA       |

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

# Joint Pain

## Key Takeaways:

- Osteoarthritis will affect the majority of people over the age of 55. So, even with low genetic risk, the overall risk is still high for older people.
- About **50%** of the differences in people's chances of getting osteoarthritis may be due to genetics.
- Higher genetic risk may mean earlier onset and a greater impact from potential risk factors.
- Risk factors include: being female, joint injury or overuse, obesity, bone deformities, and diabetes.
- Click the **next steps** tab for relevant labs and lifestyle factors.

Osteoarthritis tends to affect knees, hands, and hips. People with this condition may experience [\[R, R\]](#):

- Joint pain and stiffness
- Difficulty moving
- Weakness and balance problems

Most people with osteoarthritis are over the age of 55. In fact, older age is the number one risk factor for this condition. Other risk factors include [\[R, R\]](#):

- Being a woman
- Joint injury or overuse
- Obesity
- Bone deformities
- Diabetes
- **Genetics**

**About 50% of the differences in people's chances of getting osteoarthritis can be attributed to genetics.** Genes that contribute to osteoarthritis may influence [\[R, R, R\]](#):

- [Collagen](#) production in the joints ([COL2A1](#), [COL11A1](#), and [COL1A1](#))
- Inflammation ([IL1B](#), [IL4R](#), [IL17A](#), [IL17F](#) and [IL6](#))
- Activity of joint cells ([ESR1](#))
- Bone formation ([FRZB](#), [VDR](#))
- Bone strength ([IGF1](#), [TGFB1](#), [TIMP3](#), and [ADAM12](#))

Genetically high levels of the following markers may be causally associated with a high risk of hip and knee osteoarthritis:

- IGF-1 [\[R, R\]](#)
- Testosterone [\[R\]](#)

In contrast, genetically high ApoB levels may be associated with a lower risk [\[R\]](#).



LESS LIKELY

**Less likely to have osteoarthritis based on 377,865 genetic variants we looked at**

1st

PERCENTILE



Your risk is greater than 1% of the population and lower than 99% of the population.

**Your top variants that most likely impact your genetic predisposition:**

| GENE     | SNP         | GENOTYPE |
|----------|-------------|----------|
| EPHA5    | rs201194999 | CC       |
| COL11A1  | rs2622873   | TT       |
| ICA1L    | rs62182810  | AA       |
| SRR      | rs216175    | AA       |
| ERI1     | rs330050    | GG       |
| LYZ      | rs317630    | TT       |
| HLA-DPB1 | rs2856821   | TT       |
| CPNE1    | rs2248393   | CC       |
| RAB28    | rs1913707   | AA       |
| DPEP1    | rs1126464   | GG       |
| FAM53A   | rs798726    | CT       |
| CSK      | rs35206230  | TC       |
| ANAPC4   | rs34811474  | AG       |
| TGFB2    | rs2785988   | AC       |
| LTBP1    | rs2061027   | GA       |
| SLC44A2  | rs1560707   | GT       |
| TSKU     | rs1149620   | TA       |
| KIF26B   | rs10218792  | TG       |
| SLC44A2  | rs10405617  | GA       |
| PRDM5    | rs11729628  | GT       |
| TGFB2    | rs2820436   | AC       |

| GENE    | SNP          | GENOTYPE |
|---------|--------------|----------|
| SOCS2   | rs2171126    | TC       |
| CDC5L   | rs12154055   | AG       |
| GLIS3   | rs10974438   | CA       |
| TMEM241 | rs10502437   | GA       |
| SGO1    | rs62242105   | GA       |
| PAR6G   | rs1039257158 | CC       |
| SCUBE1  | rs528981060  | GG       |
| SLC39A8 | rs13107325   | CC       |
| TGFB1   | rs75621460   | GG       |
| TGFA    | rs3771501    | GG       |
| H4C8    | rs115740542  | TT       |
| COL27A1 | rs919642     | AA       |
| MPPED2  | rs11031191   | GG       |

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

# Tendon Injury

## Key Takeaways:

- Up to **40%** of the differences in people's chances of developing tendinopathy may be due to genetics.
- Other risk factors include intense physical activity or certain sports, using improper training technique or equipment, doing repetitive tasks, age (over 40), being female, some chronic health conditions and medications.
- About 16 million tendon and ligament injuries occur in the U.S. each year.
- If you have a high genetic risk, you may lower your overall risk by taking action on those factors that you can change.

**Tendons** are cords made of strong tissue. They attach muscle to bone. There are many tendons throughout the body. Conditions in which tendons become inflamed and painful are called **tendinopathies** [R, R].

Risk factors for tendinopathies include [R, R, R, R]:

- Taking part in intense physical activity or certain sports (e.g., baseball, golf)
- Using improper training technique or equipment
- Doing repetitive tasks (e.g., gardening, painting, typing)
- Age (over 40)
- Gender (women may be at a higher risk)
- Some chronic health conditions (e.g., obesity, diabetes)
- Some medications
- **Genetics**

Up to **40%** of the differences in people's chances of developing tendinopathy may be due to genetics. Involved genes may influence tendon function [R, R, R, R, R].

Interestingly, one study that examined the impact of genetics on tendon injuries was conducted on elite athletes from FC Barcelona [R].

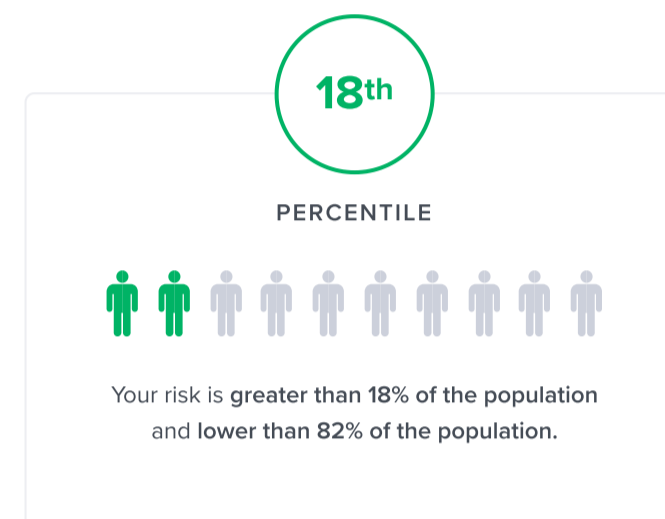
Tips to help prevent a tendon injury include [R, R]:

- Stretching and strengthening your muscles
- Alternating high-impact sports with low-impact ones (e.g., alternating running with walking)
- Avoiding running on hard, uneven, or slippery surfaces
- Using proper equipment (e.g., protective gloves, well-fitting shoes)
- Slowly increasing the intensity of the activity



LESS LIKELY

**Less likely to have tendinopathy based on 6 genetic variants we looked at**



**Your top variants that most likely impact your genetic predisposition:**

| GENE   | SNP        | GENOTYPE |
|--------|------------|----------|
| POLE2  | rs3218791  | TG       |
| /      | rs11232681 | AG       |
| GJA1   | rs11154027 | CC       |
| KLHL1  | rs59988404 | GG       |
| TRIML1 | rs60713544 | GG       |
| CERS5  | rs57224706 | AA       |

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

# Addiction

## Key Takeaways:

- About 40% of differences in people's chances of developing an addiction may be attributed to genetics.
- Risk factors include mental health conditions, difficult family life, peer pressure, substance use at a young age, and your genetics.
- If you have a high genetic risk, struggle with risk factors, or experience symptoms of addiction, you may want to talk to a healthcare professional about the best action to take.
- Addiction is heavily influenced by lifestyle and environmental factors, so even with a high genetic risk, your overall risk can be low with appropriate precautions.

*Addiction* is defined as a dependence on a behavior or substance. Researchers think almost anything that can stimulate a person can eventually lead to an addiction. This happens when something that is first done out of habit ends up becoming an obligation [R].

Things that people can become addicted to include [R]:

- Gambling
- Technology (e.g., internet, gaming, smartphones)
- Exercise
- Sex
- Shopping
- Substances

The brain has built-in systems for feeling pleasure and reward. For example, when you have a pleasant experience, dopamine systems are activated. These systems reward behaviors that help us survive and reproduce, such as eating and having sex. In response, we become motivated to take part in these behaviors again [R, R].

However, many addictive substances and behaviors can also activate the dopamine system. This can cause changes in parts of the brain that reinforce habits related to drug use. In people with a drug addiction, just being around a certain person or object can trigger the urge to use a drug [R, R, R].

*Substance use disorder* is the medical term for drug addiction. Substances that people can become addicted to include [R]:

- Tobacco
- Alcohol
- Cannabis
- Opioids (e.g., heroin, morphine, codeine)
- Stimulants (e.g., amphetamines, meth, cocaine)

**Up to 1 in 10 Americans may have substance use disorder at some point in their lives. What's more, only 1 in 4 of these people will seek treatment [R].**

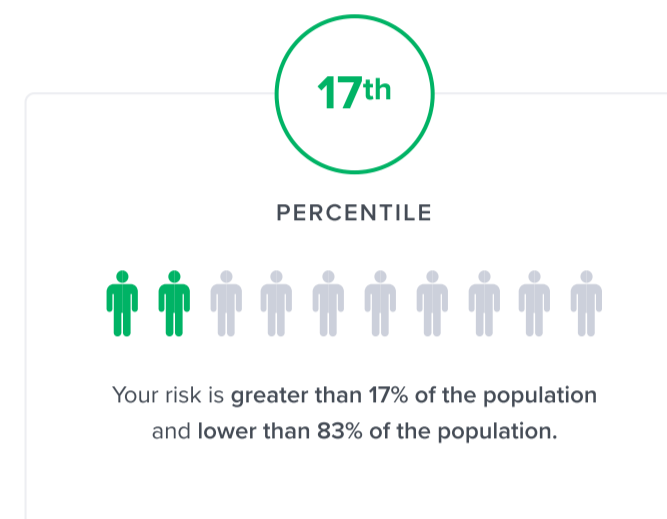
Addiction can have serious consequences. It may contribute to [R]:

- Road accidents
- Infectious disease (through shared needles or unsafe sex)
- Family or social problems
- Work or school problems
- Legal or money problems
- Mental health conditions
- Suicide or fatal overdose



LESS LIKELY

**Less likely to have addictions based on 847,156 genetic variants we looked at**



**Your top variants that most likely impact your genetic predisposition:**

| GENE   | SNP         | GENOTYPE |
|--------|-------------|----------|
| DOCK3  | rs148179194 | TT       |
| RGS18  | rs12126348  | GG       |
| PMM1   | rs4822044   | GG       |
| CSDC2  | rs202629    | TT       |
| ADH1B  | rs1229984   | CT       |
| DNMT3B | rs910083    | CA       |
| ADH1C  | rs1042026   | CT       |
| ZNF516 | rs73973283  | AA       |
| CDH6   | rs62357000  | TT       |
| ANKK1  | rs1800497   | GA       |
| LPCAT1 | rs27072     | CC       |
| EFNA5  | rs71575441  | TC       |
| MYC    | rs72716801  | GG       |
| DRD1   | rs265981    | AG       |
| SFXN1  | rs5326      | CT       |
| TTC12  | rs1079727   | TC       |
| DRD1   | rs686       | GA       |
| TTC12  | rs1079597   | CT       |
| TTC12  | rs2283265   | CA       |
| TTC12  | rs1076560   | CA       |
| CENPQ  | rs74745534  | CT       |

Risk factors for addictions include [\[R\]](#):

- Mental health conditions
- Difficult family life
- Peer pressure
- Substance use at a young age
- **Genetics**

Overcoming an addiction includes avoiding the substance, behavior, or associated trigger. This is very difficult. To help with the process, doctors may recommend [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Withdrawal therapy (e.g., drug "detox" programs)
- Talk therapy
- Medication
- Long-term follow-up to prevent relapse

**About 40% of differences in people's chances of developing an addiction may be attributed to genetics.** Genes involved in addiction may influence [\[R\]](#):

- Ability to control impulses ([MAOA](#), [HTR2B](#))
- [Dopamine](#) ([COMT](#))
- [Serotonin](#) ([SLC6A4](#))
- Opioids ([OPRM1](#))
- Alcohol metabolism ([ALDH2](#), [ADH1B](#))

| GENE     | SNP         | GENOTYPE |
|----------|-------------|----------|
| ZMYM6    | rs77109747  | GG       |
| POLR1F   | rs6461441   | AA       |
| PRKCE    | rs7591351   | TC       |
| TANC1    | rs890622    | GG       |
| HS3ST4   | rs57514421  | CT       |
| OPRM1    | rs1799971   | AG       |
| ACYP2    | rs2287641   | GA       |
| COMT     | rs4680      | GA       |
| BLMH     | rs2129785   | TT       |
| BLMH     | rs11867581  | AA       |
| HTR2A    | rs6313      | AG       |
| MYLK4    | rs2249437   | TC       |
| CADM2    | rs2875907   | AG       |
| IREB2    | rs8034191   | CT       |
| HLA-F    | rs62392942  | CT       |
| CENPW    | rs139878170 | CC       |
| XYLT1    | rs3943418   | GG       |
| SLC22A23 | rs9503551   | GG       |
| GNAL     | rs75433892  | GG       |
| SLITRK5  | rs7332726   | GG       |
| NTM      | rs75038630  | CC       |
| MAOA     | rs6323      | G        |
| LPCAT1   | rs464049    | GG       |
| SLC6A3   | rs27048     | TT       |
| MAOB     | rs1799836   | T        |
| DRD3     | rs167771    | AA       |
| ANKK1    | rs12364283  | AA       |
| DEAF1    | rs11246226  | CC       |
| CAMTA1   | rs75562159  | CC       |

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

# Testosterone

**Testosterone is the major male sex hormone.** It is mainly produced in the testes and helps men develop masculine features like increased muscle mass and body hair. Males begin producing testosterone when they are still in the womb and lose 1% of their testosterone per year after the age of 30. Testosterone helps develop a normal male reproductive system and produces some of the changes males experience during puberty [R, R].

Up to 60% of differences in people’s testosterone levels may be due to genetics. Genes involved may influence testosterone metabolism [R, R, R, R].

Testosterone levels are also influenced by your environment and lifestyle habits. Ways to balance your testosterone include [R, R, R, R]:

- Exercising
- Maintaining a healthy weight
- Improving your sleep quality
- Eating a healthy diet that includes healthy fats. Testosterone is made from cholesterol, and low-fat diets have been linked to low testosterone levels



HIGHER LEVELS

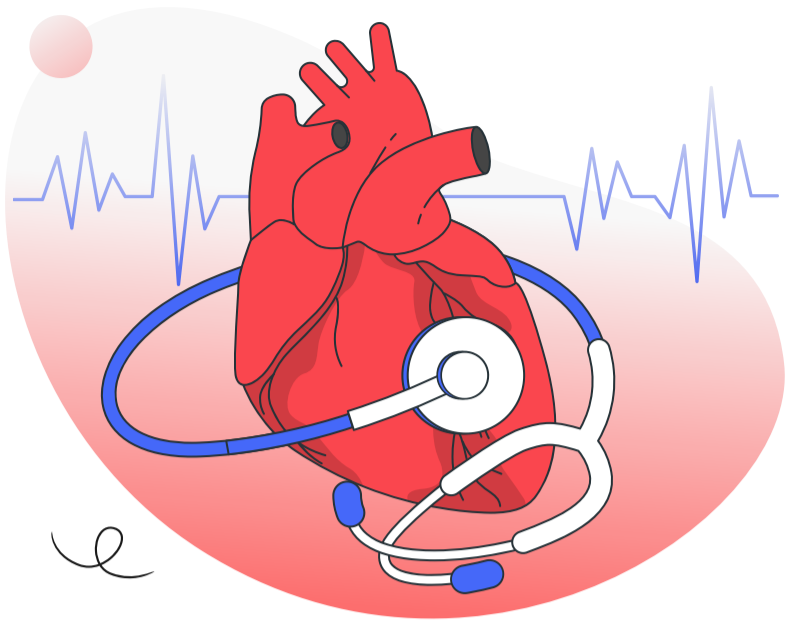
## Predisposed to higher testosterone levels based on 1,633 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

| GENE     | SNP         | GENOTYPE |
|----------|-------------|----------|
| FKBP4    | rs56196860  | CC       |
| SERPINA1 | rs28929474  | CC       |
| XDH      | rs7775907   | GG       |
| EDA2R    | rs141086308 | C        |
| TNFSF12  | rs727428    | TT       |
| PDE7B    | rs7774640   | GG       |
| FAM9A    | rs5934505   | T        |
| ATP1B2   | rs11078694  | CT       |
| TDGF1P3  | rs5942977   | G        |
| TNFSF12  | rs12946520  | TG       |
| NR2F2    | rs8023580   | TT       |
| MYPOP    | rs35318830  | TT       |
| /        | rs7097842   | GG       |
| NRBF2    | rs7084569   | AG       |
| KANSL1   | rs62062271  | TT       |
| UGT2B17  | rs9884390   | TT       |
| HACE1    | rs11156429  | TT       |
| SLCO1B1  | rs4149056   | TC       |
| GNGT2    | rs11655704  | CT       |
| GCKR     | rs1260326   | CT       |
| DGKB     | rs10278686  | TC       |
| STAT6    | rs7484541   | TA       |
| SS18     | rs600619    | AG       |
| SAT2     | rs10468481  | AG       |
| CERS5    | rs28849840  | AG       |
| JHY      | rs11218882  | TC       |
| ZBTB4    | rs12944954  | AA       |
| DNAH2    | rs117387630 | CC       |
| TACR3    | rs17289915  | CC       |

| GENE     | SNP         | GENOTYPE     |
|----------|-------------|--------------|
| WRAP53   | rs183855978 | GG           |
| WDR72    | rs79391862  | AA           |
| SHBG     | rs6258      | CC           |
| TNFSF12  | rs12150660  | GG           |
| ARL14EP  | rs10835638  | GG           |
| LCMT2    | rs143875230 | GG           |
| YIPF6    | rs7052964   | T            |
| FAM214A  | rs77255942  | CC           |
| UBQLN2   | rs6651991   | T            |
| /        | rs6484426   | TT           |
| BAIAP2L1 | rs34785619  | INS(T)INS(T) |
| PNPLA3   | rs738409    | GG           |
| GPR139   | rs2764772   | AA           |
| MRAS     | rs7626388   | AA           |
| HSD17B13 | rs6811902   | TT           |

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



## Heart & Blood Vessels


Cardiovascular health encompasses the well-being of the heart, blood vessels, and related processes that support circulation and oxygen delivery throughout the body. Genetics play a role in factors like cholesterol metabolism, vascular health, and blood pressure regulation, which together determine cardiovascular resilience.

Understanding genetic predispositions in these areas can help you adopt lifestyle adjustments that support heart and vessel health. This may help you reduce the risk of cardiovascular issues and promote sustained energy, endurance, and overall vitality.

 **TYPICAL**  
**Vascular Health (Functional)**


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Likely typical vascular health

 **TYPICAL LIKELIHOOD**  
**Artery Hardening**


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Typical likelihood of atherosclerosis

 **TYPICAL LEVELS**  
**Total Cholesterol**


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Predisposed to typical cholesterol levels

 **TYPICAL LIKELIHOOD**  
**Blood Clotting**

---

Typical likelihood of having thrombosis

 **TYPICAL**  
**Blood Pressure (Functional)**

---

Likely typical blood pressure

## Vascular Health (Functional)

Several genetic variants are associated with vascular health, impacting factors like blood pressure regulation, lipid metabolism, inflammation, and oxidative stress, all of which contribute to blood vessel integrity.

**CRP (rs1205, 2147 G>A):** The CRP gene is involved in inflammation, and the rs1205 variant (2147 G>A) can influence baseline CRP levels, affecting inflammatory processes within blood vessels and influencing vascular disease risk.

**NOS3 (rs1799983, Glu298Asp G>T):** NOS3 plays a role in blood vessel dilation by producing nitric oxide. The rs1799983 variant (Glu298Asp G>T) can affect nitric oxide production, impacting blood pressure regulation and vascular health.

**MTHFR (rs1801131, 1298 A>C):** MTHFR is crucial for folate metabolism, which is involved in vascular health. The rs1801131 variant (1298 A>C) may affect homocysteine levels, with elevated levels linked to increased risk of vascular issues.

**MTHFR (rs1801133, 677 C>T):** Another variant in *MTHFR*, rs1801133 (677 C>T), affects homocysteine metabolism, with elevated homocysteine levels being associated with higher cardiovascular risk.

**AGT (rs699, Met235Thr A>G):** The *AGT* gene affects blood pressure regulation. The rs699 variant (Met235Thr A>G) can influence angiotensin production, potentially increasing hypertension risk and impacting blood vessel health.

**CETP (rs708272, Taq1B G>A):** CETP is involved in lipid metabolism, influencing HDL cholesterol levels. The rs708272 variant (Taq1B G>A) can affect cholesterol transport and vascular health, with higher HDL levels being protective against atherosclerosis.

**HO-1 (rs2071746, -413 A>T):** HO-1 is involved in protecting blood vessels from oxidative damage. The rs2071746 variant (-413 A>T) can influence antioxidant capacity within the vascular system, impacting resilience against oxidative stress.

**LPL (rs328, Ser474Ter C>G):** LPL regulates lipid metabolism, affecting triglyceride breakdown. The rs328 variant (Ser474Ter C>G) can influence blood lipid levels, with variations linked to cardiovascular disease risk.

**ACE (rs4343, Ins/Del):** The *ACE* gene plays a role in blood pressure control. The insertion/deletion variant in ACE can affect angiotensin levels, influencing blood pressure regulation and vascular health.

**ALDH2 (rs671, Glu504Lys G>A):** ALDH2 is involved in alcohol metabolism, which can influence vascular function. The rs671 variant (Glu504Lys G>A) affects the body's ability to process alcohol, potentially impacting vascular health in alcohol consumers.

**APOA5 (rs662799, -1131 T>C):** APOA5 influences triglyceride metabolism. The rs662799 variant (-1131 T>C) can affect blood lipid levels, impacting cardiovascular health and vascular disease risk.

**APOE (rs429358, E2/E3/E4):** The *APOE* gene variant influences cholesterol levels. Different alleles (E2, E3, E4) impact cholesterol transport and vascular health, with certain variants associated with higher cardiovascular risk.

**F2 (rs1799963, 20210 G>A):** The *F2* gene variant affects blood clotting factors. The rs1799963 variant (20210 G>A) can increase the risk of clot formation, impacting vascular health, particularly in those with additional risk factors.



TYPICAL

### Likely typical vascular health based on 16 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

| GENE   | SNP       | GENOTYPE |
|--------|-----------|----------|
| CRP    | rs1205    | CC       |
| MTHFR  | rs1801133 | AA       |
| AGT    | rs699     | GG       |
| PCSK7  | rs662799  | AA       |
| IL6    | rs1800795 | GG       |
| ITGB3  | rs5918    | TC       |
| PKDREJ | rs4253778 | CG       |
| F5     | rs6025    | CC       |
| APOE   | rs429358  | TT       |
| F2     | rs1799963 | GG       |
| ALDH2  | rs671     | GG       |
| TOM1   | rs2071746 | AA       |
| VEGFA  | rs2010963 | GG       |
| MTHFR  | rs1801131 | TT       |
| CETP   | rs708272  | AA       |
| ACE    | rs4343    | AA       |
| OGG1   | rs1052133 | CC       |
| LPL    | rs328     | CC       |

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

**F5 (rs6025, Arg506Gln G>A):** The *F5* gene variant, also known as Factor V Leiden (rs6025, Arg506Gln G>A), affects blood clotting. This mutation increases the risk of abnormal clot formation, which can raise the likelihood of thrombosis and vascular complications.

**HPA-1 (rs5918, T>C):** The *HPA-1* gene variant (rs5918, T>C) influences platelet function, affecting blood clot formation. Variations in this gene can impact clotting efficiency, with potential implications for thrombosis risk and vascular health.

**IL-6 (rs1800795, -174 G>C):** IL-6 is involved in inflammatory processes. The rs1800795 variant (-174 G>C) affects IL-6 levels, influencing inflammation and potentially impacting vascular disease risk.

**OGG1 (rs1052133, Ser326Cys G>C):** The *OGG1* gene is involved in DNA repair, protecting cells from oxidative damage. The rs1052133 variant (Ser326Cys G>C) can influence vascular cell resilience to oxidative stress, impacting overall vessel health and disease resistance.

**PPARA (rs4253778, 89204 G>C):** The *PPARA* gene is involved in lipid metabolism and energy regulation within cells. The rs4253778 variant (89204 G>C) can impact how efficiently fats are processed, which may influence blood lipid levels and overall vascular health.

**VEGF (rs2010963, -634 G>C):** VEGF plays a role in blood vessel formation. The rs2010963 variant (-634 G>C) can affect vascularization and resilience, with variations linked to cardiovascular and vascular health.

These genetic factors, in conjunction with lifestyle factors, play a significant role in vascular health, affecting everything from inflammation to lipid metabolism. Understanding these genetic predispositions can help guide preventive strategies and support long-term cardiovascular health.

# Artery Hardening

## Key Takeaways:

- About 60% of differences in people's chances of having atherosclerosis may be due to genetics
- Risk factors: being male, high blood pressure and cholesterol, diabetes, obesity, smoking, lack of exercise, poor diet, and age.
- If you are at high genetic risk, you may lower your overall risk by taking action on risk factors that you can change.
- Artery hardening begins at a young age and your genetics, lifestyle, diet, and exercise may all impact how much and how fast it develops over the course of your lifetime.

Click the **Recommendations** tab for potential dietary and lifestyle changes and **next steps** for relevant labs.

The arteries are blood vessels that carry oxygen and nutrients from the heart to the rest of the body. Normally, they are elastic, able to expand and contract as blood flows through them [R, R].

Over time, some people's arteries may lose that flexibility. The blood vessel walls become thick and stiff. This is called artery hardening (*arteriosclerosis*) [R].

The most common type of artery hardening is atherosclerosis. In this condition, fatty substances build up on the blood vessel walls. This buildup is called plaque. It can narrow the arteries, which reduces blood flow. It can also burst and cause a blood clot [R, R, R].

**Atherosclerosis is the underlying cause of about 50% of all deaths in the Western world**[R].

Men may be more likely to develop atherosclerosis than women. The risk tends to increase with age [R, R].

Other risk factors for atherosclerosis include [R]:

- High blood pressure
- High cholesterol
- Underlying conditions (e.g., diabetes, obesity, sleep apnea)
- Cigarette smoking
- Lack of exercise
- Unhealthy diet
- **Genetics**

In most cases, atherosclerosis won't cause any symptoms. In fact, most people don't have symptoms until a blood vessel is so narrow that an organ stops receiving enough blood. Symptoms of moderate or severe atherosclerosis can vary depending on the artery affected. They can include [R]:

- Chest pain (for blood vessels feeding the heart)
- Weakness, loss of vision, slurred speech (for blood vessels feeding the brain)
- Leg or arm pain (for blood vessels feeding the limbs)
- High blood pressure or kidney failure (for blood vessels feeding the kidneys)

To prevent artery hardening, doctors recommend [R]:

- Quitting smoking
- Eating healthy foods
- Staying fit

Once the condition progresses, treatment options can include [R]:



TYPICAL LIKELIHOOD

**Typical likelihood of atherosclerosis based on 51,264 genetic variants we looked at**



**Your top variants that most likely impact your genetic predisposition:**

| GENE    | SNP        | GENOTYPE |
|---------|------------|----------|
| PEMT    | rs12936587 | GA       |
| NOS3    | rs2070744  | CT       |
| ZNF668  | rs9923231  | TC       |
| CDKN2A  | rs4977574  | GG       |
| CDKN2B  | rs10757278 | GG       |
| PCSK9   | rs11591147 | GG       |
| PCSK9   | rs562556   | AA       |
| PCSK9   | rs28362286 | CC       |
| COMT    | rs4680     | GA       |
| CETP    | rs5882     | GA       |
| ICAM1   | rs5498     | AG       |
| COMT    | rs4633     | CT       |
| LRIG1   | rs17045031 | GG       |
| EDNRA   | rs1878406  | TC       |
| CCDC71L | rs17398575 | AG       |
| LDLR    | rs6511720  | GG       |
| CDKN2B  | rs9632884  | CC       |
| FMN1    | rs4779614  | CT       |
| APOC1   | rs445925   | GG       |
| FAM167A | rs6601530  | GA       |
| ZHX2    | rs11781551 | AG       |

- Medication
- Surgery
- Lifestyle changes

It's important to prevent, manage, or treat atherosclerosis. Left untreated, it can cause [\[R\]](#):

- Heart attack
- Stroke
- Poor circulation in the arms and legs (peripheral artery disease)
- Bulges in blood vessels (aneurysms)
- Chronic kidney disease

**Around 60% of differences in people's chances of artery hardening may be attributed to genetics.** Genes involved in artery hardening may influence [\[R\]](#), [\[R\]](#):

- Cholesterol ([LRP6](#))
- Inflammation ([ALOX5AP](#), [LTA4H](#))

Moreover, genetically high testosterone levels may be causally associated with a lower risk of atherosclerosis in men [\[R\]](#).

| GENE    | SNP               | GENOTYPE  |
|---------|-------------------|-----------|
| CYP1A2  | <b>rs762551</b>   | <b>AA</b> |
| LPA     | <b>rs3798220</b>  | <b>TT</b> |
| FOXO3   | <b>rs2802292</b>  | <b>GG</b> |
| CCDC71L | <b>rs17477177</b> | <b>TT</b> |
| STEAP1  | <b>rs259140</b>   | <b>GG</b> |
| BTN3A2  | <b>rs4712972</b>  | <b>GG</b> |

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

# Total Cholesterol

If your doctor has ever told you that you have high cholesterol, they were either referring to [\[R\]](#):

- LDL cholesterol
- Total cholesterol (LDL, HDL, and VLDL)

Some risk factors for high cholesterol include [\[R\]](#), [\[R\]](#):

- A diet high in saturated fat
- Obesity
- Lack of exercise
- Older age
- **Genetics**

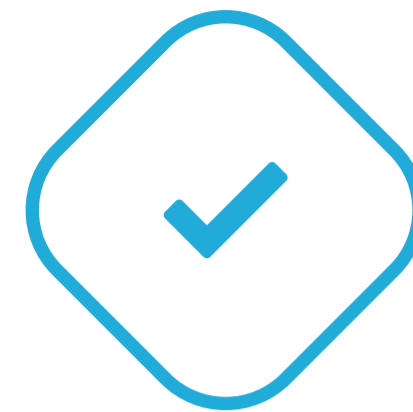
If your cholesterol levels rise, your doctor will recommend strategies for lowering them. These may include [\[R\]](#):

- A diet low in saturated fat (such as the Mediterranean diet)
- Exercise
- Losing excess weight
- Cholesterol-lowering medication

How well you respond to these strategies may, in part, depend on your genes.

**Up to 65% of differences in cholesterol levels may be attributed to genetics.** Genes that may contribute to high cholesterol influence [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Cholesterol production ([HMGCR](#))
- Cholesterol transport ([APOB](#))
- HDL and LDL cholesterol balance ([CETP](#), [LIPC](#), [LPL](#))



TYPICAL LEVELS

**Predisposed to typical cholesterol levels based on 1,265,814 genetic variants we looked at**

39<sup>th</sup>

PERCENTILE



Your risk is greater than 39% of the population and lower than 61% of the population.

**Your top variants that most likely impact your genetic predisposition:**

| GENE     | SNP         | GENOTYPE |
|----------|-------------|----------|
| APOE     | rs7412      | CC       |
| PCSK9    | rs11591147  | GG       |
| CETP     | rs708272    | AA       |
| SIDT2    | rs651821    | TT       |
| SLC16A11 | rs186021206 | GG       |
| SMARCA4  | rs142158911 | GG       |
| DNAJB14  | rs140280172 | CC       |
| CETP     | rs5882      | GA       |
| MINK1    | rs79202680  | GG       |
| SORT1    | rs12740374  | GG       |
| HNF4A    | rs1800961   | CC       |
| APOB     | rs562338    | GG       |
| FLT3     | rs76428106  | TT       |
| PPP1R3B  | rs9987289   | GG       |
| KIF13B   | rs117139027 | GG       |
| ABO      | rs2519093   | TT       |
| ABCA1    | rs2740488   | AA       |
| CD300LG  | rs72836561  | CC       |
| NLRC5    | rs56156922  | CC       |
| SEZ6     | rs72817635  | CC       |
| SLC39A8  | rs13107325  | CC       |

| GENE     | SNP         | GENOTYPE |
|----------|-------------|----------|
| GATA6    | rs79120103  | AA       |
| LCAT     | rs4986970   | AA       |
| HMGCR    | rs12916     | CT       |
| APOH     | rs149394327 | GC       |
| HAVCR2   | rs12657266  | CT       |
| IRF2BP2  | rs508293    | GA       |
| APOE     | rs429358    | TT       |
| LPL      | rs328       | CC       |
| PCSK7    | rs662799    | AA       |
| PCSK7    | rs5128      | CC       |
| MICB     | rs361525    | GG       |
| IL6      | rs1800795   | GG       |
| FABP2    | rs1799883   | CC       |
| LIPG     | rs77960347  | AA       |
| SNX8     | rs144787122 | AA       |
| /        | rs145030841 | CC       |
| ABCA6    | rs77542162  | AA       |
| MAFB     | rs1883711   | GG       |
| FGB      | rs6054      | CC       |
| SLC33A1  | rs76440173  | CC       |
| LPA      | rs55730499  | CC       |
| ADAM10   | rs1800588   | CC       |
| SGMS1    | rs80276949  | GG       |
| HP       | rs34042070  | CC       |
| HLA-DQA2 | rs6689      | AA       |
| NPC1L1   | rs10260606  | GG       |

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

# Blood Clotting

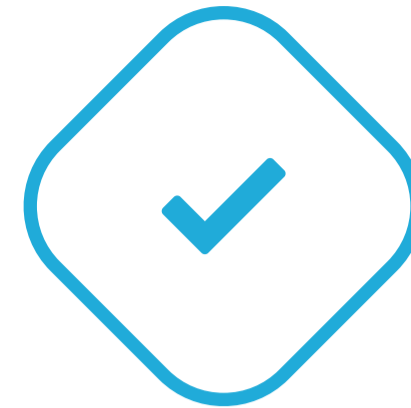
About **50%** of the differences in thrombosis may be due to **genetics** [R].

Other factors that might influence the risk of thrombosis include:

- Prolonged immobility (e.g., bed rest, long flights)
- Surgery, especially joint replacement surgery
- Injuries, especially those involving fractures or muscle damage
- Certain medications(e.g., oral contraceptives, hormone replacement therapy, chemotherapy drugs)
- Smoking
- Age, especially being over 60
- Pregnancy

Some health conditions may increase the risk of thrombosis, including:

- Obesity
- Chronic inflammatory diseases (e.g., lupus, inflammatory bowel disease)
- Blood clotting disorders
- Cancer



TYPICAL LIKELIHOOD

**Typical likelihood of having thrombosis based on 1,669 genetic variants we looked at**



**Your top variants that most likely impact your genetic predisposition:**

| GENE        | SNP         | GENOTYPE |
|-------------|-------------|----------|
| ITGB3       | rs5918      | TC       |
| F5          | rs4524      | TT       |
| ABO         | rs657152    | AA       |
| MCMBP       | rs12767946  | TT       |
| KIF26B      | rs1756912   | GG       |
| GP6         | rs1671152   | GT       |
| GP6         | rs1613662   | AG       |
| HLA-DQA2    | rs17202393  | GG       |
| NRG3        | rs1649936   | CC       |
| NCAM2       | rs62207434  | CC       |
| CSGALNAC T1 | rs62496681  | CC       |
| /           | rs72755680  | AA       |
| F5          | rs6025      | CC       |
| F2          | rs1799963   | GG       |
| CYP4V2      | rs2289252   | CC       |
| PROCR       | rs867186    | AA       |
| ENPP1       | rs72983636  | AA       |
| RNASEL      | rs55897462  | TT       |
| TAS2R5      | rs145241704 | TT       |
| POLE4       | rs74965230  | TT       |
| FAM174A     | rs115887893 | CC       |

| GENE  | SNP        | GENOTYPE |
|-------|------------|----------|
| PSG8  | rs59559305 | GG       |
| NME7  | rs16861990 | AA       |
| SELL  | rs1018827  | GG       |
| /     | rs687289   | AA       |
| PLRG1 | rs6825454  | TT       |

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

# Blood Pressure (Functional)

Several genetic variants are associated with blood pressure regulation. These genes play critical roles in pathways such as the renin-angiotensin-aldosterone system and nitric oxide signaling, both of which are central to maintaining cardiovascular health. Understanding your genetic profile can provide valuable insights into predispositions for hypertension and help tailor interventions to better manage blood pressure.

**ACE2 (rs2285666, 7132 T>C):** The *ACE2* gene encodes an enzyme that counterbalances the effects of angiotensin II by promoting vasodilation. The rs2285666 variant (7132 T>C) can influence ACE2 activity, potentially affecting blood vessel relaxation and blood pressure regulation.

**ACE2 (rs1978124, A>G):** Another variant in the *ACE2* gene, rs1978124 (A>G), also affects ACE2 function, influencing the body's ability to lower blood pressure through its vasodilatory effects.

**NOS3 (rs1799983, Glu298Asp G>T):** The *NOS3* gene encodes endothelial nitric oxide synthase, which plays a crucial role in vascular relaxation by producing nitric oxide. The rs1799983 variant (Glu298Asp G>T) is associated with reduced nitric oxide production, potentially leading to increased vascular resistance and hypertension.

**AGT (rs699, Met235Thr A>G):** The *AGT* gene produces angiotensinogen, a precursor to angiotensin II, a hormone that increases blood pressure. The rs699 variant (Met235Thr A>G) is associated with higher angiotensinogen levels, increasing the risk of elevated blood pressure.

**ACE (rs4343, Ins/Del):** The *ACE* gene encodes angiotensin-converting enzyme, which converts angiotensin I to angiotensin II, a potent vasoconstrictor. The insertion/deletion variant impacts ACE activity, with certain alleles linked to higher blood pressure and an increased risk of hypertension.

**ADRB1 (rs1801253, Arg389Gly):** The *ADRB1* gene encodes a beta-1 adrenergic receptor, which plays a key role in regulating heart rate and blood pressure. The G allele (Arg389) is associated with enhanced receptor activity, potentially contributing to elevated blood pressure and increased risk of cardiovascular conditions.

**CRP (rs579459):** The *CRP* gene encodes C-reactive protein, a marker of systemic inflammation. The C allele of rs579459 is associated with higher CRP levels, which can lead to vascular stiffness and increased blood pressure.

**ABO (rs1173771):** The *ABO* gene determines blood group. The rs1173771 variant influences glycosylation patterns on red blood cells and is linked to levels of von Willebrand factor and clotting risk. Certain alleles are linked to changes in endothelial function and blood viscosity, potentially influencing blood pressure regulation.

**SH2B3 (rs3184504, Trp262Arg):** This variant in the *SH2B3* gene, also known as LNK, impacts immune and cardiovascular function. The T allele (Arg262) is associated with higher blood pressure and an increased risk of hypertension and autoimmune conditions, likely due to altered immune signaling and vascular inflammation.

**PPARA (rs2107595):** The *PPARA* gene influences fatty acid metabolism and energy balance. Certain alleles may influence endothelial function and lipid regulation, indirectly impacting blood pressure control and contributing to cardiovascular risk.

**SORT1 (rs6495122):** Located near the *SORT1* gene, the rs6495122 variant is involved in lipid metabolism and associated



TYPICAL

## Likely typical blood pressure based on 20 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

| GENE     | SNP         | GENOTYPE |
|----------|-------------|----------|
| AGT      | rs699       | GG       |
| ADRB1    | rs1801253   | CC       |
| BCL2     | rs12454712  | TT       |
| APOE     | rs7412      | CC       |
| AGT      | rs5051      | TT       |
| ACE2     | rs1978124   | T        |
| NPR3     | rs1173771   | GA       |
| SH2B3    | rs3184504   | TC       |
| TWIST1   | rs2107595   | GA       |
| ULK3     | rs6495122   | CA       |
| TNNT3    | rs4980379   | TC       |
| ARHGAP42 | rs633185    | CG       |
| TCF7L2   | rs34872471  | CT       |
| PRKAG2   | rs10224002  | GA       |
| NOS3     | rs2070744   | CT       |
| CPA3     | rs5186      | AC       |
| ALDH2    | rs671       | GG       |
| MTHFR    | rs1801133   | AA       |
| LYPD2    | rs1799998   | AG       |
| ADD1     | rs4961      | TG       |
| GALNT2   | rs4846914   | GA       |
| TNNT3    | rs1973765   | CC       |
| FGF5     | rs10857147  | TA       |
| FGF5     | rs16998073  | TA       |
| FGF5     | rs11099098  | TG       |
| KCNK3    | rs35021474  | CG       |
| FGF5     | rs1458038   | TC       |
| CASZ1    | rs880315    | TC       |
| NT5C2    | rs112913898 | GA       |

with cholesterol regulation. The T allele has been linked to lower LDL cholesterol levels, better vascular health, and stable blood pressure.

**CETP (rs633185):** The *CETP* gene influences cholesterol transport by regulating HDL levels. The G allele of rs633185 is associated with reduced CETP activity, leading to higher HDL cholesterol levels, potentially contributing to better vascular elasticity and lower blood pressure.

| GENE    | SNP         | GENOTYPE |
|---------|-------------|----------|
| NT5C2   | rs11191593  | TC       |
| FES     | rs17514846  | AC       |
| PRDM8   | rs1902859   | CT       |
| NT5C2   | rs11191580  | TC       |
| FGF5    | rs13149993  | AG       |
| NT5C2   | rs11191548  | TC       |
| NT5C2   | rs12219304  | GC       |
| ACE     | rs4343      | AA       |
| ABO     | rs579459    | CC       |
| ULK3    | rs2472299   | GG       |
| ACE2    | rs2285666   | C        |
| NGF     | rs11466111  | CC       |
| EPAS1   | rs10168349  | CC       |
| SULT1C3 | rs6722745   | TT       |
| AGT     | rs4762      | GG       |
| RPTOR   | rs139293840 | GG       |
| BMP3    | rs17004869  | AA       |
| CACNA1D | rs3774427   | CC       |
| CACNA1D | rs9814480   | CC       |
| ST7L    | rs10776752  | GG       |
| ST7L    | rs3790604   | CC       |


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



## Energy & Metabolism


Energy and metabolism define how effectively the body generates fuel and maintains balance. Genetic differences influence how we process nutrients, regulate hunger, store fat, and respond to exercise, creating a unique metabolic profile for each person.

Knowing your genetic tendencies in energy regulation can guide you in optimizing diet and activity patterns that align with your natural metabolic rhythm. By working with your metabolism instead of against it, you can improve both physical performance and mental focus while sustaining energy levels throughout the day.

 **TYPICAL**  
**Adipogenesis (Functional)**


---

Likely typical adipogenesis

 **TYPICAL**  
**Exercise Response (Metabolic)**


---

Higher potential for fat burning from exercise

 **LOWER**  
**Metabolic Rate**


---

Predisposed to lower metabolic rate

 **TYPICAL LIKELIHOOD**  
**Tendency to Overeat**


---

Typical likelihood of overeating

 **LOWER**  
**Pro-Inflammatory Fat (Functional)**


---

Predisposed to lower fat cell inflammation

 **LESS LIKELY**  
**Overweight**


---

Less likely to be overweight or obese

 **LOWER**  
**Fat Mass**

---

Likely lower fat mass

 **BETTER**  
**FTO (Overeating)**

---

Likely better FTO genetics

# Adipogenesis (Functional)

Several genes influence adipogenesis, each playing a role in the differentiation of fat cells and the regulation of fat storage. These genetic variants impact how efficiently fat cells form and store energy, influencing overall body fat composition and metabolic health.

**PPARGC1A (rs8192678, Gly482Ser G>A):** The *PPARGC1A* gene, also known as PGC-1 $\alpha$ , is involved in the regulation of energy metabolism. The rs8192678 variant (Gly482Ser G>A) can impact mitochondrial function and fat cell differentiation, potentially influencing the body's capacity for adipogenesis and energy storage.

**MMP2 (rs1132896, Gly226Gly G>C):** *MMP2* encodes a matrix metalloproteinase involved in tissue remodeling, which is crucial for fat tissue expansion. The rs1132896 variant (Gly226Gly G>C) may affect the ability of fat tissue to expand, impacting the formation of new adipocytes and the body's capacity to store fat.

**ADRB2 (rs1042713, Arg16Gly A>G):** This variant in the *ADRB2* gene, rs1042713 (Arg16Gly A>G), influences the breakdown of fat within adipocytes. Changes in fat metabolism due to this variant can affect the balance between fat storage and fat utilization, influencing the rate of adipogenesis.

**ADRB2 (rs1042714, Gln27Glu C>G):** Another variant in the *ADRB2* gene, rs1042714 (Gln27Glu C>G), also plays a role in fat cell function and fat metabolism. This variant can impact how efficiently fat is stored versus mobilized, affecting adipogenesis and overall fat distribution.

**PLIN (rs894160, 11482 G>A):** The *PLIN* gene encodes perilipin, a protein that coats lipid droplets within fat cells, regulating lipid storage and release. The rs894160 variant (11482 G>A) can influence fat storage capacity within adipocytes, affecting overall body fat and susceptibility to obesity.

**ADRB3 (rs4994, Trp64Arg T>C):** The *ADRB3* gene is associated with fat metabolism, particularly in brown fat tissue. The rs4994 variant (Trp64Arg T>C) may reduce the ability to burn fat, potentially leading to an increased number of fat cells and higher fat storage in response to excess energy intake.

**FABP2 (rs1799883, Ala54Thr G>A):** The *FABP2* gene encodes a fatty acid-binding protein involved in fat absorption and transport. The rs1799883 variant (Ala54Thr G>A) affects how fatty acids are handled within cells, potentially influencing adipogenesis and fat accumulation.

**PPARG (rs1801282, Pro12Ala C>G):** The *PPARG* gene is a central regulator of adipocyte differentiation and function. The rs1801282 variant (Pro12Ala C>G) can alter the gene's activity, affecting adipogenesis and the body's capacity to store fat. Individuals with this variant may experience differences in fat distribution and metabolic risk.



TYPICAL

## Likely typical adipogenesis based on 8 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

| GENE     | SNP       | GENOTYPE |
|----------|-----------|----------|
| PPARG    | rs1801282 | CC       |
| ADRB3    | rs4994    | AA       |
| LPCAT2   | rs1132896 | GG       |
| FABP2    | rs1799883 | CC       |
| PEX11A   | rs894160  | CT       |
| ADRB2    | rs1042713 | AG       |
| PPARGC1A | rs8192678 | CT       |
| ADRB2    | rs1042714 | CG       |

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

## Exercise Response (Metabolic)

Several genetic variants are associated with the body's metabolic response to exercise. These variants influence fat metabolism, appetite regulation, and energy expenditure, thereby affecting how effectively one can lose weight and improve body composition through physical activity.

**FTO (rs9939609, 87653 T>A):** The FTO gene is associated with fat mass and obesity. The rs9939609 variant can influence appetite regulation and energy balance, potentially making it harder for some individuals to lose weight, even with exercise.

**LEPR (rs1137100, Lys109Arg A>G):** The LEPR gene encodes the leptin receptor, which plays a role in regulating body weight and fat storage. The rs1137100 variant (Lys109Arg A>G) affects leptin signaling, which can alter hunger and satiety responses, impacting weight loss outcomes from exercise.

**ADRB2 (rs1042713, Arg16Gly A>G):** The ADRB2 gene is involved in the regulation of lipolysis (fat breakdown) and energy expenditure. The rs1042713 variant (Arg16Gly A>G) affects how efficiently the body can mobilize fat during exercise, influencing the effectiveness of exercise in reducing body fat.

**ADRB2 (rs1042714, Gln27Glu C>G):** Another variant in the ADRB2 gene, rs1042714 (Gln27Glu C>G), also affects fat mobilization and energy expenditure. This variation may impact an individual's responsiveness to exercise, with some people experiencing better fat-burning efficiency.

**LEPR (rs1805094, Lys656Asn G>C):** This variant in the LEPR gene, rs1805094 (Lys656Asn G>C), influences leptin's role in weight regulation. Alterations in leptin sensitivity can affect how the body responds to exercise, especially in terms of fat loss and appetite control.

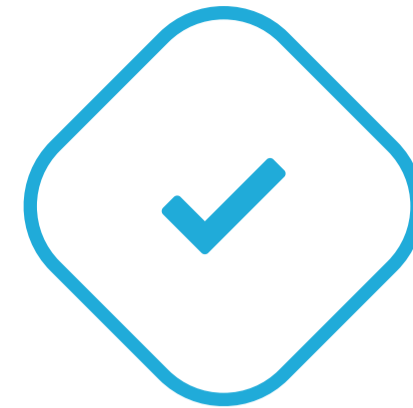
**ADRB3 (rs4994, Trp64Arg T>C):** The ADRB3 gene is involved in energy expenditure and fat breakdown. The rs4994 variant (Trp64Arg T>C) is associated with a reduced ability to burn fat, potentially making weight loss through exercise more challenging for some individuals.

**CLOCK (rs1801260, 3111 T>C):** The CLOCK gene influences circadian rhythms, which affect metabolism and energy balance. The rs1801260 variant (3111 T>C) can alter the body's natural energy cycles, potentially impacting how well one can lose weight with exercise based on individual metabolic rhythms.

**LEPR (rs1137101, Gln223Arg A>G):** Another LEPR gene variant, rs1137101 (Gln223Arg A>G), affects leptin signaling and energy homeostasis. Variations in this gene may lead to differences in appetite control and fat metabolism, influencing how effective exercise is for weight management.

**MC4R (rs17782313, T>C):** The MC4R gene is involved in energy homeostasis and appetite control. The rs17782313 variant (T>C) is linked to a higher likelihood of obesity, and individuals with this variant may need a tailored approach to exercise to see optimal weight loss results.

These genetic variants, combined with lifestyle factors, significantly influence each individual's metabolic response to exercise. For those with specific genetic predispositions, understanding these variations can help tailor exercise and diet strategies to achieve better health outcomes.



TYPICAL

### Higher potential for fat burning from exercise based on 10 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

| GENE  | SNP        | GENOTYPE |
|-------|------------|----------|
| FTO   | rs9939609  | TT       |
| PPARG | rs1801282  | CC       |
| ADRB2 | rs1042713  | AG       |
| LEPR  | rs1137100  | AG       |
| ADRB2 | rs1042714  | CG       |
| CLOCK | rs1801260  | AG       |
| LEPR  | rs1137101  | AG       |
| ADRB3 | rs4994     | AA       |
| LEPR  | rs1805094  | GG       |
| MC4R  | rs17782313 | TT       |

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

# Metabolic Rate

## Key Takeaways:

- Being high or low metabolism is not inherently problematic. Knowing what yours is allows you to adjust various diet, exercise, and lifestyle choices to properly manage it.
- Your metabolic rate influences movement, thinking, breathing, body temperature, and healing rate.
- High metabolic rate may be affected by being younger, being bigger, as well as more active. Low metabolic rate tends to be affected by the opposite of these. Your genetics may impact the influence of these factors.

Your metabolic rate is the number of calories you burn in a day to maintain bodily functions. A lower metabolic rate or a "slower metabolism" means your body needs fewer calories to do basic functions. Others may need to burn more calories to support these functions. These people have a higher metabolic rate or a "faster metabolism" [\[R,R,R\]](#).

Is metabolism related to body weight? If so, is it possible to burn more calories by boosting your metabolic rate?

Differences in metabolic rate may be due to both genetic and environmental factors. Factors that can contribute to a slower metabolism include [\[R, R, R, R, R\]](#):

- Being smaller
- Having less muscle mass
- Being older
- Being less active
- Not getting enough sleep

People with slower metabolism need fewer calories to get them through the day. They also tend to gain weight more easily.

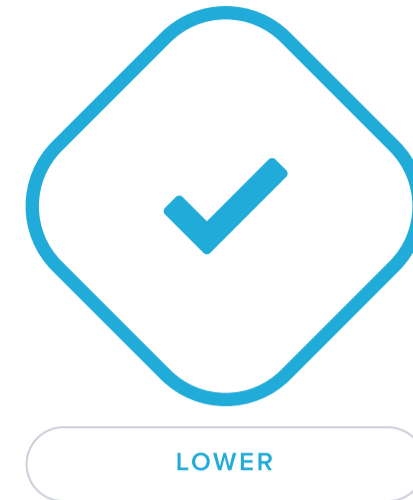
Factors that can contribute to a faster metabolism include [\[R, R, R, R\]](#):

- Being larger
- Having more muscle mass
- Being younger
- Being more active

People with faster metabolism need more calories to get them through the day. They also find it harder to gain weight.

Metabolic rate may not change much from age 20 to 60. While you may not change how many calories your body needs to perform automatic functions, **you can burn more calories by being more active**. Regular exercise can help maintain a healthy weight and support overall health [\[R, R, R, R, R\]](#).

If you're concerned about your weight or you think your metabolism is too slow or too fast, talk with your doctor.



**Predisposed to lower metabolic rate based on 136,918 genetic variants we looked at**

Your top variants that most likely impact your genetic predisposition:

| GENE     | SNP         | GENOTYPE |
|----------|-------------|----------|
| LEPR     | rs1805096   | GG       |
| PPARGC1A | rs8192678   | CT       |
| LEPR     | rs1137101   | AG       |
| ADRB2    | rs1042713   | AG       |
| ADRB2    | rs1042714   | CG       |
| CLOCK    | rs1801260   | AG       |
| LEPR     | rs1137100   | AG       |
| UCP1     | rs1800592   | TC       |
| UCP2     | rs659366    | TC       |
| CCND2    | rs76895963  | TT       |
| TP53     | rs78378222  | TT       |
| PARD3B   | rs1470545   | CC       |
| SH3YL1   | rs62106258  | CT       |
| L3MBTL3  | rs7740107   | AA       |
| HMGA2    | rs1351394   | CC       |
| DLG5     | rs117543413 | TC       |
| ZNF628   | rs147110934 | GT       |
| DCAF16   | rs1472852   | CA       |
| TEFM     | rs6505216   | TG       |
| FTO      | rs9939609   | TT       |
| ADRB3    | rs4994      | AA       |
| MC4R     | rs17782313  | TT       |
| UCP3     | rs1800849   | GG       |
| CCND3    | rs33966734  | CC       |
| MGA      | rs117183161 | AA       |
| MC4R     | rs76227980  | CC       |
| ZBTB26   | rs369508364 | CC       |
| CDKN1C   | rs143840904 | CC       |
| FANCC    | rs370727606 | GG       |

| GENE     | SNP         | GENOTYPE |
|----------|-------------|----------|
| ACAN     | rs28584580  | AA       |
| PAM      | rs78408340  | CC       |
| ADAMTS10 | rs62621197  | CC       |
| COQ5     | rs76929617  | AA       |
| PPA2     | rs143847362 | AA       |
| ASPRV1   | rs35986233  | AA       |
| RPS20    | rs72656010  | TT       |
| IL11     | rs4252548   | CC       |
| RAD9A    | rs7952436   | CC       |
| ADAL     | rs148076268 | AA       |
| DLEU7    | rs3118914   | GG       |
| HCAR1    | rs147730268 | GG       |
| MROH8    | rs73094911  | TT       |
| LTBP1    | rs116072427 | GG       |
| COPZ2    | rs62064921  | CC       |
| WDR35    | rs113386058 | AA       |
| ZNF469   | rs76520574  | CC       |
| GALR1    | rs74540285  | AA       |
| UVSSA    | rs111391498 | AA       |
| DRAM1    | rs17032220  | TT       |
| ZFHX4    | rs61729527  | CC       |

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

# Tendency To Overeat

Several genetic variants are associated with overeating behaviors, appetite control, and sensitivity to hunger and satiety signals. These variants influence hormonal regulation, reward pathways, and metabolic processes that can contribute to individual differences in eating behavior.

**FTO (rs9939609, 87653 T>A):** The *FTO* gene is strongly associated with appetite and obesity risk. The rs9939609 variant (T>A) can influence hunger and satiety, with the A allele linked to increased appetite and a higher likelihood of overeating and weight gain [R].

**FTO (rs6713532, A>G):** Another *FTO* variant, rs6713532 (A>G), has been linked to increased risk of obesity and a tendency toward overeating. Individuals with the G allele may have a higher susceptibility to weight gain due to increased appetite and reduced satiety signals.

**LEPR (rs1805094, Lys656Asn G>C):** *LEPR* encodes the leptin receptor, which is crucial for regulating hunger and satiety. The rs1805094 variant (Lys656Asn G>C) may impact leptin sensitivity, potentially affecting how full one feels after eating, influencing portion sizes and eating frequency.

**LEPR (rs1137101, Gln223Arg A>G):** Another variant in the *LEPR* gene, rs1137101 (Gln223Arg A>G), affects leptin signaling. The G allele is associated with a reduced feeling of fullness, which may lead to larger meal sizes and frequent hunger cues [R, R, R].

**TAS2R38 (rs713598, Ala262Val C>T):** *TAS2R38* is a taste receptor gene that affects taste sensitivity, particularly to bitter flavors. The rs713598 variant (Ala262Val C>T) can influence food preferences and eating behavior, potentially impacting overeating tendencies, especially in response to sweet or fatty foods [R, R, R].

**TAS2R38 (rs1726866, Ala49Pro G>A):** Another *TAS2R38* variant, rs1726866 (Ala49Pro G>A), affects bitter taste perception. Individuals with the A allele may have a preference for bitter-tasting vegetables like cruciferous greens. This variant can influence dietary choices and eating behaviors, indirectly impacting overall nutrition and weight management.

**APOA2 (rs5082, -492 T>C):** *APOA2* is involved in lipid metabolism and satiety regulation. The rs5082 variant (-492 T>C) has been associated with higher intake of saturated fats and a tendency to overeat, especially in individuals with the CC genotype.

**CLOCK (rs1801260, 3111 T>C):** The *CLOCK* gene influences circadian rhythms, which affect eating patterns and metabolism. The rs1801260 variant (3111 T>C) can disrupt regular eating schedules, potentially leading to increased food intake during irregular hours and contributing to overeating [R, R, R].

**DRD2 (rs1800497, Taq1A C>T):** *DRD2* encodes a dopamine receptor, which is involved in reward and pleasure pathways in the brain. The rs1800497 variant (Taq1A C>T) can affect dopamine sensitivity, potentially leading to increased cravings and reward-seeking behaviors related to food [R, R, R, R].

**FAAH (rs324420, Pro129Thr C>A):** *FAAH* is involved in endocannabinoid signaling, which influences appetite and pleasure from eating. The rs324420 variant (Pro129Thr C>A) can increase the tendency to snack and overeat, particularly high-fat foods, due to heightened pleasure responses to food.

**MC4R (rs17782313, T>C):** The *MC4R* gene is associated with energy balance and appetite control. The rs17782313 variant (T>C) has been linked to increased appetite and a higher risk of



TYPICAL LIKELIHOOD

## Typical likelihood of overeating based on 20 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

| GENE    | SNP        | GENOTYPE |
|---------|------------|----------|
| POMC    | rs6713532  | TT       |
| NPY     | rs16147    | TT       |
| ANKK1   | rs1800497  | GA       |
| CLOCK   | rs1801260  | AG       |
| CNR1    | rs1049353  | TT       |
| LEPR    | rs1805096  | GG       |
| LEPR    | rs1137101  | AG       |
| TAS2R38 | rs713598   | GC       |
| LEP     | rs7799039  | GG       |
| COMT    | rs4680     | GA       |
| FAAH    | rs324420   | AC       |
| TAS2R38 | rs1726866  | GA       |
| LEPR    | rs1137100  | AG       |
| TCF7L2  | rs7903146  | TC       |
| FTO     | rs9939609  | TT       |
| MC4R    | rs17782313 | TT       |
| MC4R    | rs12970134 | GG       |
| SLC2A2  | rs5400     | GG       |
| FCER1G  | rs5082     | AA       |
| NPY     | rs16139    | TT       |
| POMC    | rs1042571  | GG       |

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

obesity, as individuals with the C allele may feel less satiated after eating [\[R, R, R, R\]](#).

**MC4R (rs12970134, G>A):** The rs12970134 variant (G>A) near the *MC4R* gene has been linked to increased hunger and a reduced feeling of fullness. Individuals with the A allele may be more prone to overeating and weight gain due to a diminished satiety response, making appetite control more challenging [\[R\]](#).

**SLC2A2 (rs5400, Thr110Ile C>T):** SLC2A2 plays a role in glucose transport and blood sugar regulation. The rs5400 variant (Thr110Ile C>T) can influence carbohydrate cravings and eating patterns, with certain alleles associated with a preference for high-carb foods.

**HADH (rs1042571, C>T):** The *HADH* gene encodes hydroxyacyl-CoA dehydrogenase, an enzyme involved in fatty acid metabolism and energy regulation. The rs1042571 variant (C>T) has been associated with differences in metabolic efficiency and energy utilization.

**NPY (rs16147, A>G):** The *NPY* gene encodes the neuropeptide Y, which is involved in regulating stress response, appetite, and arousal. The rs16147 variant (A>G) has been associated with differences in appetite control and stress-induced eating behaviors. Individuals with the G allele may be more prone to overeating, especially in response to stress [\[R\]](#).

**CNR1 (rs1049353, C>T):** The *CNR1* gene encodes the cannabinoid receptor 1, which is involved in the endocannabinoid system that regulates appetite, mood, and reward pathways. Individuals with the T allele of rs1049353 may have an increased tendency to cravings and overeating, particularly for high-calorie or "comfort" foods, due to heightened activity in the brain's reward centers.

**COMT (rs4680, Val158Met G>A):** The *COMT* gene encodes an enzyme that breaks down dopamine in the brain, affecting mood, reward sensitivity, and impulse control. The rs4680 variant (Val158Met G>A) influences dopamine levels, with the A allele (Met) associated with slower dopamine breakdown. Individuals with the A allele may have heightened sensitivity to rewards, which can increase susceptibility to cravings and overeating.

**ADRB3 (rs1805096, Trp64Arg T>C):** The *ADRB3* gene encodes the beta-3 adrenergic receptor, which is involved in regulating fat breakdown and energy expenditure. The rs1805096 variant (Trp64Arg T>C) has been associated with reduced receptor function, leading to decreased fat metabolism and an increased risk of weight gain.

## Pro-Inflammatory Fat (Functional)

Several genetic variations are linked to the body's inflammatory response and influence the production of pro-inflammatory adipokines. These variants can impact the likelihood and severity of inflammation, especially in individuals with high adipose tissue levels.

**ADIPOQ (-11391 G>A, rs17300539):** The ADIPOQ gene encodes adiponectin, a protein that modulates glucose levels and fatty acid breakdown. This particular variant (-11391 G>A, rs17300539) can lower adiponectin levels, leading to higher pro-inflammatory activity, especially in individuals with obesity.

**CRP (2147 G>A, rs1205):** C-reactive protein (CRP) is a marker of inflammation, and its levels rise in response to inflammatory conditions. The CRP variant rs1205 (2147 G>A) can influence CRP blood levels, potentially elevating baseline inflammation and increasing risks related to cardiovascular and metabolic health.

**IL-6R (Asp358Ala A>C, rs2228145):** This variant in the IL-6 receptor gene, rs2228145 (Asp358Ala A>C), affects how the body responds to the inflammatory cytokine IL-6, potentially leading to an increased inflammatory response and higher susceptibility to inflammation-related diseases.

**TNFA (-308 G>A, rs1800629 and -238 G>A, rs361525):** Tumor necrosis factor-alpha (TNFA) is a potent pro-inflammatory cytokine. Variants -308 G>A (rs1800629) and -238 G>A (rs361525) can increase TNFA production, elevating inflammation levels and increasing the risk of chronic inflammatory conditions, particularly with excess fat tissue.

These genetic factors, along with lifestyle and environmental influences, play a critical role in determining an individual's inflammatory profile. For those carrying these variants, managing weight and maintaining a balanced diet can help counteract the effects of pro-inflammatory adipokines.



LOWER

### Predisposed to lower fat cell inflammation based on 7 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

| GENE   | SNP        | GENOTYPE |
|--------|------------|----------|
| MICB   | rs361525   | GG       |
| ADIPOQ | rs17366743 | TT       |
| TNF    | rs1800629  | GG       |
| IL6    | rs1800795  | GG       |
| IL6R   | rs2228145  | CC       |
| CRP    | rs1205     | CC       |
| RFC4   | rs17300539 | GG       |

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

# Overweight

## Key Takeaways:

- Up to **70%** of people's differences in weight may be due to genetics.
- Up to **42% of adults** and **19% of children** in the US meet the medical criteria for obesity.
- Weight gain affects conditions like high blood sugar and heart disease. However, it is highly modifiable by diet and exercise. So, even if your genetic risk is high, there's a lot you can do to reduce its impact.
- Click the **Recommendations** tab for useful weight control tips and **next steps** for relevant labs.

People are finding it harder than ever to manage their weight. **Global obesity rates have skyrocketed** [R, R, R].

Some health experts even say we're in an "obesity epidemic." **Up to 42% of adults and 19% of children in the US meet the medical criteria for obesity** [R, R, R].

Doctors can use *body mass index* (BMI) to tell if someone is obese. To calculate your BMI, divide your weight by the square of your height (kg/m<sup>2</sup>). There are many online calculators that can help you do this [R, R].

In Western countries, people with a **BMI of 25 and over** are considered **overweight**. A **BMI of 30 or greater** is considered **obese**. In some Asian countries, a BMI of 25 and over is considered obese [R, R, R].

**BMI isn't the only important measure of healthy weight, however.** Body composition is also important because muscle is more dense than fat. Thus, a muscular athlete and an obese person can have similar BMIs [R, R].

For this reason, doctors and researchers often use other body weight measurements, including [R, R]:

- Waist circumference (WC)
- Waist-to-hip ratio (WHR)
- Percentage of body fat (%BF)
- Lean (muscle) mass

Some people worry about body weight because they value how they look. However, **body weight impacts both mental and physical health**. Obesity may increase the risk of [R, R]:

- High blood pressure
- High [cholesterol](#)
- Heart disease
- [High blood sugar](#)
- Reproductive issues and erectile dysfunction
- Breathing problems during sleep
- Joint and bone disorders
- Some cancers

In theory, you gain weight when you consume more calories than you burn. Your body stores the extra energy as fat [R, R, R].

**In reality, it's more complicated than that.** To stick to a healthy weight, you'll need to manage many factors, including [R, R, R]:

- **Diet.** Pay attention to the amount and type of food you eat, meal timing, and portion size.
- **Lifestyle.** It's better to live an "active" lifestyle than a "sedentary" one and to allow your body to get the sleep it



LESS LIKELY

**Less likely to be overweight or obese based on 455,232 genetic variants we looked at**



**Your top variants that most likely impact your genetic predisposition:**

| GENE   | SNP        | GENOTYPE |
|--------|------------|----------|
| LEPR   | rs1805096  | GG       |
| MC4R   | rs2229616  | CC       |
| TCF7L2 | rs7903146  | TC       |
| LPCAT2 | rs2285053  | CC       |
| LEPR   | rs1137101  | AG       |
| SEC16B | rs591120   | CC       |
| NPY    | rs16147    | TT       |
| POMC   | rs6713532  | TT       |
| NEGR1  | rs3101336  | CC       |
| ADRB2  | rs1042713  | AG       |
| PEX11A | rs894160   | CT       |
| CLOCK  | rs1801260  | AG       |
| UCP1   | rs1800592  | TC       |
| UCP2   | rs659366   | TC       |
| ANKK1  | rs1800497  | GA       |
| NEGR1  | rs2815752  | AA       |
| GIPR   | rs2287019  | CC       |
| CDKAL1 | rs2206734  | CC       |
| GP2    | rs12597579 | CC       |
| KLF9   | rs11142387 | CC       |
| RFC4   | rs17300539 | GG       |

- needs.
- **Environment.** What are your family habits? Do you have social support? What is your stress level? These things have a surprising effect on weight management.
  - **Medical conditions.** Anything that changes your metabolism or ability to exercise can also affect body weight.
  - **Genetics.** Some gene variants may make it easier or harder to manage your weight.

Doctors may recommend a variety of strategies to help reach and maintain a healthy weight. These include [R]:

- Reducing how much food you eat
- Choosing low-calorie foods
- Choosing more plant-based foods
- Exercising
- Counseling or support groups

Your genes may help determine how well you respond to these strategies.

Rarely, obesity can become a serious health problem. In these cases, doctors may prescribe [weight loss](#) drugs or surgery [R].

**Up to 70% of differences in weight may be attributed to genetics.** Genes that may contribute to body weight influence [R, R, R, R, R, R, R, R, R]:

- Food choices ([FTO](#), [IRX4](#))
- Appetite ([LEP](#), [POMC](#), [MC4R](#), [NPY](#))
- Meal timing ([CLOCK](#))
- Fat and sugar metabolism ([FTO](#), [UCP2](#), [TCF7L2](#))

Genetically high bioavailable testosterone may be causally associated with a high risk of obesity (in women). In contrast, genetically high choline, omega-3 fatty acids, and DHA may be causally associated with a lower risk of obesity [R, R].

| GENE    | SNP         | GENOTYPE |
|---------|-------------|----------|
| TAS1R2  | rs35874116  | TT       |
| NPC1    | rs1808579   | CT       |
| MTCH2   | rs10838738  | AG       |
| NPC1    | rs1805081   | TC       |
| KCTD15  | rs29941     | AG       |
| SH3YL1  | rs6548238   | TC       |
| LEPR    | rs1137100   | AG       |
| ADRB2   | rs1042714   | CG       |
| GNB3    | rs5443      | CT       |
| IL6R    | rs4845623   | GG       |
| IL6R    | rs2228145   | CC       |
| LEPR    | rs11208659  | TT       |
| LEP     | rs2167270   | AA       |
| LEP     | rs3828942   | GG       |
| LEP     | rs10244329  | TT       |
| SOCS3   | rs9892622   | AA       |
| CRP     | rs1205      | CC       |
| STEAP1B | rs10242595  | GA       |
| STAT3   | rs9891119   | AA       |
| PYY     | rs162431    | GG       |
| PGS1    | rs4969170   | GA       |
| TMC8    | rs4969168   | GA       |
| UCP2    | rs2075577   | AG       |
| GNPDA2  | rs16858082  | TT       |
| UCP2    | rs647126    | GA       |
| RFC4    | rs266729    | GC       |
| UCP2    | rs660339    | AG       |
| STMN4   | rs140901272 | CC       |
| IL1B    | rs1143634   | GG       |

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

# Fat Mass

Assessing fat mass is critical in managing and preventing obesity-related conditions. A report on an individual's fat mass can provide valuable insights into their potential health risks and serve as a basis for personalized dietary, lifestyle, and medical interventions.

Healthcare providers often use body composition analysis, such as Body Mass Index (BMI), waist circumference, or advanced imaging techniques like DEXA scans, to evaluate and monitor fat mass in relation to lean tissue. By doing so, they can track the effectiveness of treatment plans and guide patients towards healthier body composition.



LOWER

**Likely lower fat mass based on 132,025 genetic variants we looked at**



# FTO (Overeating)

Genetics may play a role in how often you feel hungry. One related gene is [FTO](#), known as fat mass and obesity-associated gene [\[R\]](#).

A variant near this gene is associated with:

- Increased appetite [\[R, R\]](#)
- Higher food intake [\[R, R\]](#)
- Feeling less full after meals [\[R, R, R\]](#)
- Eating in the absence of hunger [\[R, R\]](#)
- Food cravings and emotional eating [\[R, R\]](#)

It is important to remember that a number of other gene variants may also influence hunger. Additionally, lifestyle and environmental factors play an important role in appetite control and how much we eat.

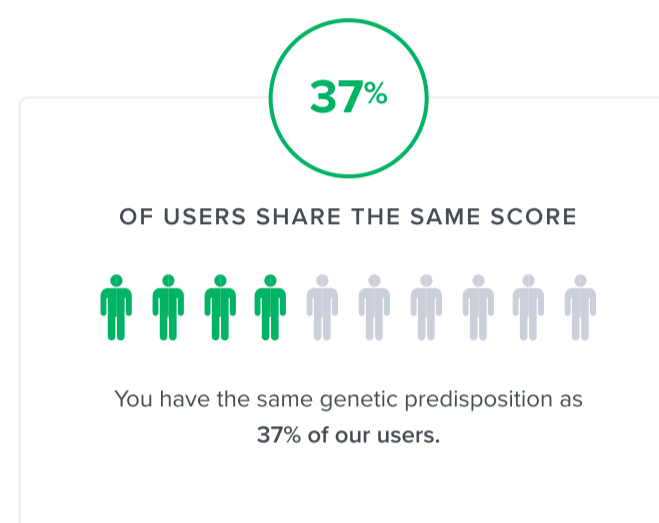
Some choices that may help you eat less include [\[R, R, R, R, R\]](#):

- Only eating when physically hungry
- Drinking more water
- Eating more protein
- Replacing sugary snacks with more filling foods



BETTER

## Likely better FTO genetics based on the genetic variants we looked at



### Your top variants that most likely impact your genetic predisposition:

| GENE | SNP       | GENOTYPE |
|------|-----------|----------|
| FTO  | rs9939609 | TT       |

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



## Activity & Fitness

Genetics contribute significantly to individual responses to physical activity, including endurance, muscle strength, and recovery rates. Certain genes determine how well the body adapts to exercise, the best types of training, and potential injury risks.

Understanding these genetic influences allows you to tailor your fitness approach to match your body's strengths. With insights into your genetic fitness profile, you can optimize performance and avoid overtraining for sustainable progress.

**LOWER**  
**Training Response (Fitness)**

Lower potential for fitness improvement from training

**TYPICAL LIKELIHOOD**  
**Injuries (Functional)**

Typical likelihood of injuries

**TYPICAL LIKELIHOOD**  
**ACL Injury**

Typical likelihood of tearing an ACL

**TYPICAL**  
**Exercise Recovery**

Predisposed to typical recovery after exercise

**TYPICAL**  
**Power**

Likely typical power performance

**TYPICAL ACTIVITY**  
**ACTN3 (Power)**

Likely typical ACTN3 activity

**TYPICAL**  
**Aerobic Capacity (VO2 Max)**

Predisposed to typical VO2 max

**LESS LIKELY**  
**Ankle Injury**

Less likely to have an ankle injury

**HIGHER**  
**Endurance**

Predisposed to higher endurance

# Training Response (Fitness)

Several genetic variants are associated with the body's response to aerobic training and its ability to improve VO2 max, endurance, and overall fitness levels:

**ACE (rs4343, Ins/Del):** The ACE gene influences cardiovascular function and muscle efficiency. The insertion/deletion (Ins/Del) variant in ACE can affect endurance potential, with the insertion allele associated with improved aerobic capacity and endurance performance.

**AMPD1 (rs17602729, 133 C>T):** AMPD1 encodes an enzyme involved in muscle energy metabolism. The rs17602729 variant (133 C>T) can impact the efficiency of energy production during exercise, potentially influencing endurance and recovery.

**CKM (rs8111989, NcoI T>C):** The CKM gene is involved in muscle energy storage and utilization. The rs8111989 variant (NcoI T>C) affects the enzyme creatine kinase, which plays a role in quick energy release for high-intensity exercise, impacting strength and endurance performance.

**PPARGC1A (rs8192678, Gly482Ser G>A):** Known as PGC-1α, this gene regulates mitochondrial biogenesis and energy metabolism. The rs8192678 variant (Gly482Ser G>A) influences aerobic endurance and VO2 max, making it a key factor in exercise response and stamina.

**ACSL1 (rs6552828, T>C):** ACSL1 plays a role in fatty acid metabolism, which is crucial for endurance exercise. The rs6552828 variant (T>C) affects the body's ability to utilize fats for fuel, impacting endurance and overall aerobic efficiency.

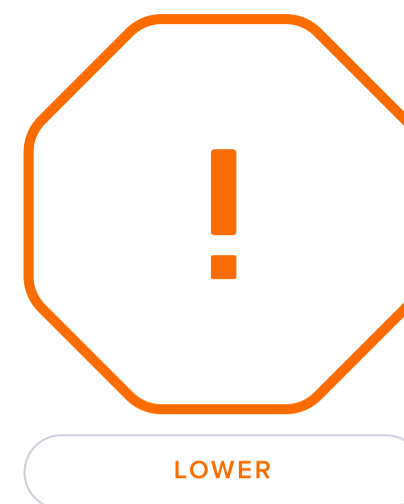
**GSTP1 (rs1695, Ile105Val A>G):** The GSTP1 gene is involved in detoxification processes and oxidative stress management. The rs1695 variant (Ile105Val A>G) can influence recovery and resilience to exercise-induced oxidative damage, affecting endurance and performance.

**HIF1A (rs11549465, Pro582Ser C>T):** HIF1A regulates the body's response to oxygen levels, which is vital during aerobic exercise. The rs11549465 variant (Pro582Ser C>T) can affect the body's adaptation to low oxygen during endurance activities, influencing VO2 max and exercise capacity.

**NRF2/NFE2L2 (rs35652124, A>G):** NRF2 controls antioxidant responses and cellular defense mechanisms. The rs35652124 variant (A>G) can impact recovery and resilience to oxidative stress, which is crucial for sustained performance in endurance sports.

**VEGF (rs2010963, -634 G>C):** VEGF is involved in blood vessel formation and oxygen delivery to muscles. The rs2010963 variant (-634 G>C) affects vascularization and muscle oxygenation, influencing endurance capacity and training response.

These genetic factors, combined with lifestyle and training choices, shape individual fitness levels and training response. Understanding these genetic influences can help create a more personalized approach to exercise, improving endurance, cardiovascular health, and overall fitness outcomes.



**Lower potential for fitness improvement from training based on 9 genetic variants we looked at**

Your top variants that most likely impact your genetic predisposition:

| GENE     | SNP        | GENOTYPE |
|----------|------------|----------|
| ACE      | rs4343     | AA       |
| HIF1A    | rs11549465 | CC       |
| GSTP1    | rs1695     | AA       |
| NFE2L2   | rs35652124 | TT       |
| ACSL1    | rs6552828  | AA       |
| VEGFA    | rs2010963  | GG       |
| CKM      | rs8111989  | TC       |
| PPARGC1A | rs8192678  | CT       |
| AMPD1    | rs17602729 | GG       |

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

## Injuries (Functional)

Several genetic variants have been associated with injury susceptibility, particularly in relation to tissue strength, inflammation, and recovery. These variants can impact how well the body withstands physical strain, repairs tissue damage, and manages inflammation.

**COL12A1 (rs970547, AluI A>G):** The *COL12A1* gene is involved in collagen formation, which is essential for the structural integrity of tendons and ligaments. The rs970547 variant (AluI A>G) may influence the resilience of connective tissues, affecting susceptibility to ligament and tendon injuries.

**GDF5 (rs143383, 5'UTR C>T):** The *GDF5* gene plays a role in joint formation and tissue repair. The rs143383 variant (5'UTR C>T) has been associated with an increased risk of osteoarthritis and may also affect recovery and injury susceptibility in joint tissues, especially under high-impact physical activities.

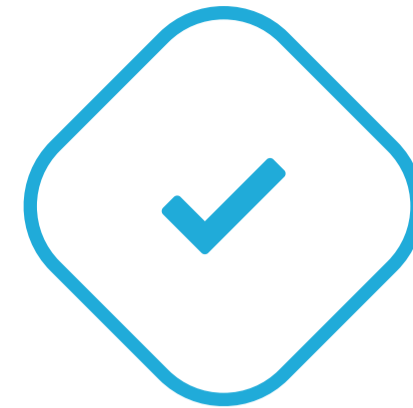
**VEGFA (rs699947, -2578 C>A):** VEGFA is involved in blood vessel formation and tissue repair. The rs699947 variant (-2578 C>A) can influence blood flow to injured areas, impacting healing time. Individuals with this variant may experience slower recovery from tissue injuries due to reduced vascularization.

**TNFA (rs1800629, -308 G>A):** Tumor necrosis factor-alpha (TNFA) is a key mediator in inflammation. The rs1800629 variant (-308 G>A) can lead to an increased inflammatory response, which may affect tissue healing and increase susceptibility to inflammation-related injuries in muscles and tendons.

**COL1A1 (rs1800012, 1546 G>T):** The *COL1A1* gene encodes a major collagen protein in tendons and ligaments. The rs1800012 variant (1546 G>T) can influence collagen strength and resilience, making tissues more prone to tears or strains during intense physical activity.

**COL3A1 (rs1800255, Ala698Thr G>A):** Another collagen gene, *COL3A1*, contributes to the structural integrity of connective tissues. The rs1800255 variant (Ala698Thr G>A) may decrease tissue flexibility, increasing the risk of injuries under physical strain.

**MMP3 (rs3025058, A>G):** The *MMP3* gene encodes an enzyme involved in tissue remodeling and repair. The rs3025058 variant (A>G) can influence the rate of tissue breakdown and repair, impacting recovery times and potentially leading to a higher risk of chronic injuries.



TYPICAL LIKELIHOOD

### Typical likelihood of injuries based on 7 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

| GENE    | SNP       | GENOTYPE |
|---------|-----------|----------|
| CPNE1   | rs143383  | AA       |
| COL1A1  | rs1800012 | AC       |
| COL5A1  | rs12722   | TC       |
| COL3A1  | rs1800255 | GA       |
| VEGFA   | rs699947  | AC       |
| COL12A1 | rs970547  | CC       |
| TNF     | rs1800629 | GG       |

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

# ACL Injury

The **anterior cruciate ligament (ACL)** is a strong band of tissue that connects the bone in your thigh to the bone in your shin. It helps stabilize the knee. Damage to the ACL may cause it to tear partially or completely. An ACL tear can occur if the knee moves suddenly or awkwardly. It can also occur if the side of your knee gets hit very hard [\[R, R, R\]](#).

An ACL injury is most likely to occur during exercise. For example, taking part in soccer, football, basketball, and skiing may increase the risk. Other risk factors include [\[R, R, R\]](#):

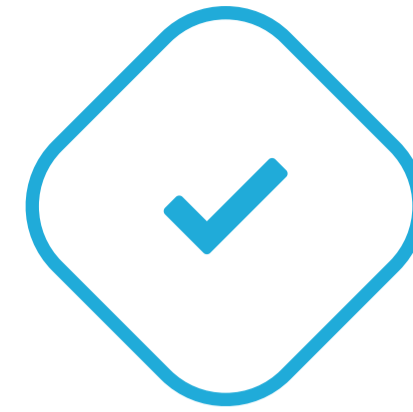
- Female sex
- Not warming up before exercising
- Using improper form during exercise
- Wearing improper sports equipment
- Exercising on artificial turf
- Working an intense job that requires you to jump, pivot, or climb
- **Genetics**

In fact, up to **70%** of differences in people’s likelihood of tearing an ACL may be due to genetics [\[R, R\]](#).

Treatment for a partial ACL tear includes the “RICE” method [\[R, R\]](#):

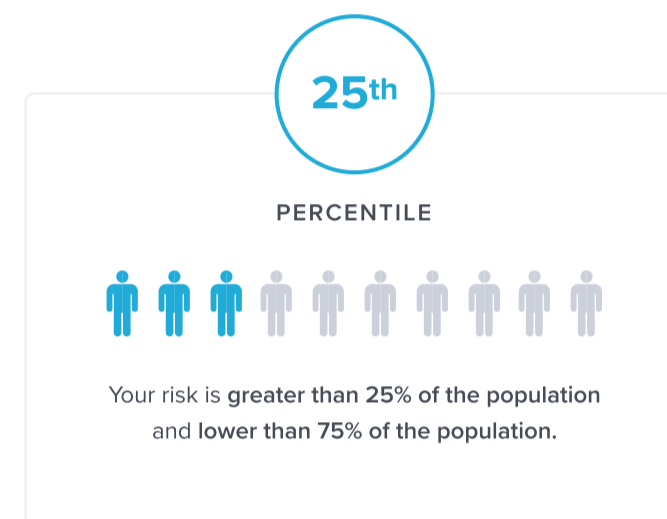
- **R**esting
- **I**cing the knee
- **C**ompressing the knee
- **E**levating the leg

Physical therapy and wearing a brace or using a crutch may also help. In more severe cases, surgery may be required [\[R\]](#).



TYPICAL LIKELIHOOD

## Typical likelihood of tearing an ACL based on 70,824 genetic variants we looked at



Your top variants that most likely impact your genetic predisposition:

| GENE        | SNP         | GENOTYPE |
|-------------|-------------|----------|
| SOAT1       | rs113435565 | CA       |
| MALRD1      | rs118010763 | TT       |
| MGMT        | rs112031232 | AA       |
| HSPG2       | rs190446136 | CC       |
| MYOM3       | rs140568949 | AA       |
| DOCK7       | rs138219207 | CC       |
| AHCTF1      | rs184856290 | GG       |
| PLXNA2      | rs61813824  | AA       |
| SGMS1       | rs151045759 | CC       |
| ARHGAP20    | rs9704284   | GG       |
| PFKP        | rs12413610  | TT       |
| NBPF3       | rs7524699   | CC       |
| DPP6        | rs4067493   | CC       |
| /           | rs11960097  | TT       |
| ST6GALNA C3 | rs289694    | CC       |
| IGSF21      | rs9660827   | CC       |
| TCERG1L     | rs2663012   | CC       |
| OR2T2       | rs28693711  | TT       |
| UBE2J2      | rs61766282  | GG       |
| OR2M4       | rs191269595 | GG       |
| TNFSF18     | rs2143185   | TT       |

| GENE     | SNP         | GENOTYPE |
|----------|-------------|----------|
| LBR      | rs146324110 | TT       |
| DNAH14   | rs12116987  | TT       |
| SHTN1    | rs142967392 | TT       |
| CADM1    | rs61899165  | CC       |
| SLC22A15 | rs7540316   | CC       |
| DNAH14   | rs12127872  | CC       |
| USP6NL   | rs76172007  | GG       |
| HSPA14   | rs17155523  | AA       |
| TACC2    | rs61873773  | CC       |
| CRYZ     | rs147331170 | TT       |
| ADGRL2   | rs114426845 | AA       |
| NCAM1    | rs59568652  | GG       |
| VAV3     | rs138238287 | CC       |
| ARHGAP12 | rs79526796  | GG       |
| DAB1     | rs852794    | GG       |
| /        | rs116845747 | TT       |
| NTPCR    | rs8179359   | GG       |
| /        | rs114694655 | TT       |

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

# Exercise Recovery

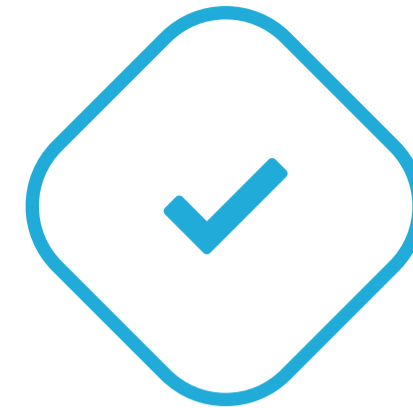
It is common to feel tired and sore after exercise. Exercise puts stress on our bodies, and we need time to recover after each bout.

Some people may recover from exercise more quickly and easily than others. Part of the reason for this may be genetic. For example, **variants in the ACTN3 gene**, important for the function of fast-twitch muscle fibers, **may make the muscles more susceptible to exercise-induced damage** [R, R, R].

Other factors that affect muscle recovery, include [R, R]:

- Intensity and type of exercise
- Nutrition and hydration
- Sleep quality
- Stress
- Aging

Light stretching, massage, and cold exposure can help improve recovery after exercise. For example, a cold bath for 10-15 minutes can decrease soreness and speed up muscle recovery [R, R, R, R, R, R].



TYPICAL

## Predisposed to typical recovery after exercise based on 16 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

| GENE    | SNP        | GENOTYPE |
|---------|------------|----------|
| FTO     | rs9939609  | TT       |
| IGF2    | rs7924316  | GG       |
| HGF     | rs5745697  | GG       |
| HGF     | rs5745678  | GG       |
| IL6R    | rs4129267  | TT       |
| MYLK    | rs28497577 | TT       |
| IL6R    | rs2228145  | CC       |
| ACTN3   | rs1815739  | CT       |
| CCR2    | rs1799865  | TT       |
| SLC30A8 | rs13266634 | CC       |
| CRP     | rs1205     | CC       |
| IL1B    | rs1143634  | GG       |
| GPX1    | rs1050450  | GG       |
| IGF2    | rs680      | TC       |
| IL1A    | rs4848306  | AG       |
| CYBA    | rs4673     | GA       |
| IGF2    | rs3213221  | CG       |
| CD28    | rs3116496  | TC       |
| CCL8    | rs2857656  | CG       |
| COL2A1  | rs2070739  | TC       |
| IL1B    | rs16944    | GA       |
| COL5A1  | rs12722    | TC       |
| CAT     | rs1001179  | CT       |
| SLC16A1 | rs1049434  | TT       |
| SLC16A1 | rs7169     | AA       |
| SOD2    | rs4880     | GG       |
| IGF2    | rs4244808  | GG       |
| CCR2    | rs3918358  | AA       |
| CCL2    | rs3917878  | CC       |

| GENE      | SNP        | GENOTYPE |
|-----------|------------|----------|
| C11ORF21  | rs3842748  | GG       |
| SPP1      | rs28357094 | TT       |
| MYLK      | rs2700352  | GG       |
| IL6       | rs1800795  | GG       |
| TNF       | rs1800629  | GG       |
| EEF1AKMT3 | rs11613457 | GG       |

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

# Power

**Power is the ability to produce a large amount of force in a short amount of time.** This involves intense muscle movements over a short time interval (e.g., **sprinting, jumping, throwing**) [R].

Some people are better at power sports than others. **Up to 85% of people's differences in muscle power may be due to genetics.** Genes associated with power affect [R, R, R, R, R, R, R]:

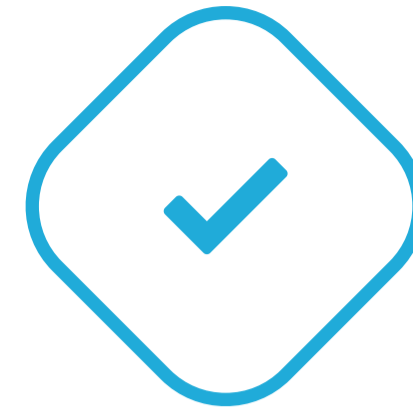
- Muscle composition and efficiency (fast-twitch vs. slow-twitch muscle fibers)
- Inflammation and recovery after exercise
- Energy metabolism
- Respiratory and cardiovascular fitness

**However, fitness level and other lifestyle factors also strongly affect your muscle power.**

Some tips that may help you build muscle power include:

- Doing regular resistance training to build up muscle strength
- Doing exercises that exert a lot of force in short time intervals. For example plyometrics (such as box jumps and burpees) or ballistic exercises (such as jumping with weights or throwing weights) increase explosive power.
- Focusing on maximum intent and quality rather than high repetition
- Eating a protein-rich diet to support muscle growth and repair
- Getting sufficient rest for muscle recovery

While general power training is beneficial, if you are training for a specific sport, you will need exercises that mimic the movements required in that sport.



TYPICAL

## Likely typical power performance based on 14 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

| GENE     | SNP        | GENOTYPE |
|----------|------------|----------|
| ACTN3    | rs1815739  | CT       |
| ACVR1B   | rs2854464  | AA       |
| ACE      | rs4343     | AA       |
| CKM      | rs8111989  | TC       |
| ADRB2    | rs1042713  | AG       |
| PKDREJ   | rs4253778  | CG       |
| ADRB2    | rs1042714  | CG       |
| NOS3     | rs2070744  | CT       |
| PPARGC1A | rs8192678  | CT       |
| VDR      | rs1544410  | CT       |
| VDR      | rs731236   | AG       |
| HIF1A    | rs2301113  | AA       |
| IL6      | rs1800795  | GG       |
| HIF1A    | rs11549465 | CC       |
| AGT      | rs699      | GG       |
| AMPD1    | rs17602729 | GG       |

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

# ACTN3 (Power)

**Power is the ability to produce short, intense movements (e.g., sprinting, jumping, throwing).** Our muscles are made up of fibers. The type of fibers determines what a muscle is good at. **Fast-twitch fibers support rapid movements and are more common in power athletes** [R, R, R].

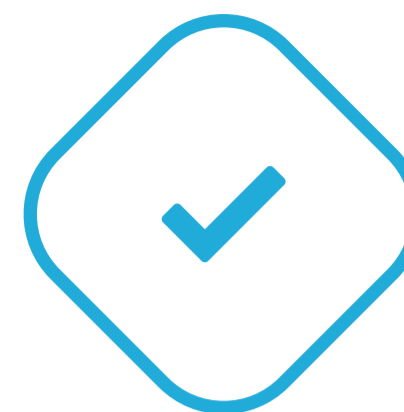
Fast-twitch muscle fibers contain higher amounts of a specific protein (alpha-actinin-3) that supports muscle power. The gene that helps make this protein is called [ACTN3](#) [R].

A specific *ACTN3* gene variant determines whether people produce this protein or not. People who produce this protein tend to have increased power performance. They are more likely to be elite power athletes [R, R, R].

On the other hand, people with more slow-twitch muscle fibers may be more suitable for endurance sports. They may also have better cold adaptation.

**However, fitness level and other lifestyle factors have a strong effect on your power.** The impact of genetics is more pronounced in elite athletes because they have improved all other factors [R].

Also, other gene variants not included in this report may influence power performance.



TYPICAL ACTIVITY

## Likely typical ACTN3 activity based on the genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

| GENE  | SNP       | GENOTYPE |
|-------|-----------|----------|
| ACTN3 | rs1815739 | CT       |

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

# Aerobic Capacity (VO2 Max)

VO<sub>2</sub> max (maximal oxygen uptake) **measures how efficiently your body uses oxygen during intense exercise.** It is a **key indicator of your aerobic fitness.** A higher VO<sub>2</sub> is linked to better endurance and improved athletic performance [R, R, R].

Between **45%-70%** of differences in people's VO<sub>2</sub> max may be due to **genetics** [R, R].

Genes linked to VO<sub>2</sub> max play roles in [R, R, R]:

- Muscle composition and function
- Energy production
- Glucose and lipid metabolism
- Blood flow and oxygen delivery

Other important factors that influence VO<sub>2</sub> max include [R, R, R, R, R, R]:

- **Physical activity:** Exercise may help improve VO<sub>2</sub> max by up to 30%. The difference is especially pronounced in those who are the least fit.
- **Gender:** Men typically have a greater VO<sub>2</sub> max than women.
- **Age:** VO<sub>2</sub> max tends to drop by about 2% per year after age 30
- **Body weight and composition:** Increased body fat can impair oxygen delivery during exercise.
- **Health status:** Conditions such as heart disease, lung disease and anemia can decrease VO<sub>2</sub> max.

You can improve your VO<sub>2</sub> max by doing cardio. Vigorous physical activity that gets your heart pumping is the best way to increase your aerobic fitness.



TYPICAL

**Predisposed to typical VO2 max based on 7,265,663 genetic variants we looked at**

Your top variants that most likely impact your genetic predisposition:

| GENE    | SNP         | GENOTYPE |
|---------|-------------|----------|
| NUP93   | rs78291913  | CT       |
| /       | rs139077859 | GG       |
| SCN10A  | rs6801957   | CC       |
| TGM2    | rs4811602   | GG       |
| SEC31B  | rs11190709  | AG       |
| ERBIN   | rs251295    | GA       |
| KLRK1   | rs10743889  | TT       |
| RSU1    | rs11254160  | GG       |
| POLM    | rs10232743  | CC       |
| MOXD1   | rs589756    | AC       |
| CCDC141 | rs10497529  | GG       |
| CCDC141 | rs142556838 | CC       |
| KCND3   | rs269071    | AA       |

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

# Ankle Injury

The ankle is a joint that connects the bones of the foot to the bones of the leg. It can bend sideways, upward, and downward. If a jump, fall, pivot, or step causes the ankle to bend in an odd way, the ligaments can stretch or tear. This is called a **sprained ankle** [R, R, R].

Some factors may increase the risk of ankle sprains. These include [R, R]:

- Taking part in sports that involve jumping or sudden changes in movement (e.g., basketball and soccer)
- Poor ankle strength, flexibility, or stability
- A previous ankle injury
- Wearing improper shoes
- Uneven surfaces
- Excess weight
- **Genetics**



LESS LIKELY

**Less likely to have an ankle injury based on 18,971 genetic variants we looked at**



**Your top variants that most likely impact your genetic predisposition:**

| GENE    | SNP         | GENOTYPE |
|---------|-------------|----------|
| COL5A2  | rs62182422  | CT       |
| SLC40A1 | rs62187073  | CT       |
| HIVEP1  | rs1569733   | TC       |
| /       | rs270481    | GA       |
| EFNB2   | rs74576663  | TG       |
| CCSER1  | rs62309831  | GA       |
| TENM3   | rs35619804  | AG       |
| UGDH    | rs56118664  | CC       |
| /       | rs139095264 | GG       |
| PRR16   | rs4340940   | CC       |
| CHD9    | rs72797642  | AA       |
| GATA3   | rs142347570 | AA       |
| NPY2R   | rs115005126 | TT       |
| RALGPS2 | rs187271145 | GG       |
| NFIB    | rs13286037  | TT       |
| SGO1    | rs12489876  | GG       |
| RABEPK  | rs117724125 | CC       |
| ASB18   | rs78681719  | TT       |
| C8ORF48 | rs73210044  | GG       |
| GRIA1   | rs140053818 | GG       |
| DLC1    | rs73208003  | GG       |

| GENE    | SNP         | GENOTYPE |
|---------|-------------|----------|
| NTS     | rs10506913  | AA       |
| /       | rs75670712  | TT       |
| DEPTOR  | rs149163456 | CC       |
| GTF3A   | rs67227314  | CC       |
| SLC20A2 | rs7459609   | CC       |
| HAS2    | rs13259692  | AA       |
| TCF12   | rs3803452   | TT       |
| ISOC1   | rs35100037  | CC       |
| SOX2    | rs34308817  | GG       |
| BCHE    | rs34324672  | CC       |
| PRPSAP2 | rs1634423   | CC       |
| SRPRB   | rs2718798   | CC       |

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

# Endurance

**Endurance is the ability to produce low-intensity movements for a long period of time (e.g., cycling, running, swimming).** It is made up of **cardiorespiratory endurance** (the ability of the heart and lungs to deliver enough oxygen to muscles during prolonged activity) and **muscular endurance** (the ability of muscles to contract over an extended period of time without fatigue) [R, R, R].

Some people have greater endurance than others. **Up to 70% of people's differences in endurance may be due to genetics.** Genes associated with endurance affect [R, R, R, R, R, R, R, R]:

- Muscle composition and efficiency (slow-twitch vs. fast-twitch muscle fibers)
- The body's ability to use oxygen
- Heart function

Some tips that may help you build endurance include:

- Getting at least 150 min of cardio per week
- Doing the same exercise regularly and letting your body adapt to it over time
- Slowly increasing the amount and intensity of your workouts over time
- Switching between periods of high-intensity training and resting. This is called high-intensity interval training (HIIT).

Great news is that **endurance can actually improve as we age!** For example, peak endurance age for ultra-marathoners often occurs in the late 30s and 40s, potentially even the 50s [R, R, R, R].



HIGHER

## Predisposed to higher endurance based on 36 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

| GENE     | SNP        | GENOTYPE |
|----------|------------|----------|
| HFE      | rs1799945  | CC       |
| GABPB1   | rs7181866  | AA       |
| GABPB1   | rs8031031  | CC       |
| ACTN3    | rs1815739  | CT       |
| SLC16A1  | rs1049434  | TT       |
| TTN      | rs10497520 | CC       |
| KDR      | rs1870377  | TT       |
| PRDM1    | rs10499043 | CC       |
| ADRB3    | rs4994     | AA       |
| CHRNA3   | rs4950     | AA       |
| GSTP1    | rs1695     | AA       |
| HIF1A    | rs11549465 | CC       |
| TSHR     | rs7144481  | TT       |
| NFE2L2   | rs35652124 | TT       |
| DES      | rs7564856  | GA       |
| SATB1    | rs4973706  | TC       |
| PPARGC1A | rs8192678  | CT       |
| GALNTL6  | rs558129   | GA       |
| ADRB2    | rs1042713  | AG       |
| ADRB2    | rs1042714  | CG       |
| COL5A1   | rs12722    | TC       |
| GNB3     | rs5443     | CT       |
| BDKRB2   | rs1799722  | TC       |
| RBFOX1   | rs7191721  | GA       |
| CNDP2    | rs6566810  | TA       |
| PKDREJ   | rs4253778  | CG       |
| AGTR2    | rs11091046 | C        |
| CKM      | rs8111989  | TC       |
| DEF6     | rs2016520  | CT       |

| GENE     | SNP        | GENOTYPE |
|----------|------------|----------|
| PPARGC1A | rs7665116  | CT       |
| PPARGC1A | rs2970869  | CT       |
| NR1H3    | rs7120118  | TT       |
| ACE      | rs4343     | AA       |
| GABPB1   | rs12594956 | AA       |
| MYBPC3   | rs1052373  | CC       |
| CYFIP1   | rs8029108  | AA       |
| NFIA     | rs1572312  | GG       |
| TTC23    | rs1464430  | AA       |
| KCNA4    | rs1323860  | GG       |
| PPARA    | rs1800206  | CC       |
| PPARGC1A | rs3774923  | CC       |
| HIF1A    | rs2301113  | AA       |


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



## Nutrition

Nutrition is essential to supporting the body’s fundamental processes, from cell maintenance to immune response. Genetic factors influence how effectively the body absorbs and utilizes nutrients like vitamins, minerals, and dietary compounds.

These insights can guide you in making dietary choices that meet your unique genetic needs, enhancing nutrient efficiency, and ensuring your body receives the right support for optimal health.

 **INCREASED NEED**  
**Folate (Functional)**

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Predisposed to increased need for folate

 **INCREASED NEED**  
**Folate (Vitamin B9)**


---

Likely increased need for folate

 **TYPICAL NEED**  
**Vitamin B12**


---

Likely typical need for vitamin B12

 **TYPICAL**  
**Salt Sensitivity**


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Likely typical sensitivity to salt

 **TYPICAL NEED**  
**Vitamin D**


---

Likely typical need for vitamin D

 **TYPICAL NEED**  
**Choline**


---

Likely typical need for choline

 **TYPICAL NEED**  
**Omega-3**


---

Likely typical need for omega-3s

 **TYPICAL RESPONSE**  
**Saturated Fat**


---

Predisposed to typical saturated fat response

 **TYPICAL NEED**  
**Vitamin C**


---

Likely typical need for vitamin C

 **TYPICAL GENETICS**  
**HLA-DQ (Gluten)**


---

Likely typical HLA-DQ genetics

 **TYPICAL LIKELIHOOD**  
**Iron Overload**

---

Typical likelihood of iron overload

 **LOWER**  
**Caffeine Sensitivity**

---

Predisposed to lower caffeine sensitivity

## Folate (Functional)

Several genetic variants are associated with folate metabolism, affecting how the body processes, utilizes, and requires folate.

**MTHFR (rs1801133, 677 C>T):** MTHFR is essential for converting folate to its active form. The rs1801133 variant (677 C>T) can reduce enzyme activity, leading to higher homocysteine levels and an increased need for dietary folate to support healthy methylation [R].

**MTHFR (rs1801131, 1298 A>C):** Another variant in *MTHFR*, rs1801131 (1298 A>C), also impacts folate processing efficiency. This variant may compound the effects of the 677 C>T variant, further increasing folate needs for individuals with both mutations [R, R, R, R].

**MTHFD1 (rs2236225, 1958 G>A):** The *MTHFD1* gene is involved in folate metabolism, particularly in providing one-carbon units for methylation and DNA synthesis. The rs2236225 variant (1958 G>A) can affect enzyme efficiency, potentially impacting folate requirements for optimal metabolic function [R].

**MTHFS (rs6495446, G482S):** The *MTHFS* gene is involved in the folate cycle, specifically in converting folinic acid (a form of folate) into 5,10-methylenetetrahydrofolate, which is crucial for DNA synthesis and repair. The rs6495446 variant (G482S) may reduce enzyme activity and has been linked to kidney disease [R].

**MTHFD1L (rs202676, 484 T>C):** The *MTHFD1L* gene plays a role in the folate metabolism pathway, specifically in the conversion of folate derivatives needed for cellular methylation and DNA synthesis. The rs202676 variant (484 T>C) may reduce the efficiency of this enzyme, potentially leading to impaired methylation and homocysteine removal. This variant has been associated with Alzheimer's disease, Parkinson's disease, and depression [R, R, R, R, R].

**SHMT1 (rs1979277, 1420 C>T):** The *SHMT1* gene encodes serine hydroxymethyltransferase, an enzyme that converts serine to glycine while generating 5,10-MTHF, a key form of folate involved in DNA synthesis and repair. The rs1979277 variant (1420 C>T) seems to reduce the ability of SHMT to produce 5,10-MTHF, leading to lower levels of active folate. The minor allele has been linked to liver cirrhosis, congenital problems with blood vessels, and Down's syndrome [R, R].

**DHFR (rs408626, 317 A>G):** The *DHFR* gene encodes an enzyme called dihydrofolate reductase that converts dihydrofolate (DHF) into tetrahydrofolate (THF). THF is a methyl group shuttle required for the production of purines and thymidine, both of which are required for DNA synthesis and cell growth. The rs408626 variant (317 A>G) may increase gene expression [R].

**DHFR (rs1650697, 473 T>C):** Another *DHFR* gene variant, rs1650697 (473 T>C) may increase DHFR levels [R].



INCREASED NEED

**Predisposed to increased need for folate based on 12 genetic variants we looked at**

Your top variants that most likely impact your genetic predisposition:

| GENE    | SNP        | GENOTYPE |
|---------|------------|----------|
| MTHFR   | rs1801133  | AA       |
| SHMT1   | rs1979277  | AA       |
| MTHFS   | rs6495446  | CC       |
| FOLH1   | rs61886492 | GG       |
| MTHFD1  | rs2236225  | GA       |
| MTRR    | rs1801394  | GA       |
| MSH3    | rs408626   | TT       |
| MSH3    | rs1650697  | AA       |
| MTHFR   | rs1801131  | TT       |
| MTHFD1L | rs11754661 | GG       |
| FOLH1   | rs202676   | AA       |
| MTR     | rs1805087  | AA       |

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

# Folate (Vitamin B9)

**Key Takeaways:**

- Folate is an essential vitamin. It is particularly important for pregnant women.
- Folate is needed for brain and heart health, gene signaling, and to protect DNA. It is readily available in citrus fruits, green vegetables, and fortified foods.
- Your diet, smoking, heavy drinking, gut issues, and genes may impact folate levels.
- Click the **next steps** tab for relevant labs.

Vitamin B9, also known as folate or folic acid, is an essential nutrient. Most adults should get **400 micrograms (mcg)** of folate per day. Among other functions, folate helps the body make red blood cells [R, R, R, R].

Low levels of folate are not common. However, women may be at a higher risk than men [R, R].

Additional risk factors and causes of low folate levels include:

- **Low intake of fruits and vegetables** [R, R]
- Heavy drinking [R, R]
- Smoking [R, R]
- Gut issues such as inflammatory bowel disease (IBD) or celiac disease [R, R, R]
- Certain medications [R]

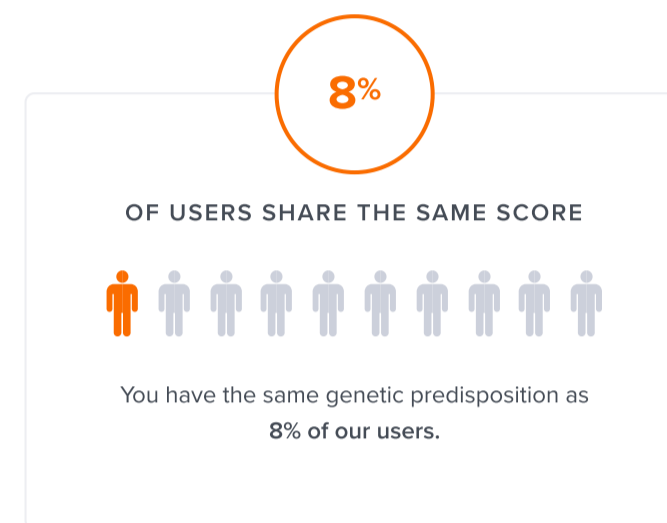
A variant in a gene called *MTHFR* is linked to slightly lower folate levels. People who carry two copies of this variant may have about 16% lower blood folate [R]. Genetically higher folate levels may be causally associated with [R, R, R, R, R, R, R, R]:

- IgE levels
- Fatty liver
- Vitiligo
- Joint pain
- HDL cholesterol
- Heart health (lower CHD)
- Stroke
- Gut inflammation (lower UC)

Read [this blog post](#) for more details about MTHFR variants and potential ways to reduce their impact.



**Likely increased need for folate based on the genetic variants we looked at**



**Your top variants that most likely impact your genetic predisposition:**

| GENE  | SNP       | GENOTYPE |
|-------|-----------|----------|
| MTHFR | rs1801133 | AA       |

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

# Vitamin B12

## Key Takeaways:

- Vitamin B12 is important for making energy and red blood cells, building DNA, and nerve function.
- It is most easily obtained via animal products like meat, eggs, dairy, and fortified foods.
- If you have an increased need or you tested as deficient, you may want to examine your current diet. You should talk to your doctor before taking B12 supplements.
- Click the **next steps** tab for relevant labs.

People more prone to low levels of vitamin B12 include [\[R\]](#):

- Vegetarians and vegans
- Older adults
- People with gut disorders (e.g., Crohn's disease, celiac disease)

A hallmark of vitamin B12 deficiency is a lack of healthy red blood cells (anemia). Anemia can cause symptoms like weakness and fatigue. A sign of long-term vitamin B12 deficiency is nerve damage [\[R, R, R, R\]](#).

Vitamin B12 deficiency can be detected with a blood test. After it is diagnosed, you may need to work with your doctor to figure out the cause. Your doctor may recommend oral supplements or injections of vitamin B12 to help correct the deficiency [\[R, R\]](#).

**If you are not deficient, it is best to get vitamin B12 from food. Talk to your doctor before taking vitamin B12 supplements [\[R\]](#).**



TYPICAL NEED

**Likely typical need for vitamin B12 based on 1,018,082 genetic variants we looked at**

Your top variants that most likely impact your genetic predisposition:

| GENE    | SNP         | GENOTYPE |
|---------|-------------|----------|
| TCN2    | rs1801198   | GG       |
| FUT2    | rs1047781   | AA       |
| FUT2    | rs602662    | GA       |
| CUBN    | rs11254363  | GG       |
| ADGRE1  | rs62123070  | CC       |
| FUT2    | rs601338    | GA       |
| MTRR    | rs1801394   | GA       |
| ABCD4   | rs4148077   | CC       |
| TCN1    | rs526934    | AG       |
| FUT5    | rs3760775   | GT       |
| FUT3    | rs708686    | CT       |
| FUT2    | rs516246    | CT       |
| CBS     | rs234706    | GA       |
| MMAB    | rs7134594   | CT       |
| CUBN    | rs1801222   | GG       |
| TCN1    | rs34324219  | CC       |
| RGS7    | rs7544372   | TT       |
| /       | rs1990193   | AA       |
| /       | rs1513859   | AA       |
| FAM240C | rs12478296  | CC       |
| SLC25A2 | rs3749779   | AA       |
| FOXK1   | rs314590    | AA       |
| CFAP299 | rs1385890   | AA       |
| LAMA4   | rs76190642  | GG       |
| CHODL   | rs34988353  | AA       |
| ARAP2   | rs142554771 | TT       |
| LAMA4   | rs144505878 | GG       |
| C1QL3   | rs79770840  | GG       |
| RGS18   | rs114973754 | CC       |

| GENE     | SNP         | GENOTYPE |
|----------|-------------|----------|
| ADGRL3   | rs545255284 | TT       |
| C16ORF82 | rs139645308 | CC       |
| POU3F3   | rs188141458 | GG       |
| KCNK2    | rs72761546  | TT       |
| KCNK2    | rs189754522 | AA       |
| PCSK2    | rs141477158 | GG       |
| TMEM179  | rs79885401  | CC       |
| LRRC6    | rs117429467 | AA       |
| STT3B    | rs188968123 | AA       |
| SPATA18  | rs142766122 | CC       |
| SRRM4    | rs73215576  | CC       |
| MICA     | rs556990455 | GG       |
| CADM2    | rs188586547 | AA       |
| CENPF    | rs72759663  | GG       |
| SMYD3    | rs148487271 | TT       |
| HSPB7    | rs144839376 | AA       |
| AKAIN1   | rs7239302   | CC       |
| ST8SIA6  | rs188363440 | AA       |
| DACT1    | rs118119041 | GG       |
| MMUT     | rs9473555   | GG       |
| TCN2     | rs9606756   | AA       |

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

# Salt Sensitivity

People who are salt sensitive will experience a bump in blood pressure when they eat salty foods. This happens because their kidneys function a bit differently [R, R, R].

Salt sensitivity is partly determined by the genes we carry. Genes involved in salt sensitivity may influence [R, R, R, R, R, R]:

- Sodium levels in the blood and kidney
- Blood vessel function
- Blood pressure

However, other genes and environmental factors may also influence your salt needs. It is important to get the right amount of salt for you.



TYPICAL

Likely typical sensitivity to salt based on 68 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

| GENE    | SNP         | GENOTYPE |
|---------|-------------|----------|
| BCAT1   | rs7961152   | AA       |
| SGK1    | rs9389154   | GG       |
| POC1B   | rs2681472   | AG       |
| NR2F2   | rs2398162   | GA       |
| ACE2    | rs184874220 | T        |
| PRKG1   | rs7905063   | TC       |
| PRKG1   | rs7897633   | AC       |
| SLC4A5  | rs7571842   | GA       |
| SCNN1A  | rs4764586   | AA       |
| SCNN1G  | rs4299163   | GG       |
| GC      | rs4254735   | TT       |
| CLGN    | rs2567241   | CC       |
| RAD52   | rs2301880   | TC       |
| FGF5    | rs16998073  | TA       |
| WNK1    | rs12828016  | TG       |
| CSTF2T  | rs12414562  | GA       |
| HYAL1   | rs10510755  | TC       |
| ADRB2   | rs1042714   | CG       |
| SCNN1G  | rs7404408   | TC       |
| SCNN1G  | rs5735      | CT       |
| SCNN1G  | rs4073930   | CT       |
| SCNN1G  | rs4073291   | CA       |
| RENBP   | rs78377269  | G        |
| ACE2    | rs714205    | C        |
| AGT     | rs699       | GG       |
| ACE     | rs4343      | AA       |
| SLC24A3 | rs3790261   | AA       |
| ACE2    | rs2285666   | C        |
| GSKIP   | rs11847625  | GG       |

| GENE     | SNP        | GENOTYPE |
|----------|------------|----------|
| SGK1     | rs9376026  | CC       |
| RAD52    | rs880054   | CT       |
| CPA3     | rs75367686 | AA       |
| SLC8A1   | rs434082   | CC       |
| SLC8A1   | rs11893826 | GG       |
| CSTF2T   | rs10997916 | GG       |
| SLC4A5   | rs10177833 | AA       |
| SLC4A4   | rs10022637 | TT       |
| KL       | rs9536314  | TT       |
| SCNN1G   | rs4499238  | CC       |
| SCNN1A   | rs3741914  | CC       |
| TNFRSF1A | rs11614164 | AA       |

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

# Vitamin D

## Key Takeaways:

- Vitamin D is an essential nutrient that you need outside sources of to achieve adequate levels. It is important for mood, immunity, heart health, and blood sugar control.
- Vitamin D levels can be impacted by intensity and amount of sun exposure, age, skin color, and your genetics.
- If you are genetically predisposed to needing more vitamin D, you may want to consider supplementation and addressing possible issues like sun exposure.
- Click the **next steps** tab for relevant labs.

[Vitamin D](#) is an essential nutrient. **Your body needs vitamin D for strong bones.** Our skin naturally makes vitamin D when exposed to [sunlight](#). We also get small amounts of vitamin D from foods such as fatty fish, egg yolks, beef liver, and mushrooms [\[R,R\]](#).

Around **20-40%** of differences in people's vitamin D levels may be due to genetics [\[R\]](#).

Genes that influence vitamin D levels may play a role in its [\[R\]](#):

- Production
- Activation
- Transport
- Breakdown

Besides genetics, the following factors also influence vitamin D levels [\[R\]](#):

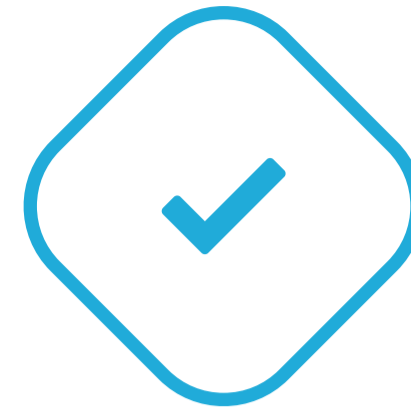
- Sun exposure
- Skin color
- Age

Genetically high vitamin D levels may be causally associated with positive outcomes for:

- Alzheimer's [\[R,R,R\]](#)
- COPD [\[R,R\]](#)
- Uterine fibroids [\[R\]](#)
- Migraines [\[R\]](#)
- Heart Failure [\[R,R\]](#)
- Psoriasis [\[R\]](#)
- Lupus [\[R\]](#)
- Delirium [\[R\]](#)
- Hypertension [\[R\]](#)
- Rosacea [\[R\]](#)
- Total Testosterone [\[R\]](#)
- Muscle loss [\[R,R\]](#)
- Muscle mass [\[R\]](#)
- CRP [\[R,R\]](#)
- Longevity [\[R,R\]](#)
- Lower cholesterol, lipoprotein particles, and phospholipids within VLDL and IDL [\[R\]](#)
- Higher HDL cholesterol [\[R\]](#)
- Lower triglycerides [\[R\]](#)
- Higher adiponectin [\[R\]](#)
- eGFR (lower) [\[R\]](#)
- Primary biliary cholangitis [\[R\]](#)

Genetically lower vitamin D levels may be causally associated with negative outcomes for:

- Multiple sclerosis [\[R,R,R,R,R,R,R,R,R\]](#)



TYPICAL NEED

## Likely typical need for vitamin D based on 1,754 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

| GENE    | SNP         | GENOTYPE |
|---------|-------------|----------|
| COPB1   | rs2060793   | GG       |
| COPB1   | rs12794714  | AA       |
| COPB1   | rs10832289  | TT       |
| GC      | rs2282679   | GT       |
| COPB1   | rs10741657  | GG       |
| GC      | rs7041      | AC       |
| CYP1B1  | rs1800440   | CT       |
| VDR     | rs1544410   | CT       |
| VDR     | rs2228570   | GA       |
| /       | rs189918701 | GG       |
| /       | rs558560635 | GG       |
| /       | rs375984409 | GG       |
| PDE3B   | rs571484036 | AA       |
| COPB1   | rs117913124 | GG       |
| GC      | rs222026    | TT       |
| GC      | rs4588      | TG       |
| VDR     | rs731236    | AG       |
| GC      | rs11723621  | GA       |
| PDE3B   | rs201501563 | TT       |
| RRAS2   | rs117206369 | TT       |
| /       | rs201561609 | TT       |
| ADH1B   | rs1229984   | CT       |
| GC      | rs113938679 | GG       |
| CYP2R1  | rs117576073 | GG       |
| /       | rs561089663 | GG       |
| PSMA1   | rs577185477 | TT       |
| /       | rs557657187 | GG       |
| NADSYN1 | rs12785878  | GG       |
| PSMA1   | rs554808052 | CC       |

- Pneumonia [\[R\]](#)
- Gut Inflammation: ulcerative colitis, non-infective colitis, and Crohn's disease [\[R\]](#)
- Lupus [\[R,R,R\]](#)
- Psoriasis [\[R,R\]](#)
- Longevity [\[R,R,R,R,R,R\]](#)

**A blood test is the only reliable way to determine vitamin D status [\[R\]](#).**

| GENE    | SNP                         | GENOTYPE           |
|---------|-----------------------------|--------------------|
| GC      | <a href="#">rs565277381</a> | <a href="#">TT</a> |
| /       | <a href="#">rs567415847</a> | <a href="#">GG</a> |
| /       | <a href="#">rs529640451</a> | <a href="#">CC</a> |
| NADSYN1 | <a href="#">rs536006581</a> | <a href="#">AA</a> |
| COPB1   | <a href="#">rs148514005</a> | <a href="#">CC</a> |
| /       | <a href="#">rs185433896</a> | <a href="#">AA</a> |
| PDE3B   | <a href="#">rs188480917</a> | <a href="#">CC</a> |
| GC      | <a href="#">rs3775150</a>   | <a href="#">TT</a> |
| NPFFR2  | <a href="#">rs143106299</a> | <a href="#">AA</a> |

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

# Choline

Some people have no symptoms despite their reduced choline intake, while others may need even more than usually recommended amounts. Genetics may be partly responsible for this.

The [PEMT](#) gene helps make an enzyme that produces [phosphatidylcholine](#) (PC) in the liver. PC can release choline and make up for lower amounts of this nutrient in a diet [R, R, R].

People with certain *PEMT* variants, such as [rs12325817-G](#), may benefit from getting more choline. Read [this post](#) for more details [R, R].

Fatty liver is usually the first clinical sign of choline deficiency. One *PEMT* variant, [rs7946-T](#), correlates with fatty liver and reduced choline supply. If you have this variant, you're more likely to experience liver damage due to poor choline intake, a sedentary lifestyle, and overeating. Read [this post](#) for more details [R, R].

The [CHDH](#) gene helps make an enzyme that turns choline into betaine. It may affect choline needs by 'spending' too much of this nutrient for betaine production. People with the following variants may be more sensitive to reduced choline intake [R]:

- [rs9001-T](#)
- [rs12676-A](#)

Read [this post](#) for more details.

The [CHKA](#) gene helps make an enzyme called 'choline kinase alpha' that turns dietary methionine into phosphatidylcholine. People with the [rs10791957-A](#) allele may need higher dietary choline since they don't convert dietary protein into choline well [R, R].

Choline helps remove homocysteine, along with [folate](#) and [vitamin B12](#). The [MTHFD1](#) and [MTRR](#) genes are involved in this process and may affect choline needs. People with the following variants may benefit from increasing their choline intake [R, R, R, R, R]:

- [rs2236225-A](#) (read [this post](#) for more details)
- [rs1801394-G](#) (read [this post](#) for more details)
- [rs1532268-T](#)

**Please note:** *The available research for this report is limited, so take your results with a grain of salt. We will update the report as soon as more research is available. Also, keep in mind that your diet, environment, and other genetic variants can influence your choline needs.*



TYPICAL NEED

## Likely typical need for choline based on 12 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

| GENE    | SNP                        | GENOTYPE |
|---------|----------------------------|----------|
| MTRR    | <a href="#">rs1532268</a>  | TC       |
| CHDH    | <a href="#">rs9001</a>     | TT       |
| PEMT    | <a href="#">rs7946</a>     | CT       |
| ALDH3B1 | <a href="#">rs10791957</a> | CA       |
| BHMT    | <a href="#">rs3733890</a>  | AG       |
| MTHFD1  | <a href="#">rs2236225</a>  | GA       |
| PEMT    | <a href="#">rs4646343</a>  | GT       |
| PEMT    | <a href="#">rs3760188</a>  | CT       |
| MTRR    | <a href="#">rs1801394</a>  | GA       |
| CHKA    | <a href="#">rs7928739</a>  | CA       |
| PEMT    | <a href="#">rs12325817</a> | CC       |
| CHDH    | <a href="#">rs12676</a>    | CC       |

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

# Omega-3

Some people may have lower blood levels of omega-3s than others. This means that they may have an increased need for omega-3s [R, R, R, R, R, R].

This may be partly due to genetics. Genes involved may influence omega-3 metabolism [R, R, R, R, R, R].



TYPICAL NEED

## Likely typical need for omega-3s based on 54 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

| GENE    | SNP        | GENOTYPE |
|---------|------------|----------|
| /       | rs11235247 | GG       |
| TNFSF10 | rs11914753 | CC       |
| FADS2   | rs174579   | CC       |
| TMEM258 | rs174532   | GG       |
| MACROD2 | rs12481689 | AA       |
| KCNK17  | rs6921231  | AA       |
| /       | rs6553050  | TT       |
| MAP7    | rs13191834 | TT       |
| ANKS1A  | rs3800433  | GG       |
| WSB1    | rs17703271 | TT       |
| PIK3C2A | rs7949405  | AA       |
| /       | rs2129588  | CC       |
| ADRA1A  | rs558455   | GG       |
| TMEM258 | rs108499   | TC       |
| SNX17   | rs4665972  | CC       |
| TSPAN31 | rs2277324  | AG       |
| PRR11   | rs2291193  | AG       |
| SYCP2L  | rs953413   | GA       |
| MYOM1   | rs949306   | AG       |
| WDR70   | rs7736605  | GG       |
| CITED2  | rs10499212 | GG       |
| FADS2   | rs174583   | CC       |
| FADS2   | rs174577   | CC       |
| FADS2   | rs174576   | CC       |
| FADS2   | rs174550   | TT       |
| FADS2   | rs174547   | TT       |
| FADS2   | rs174546   | CC       |
| TMEM258 | rs174538   | GG       |
| TMEM258 | rs174537   | GG       |

| GENE     | SNP        | GENOTYPE |
|----------|------------|----------|
| TMEM258  | rs174535   | TT       |
| COL11A1  | rs11164689 | GG       |
| AHI1     | rs2092556  | TT       |
| FADS1    | rs2727270  | CC       |
| AHI1     | rs4896151  | CC       |
| AHI1     | rs1547079  | TT       |
| G2E3     | rs7149414  | GG       |
| FADS2    | rs1535     | AA       |
| TMEM258  | rs102275   | TT       |
| MAU2     | rs10401969 | TT       |
| TMEM132D | rs265603   | GT       |
| FADS1    | rs99780    | CC       |

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

# Saturated Fat

Some people may tolerate more saturated fat than others. This difference may be genetic. If they eat a lot of saturated fats, people who are sensitive to saturated fat may have a higher risk of [\[R, R, R\]](#):

- Elevated cholesterol
- Weight gain
- Reduced bone strength



TYPICAL RESPONSE

**Predisposed to typical saturated fat response based on 42 genetic variants we looked at**

Your top variants that most likely impact your genetic predisposition:

| GENE   | SNP        | GENOTYPE |
|--------|------------|----------|
| TLR4   | rs5030728  | GG       |
| PPARA  | rs135549   | TT       |
| APOA1  | rs670      | CC       |
| ABCA1  | rs2230806  | CC       |
| TCF7L2 | rs7903146  | TC       |
| SIDT2  | rs5070     | GG       |
| FTO    | rs1121980  | GG       |
| SIDT2  | rs2854117  | CC       |
| APOE   | rs429358   | TT       |
| ADAM10 | rs2070895  | GG       |
| STAT6  | rs1799986  | CT       |
| CETP   | rs5882     | GA       |
| APOB   | rs693      | AG       |
| FTO    | rs1558902  | TT       |
| FTO    | rs1421085  | TT       |
| FTO    | rs17817449 | TT       |
| STAT3  | rs2293152  | CG       |
| LPL    | rs13702    | CT       |
| AHSG   | rs4917     | CT       |
| CD36   | rs1984112  | GA       |
| CLOCK  | rs1801260  | AG       |
| CLOCK  | rs4580704  | CC       |
| PKDREJ | rs4253778  | CG       |
| PEX11A | rs894160   | CT       |
| FCER1G | rs5082     | AA       |
| PPARG  | rs1801282  | CC       |
| PCSK7  | rs662799   | AA       |
| FTO    | rs9939609  | TT       |
| AGT    | rs699      | GG       |

| GENE   | SNP        | GENOTYPE |
|--------|------------|----------|
| ACE    | rs4343     | AA       |
| APOC1  | rs405509   | GG       |
| ADAM10 | rs1800588  | CC       |
| PPARA  | rs1800206  | CC       |
| MED24  | rs1568400  | TT       |
| PPARG  | rs10865710 | GG       |
| SIDT2  | rs964184   | CC       |
| STAT3  | rs8069645  | AA       |
| STAT3  | rs744166   | AA       |
| APOE   | rs7412     | CC       |
| PPARG  | rs3856806  | CC       |
| LPL    | rs328      | CC       |
| MC4R   | rs12970134 | GG       |
| LPL    | rs1121923  | GG       |
| STAT3  | rs1053005  | TT       |

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

# Vitamin C

## Key Takeaways:

- Vitamin C supports a number of important body functions, like immunity, heart and lung health, wound healing, and collagen production.
- Being genetically predisposed to needing more vitamin C means you may want to consider supplementing with vitamin C.
- It is very difficult to get vitamin C deficiency in the modern, western world.
- Click the **next steps** tab for relevant labs.

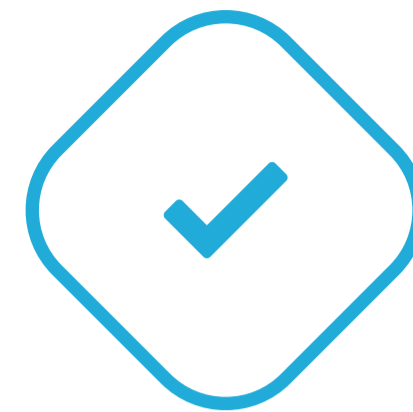
[Vitamin C deficiency](#) or *scurvy* is extremely rare in developed countries. Milder forms may cause [\[R\]](#):

- Poor wound healing
- Gum bleeding
- Skin lesions
- Joint pain

Genetically lower levels of vitamin C may be causally associated with an increased risk for high blood sugar [\[R\]](#).

In turn, genetically higher levels of vitamin C may be causally associated with:

- Lower risk of heart disease [\[R, R\]](#)
- Lower risk of Alzheimer's disease [\[R\]](#)
- Improved longevity [\[R\]](#)



TYPICAL NEED

## Likely typical need for vitamin C based on 11 genetic variants we looked at



### Your top variants that most likely impact your genetic predisposition:

| GENE    | SNP         | GENOTYPE |
|---------|-------------|----------|
| SLC23A1 | rs4257763   | GG       |
| LTA4H   | rs117885456 | GG       |
| GLB1L   | rs13028225  | CT       |
| GSTO2   | rs156697    | GA       |
| AKT1    | rs10136000  | GG       |
| FADS2   | rs174547    | TT       |
| SYCP3   | rs2559850   | GA       |
| MAF     | rs56738967  | CG       |
| SLC23A1 | rs33972313  | CC       |
| TBX2    | rs9895661   | TT       |
| RER1    | rs6693447   | TT       |
| RGS14   | rs10051765  | CC       |
| GSTA1   | rs7740812   | AA       |

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

## HLA-DQ (Gluten)

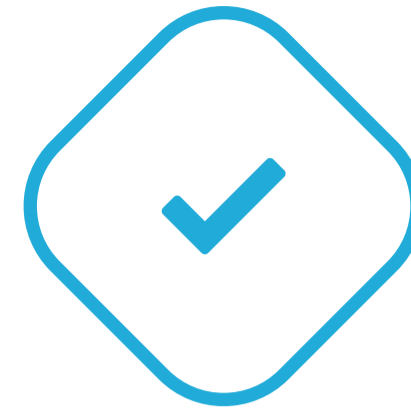
Different alleles in these genes can produce different types of HLA-DQ structures. The **DQ2** type (especially the DQ2.5 subtype) is present in up to 98% of celiac disease patients, depending on the population. That is among the strongest known links to autoimmunity in the entire HLA system [R, R].

Two alleles — DQA1\*0501 and DQB1\*0201 — form the DQ2.5 haplotype, which codes for the DQ2.5 receptor on white blood cells. The DQ2.5 receptor binds gluten and presents it to T-helper cells, initiating widespread gut inflammation [R, R].

The 'T' variant of [rs2187668](#) serves as a genetic marker — it tags the DQ2.5 haplotype with high precision. In other words, the vast majority of people with this allele will have this haplotype. A study of over 27,000 subjects identified this SNP as the primary genetic factor for celiac disease. People carrying the 'T' allele had over six times higher chances of being diagnosed with celiac disease. A smaller trial of 889 participants came to a similar conclusion [R, R].

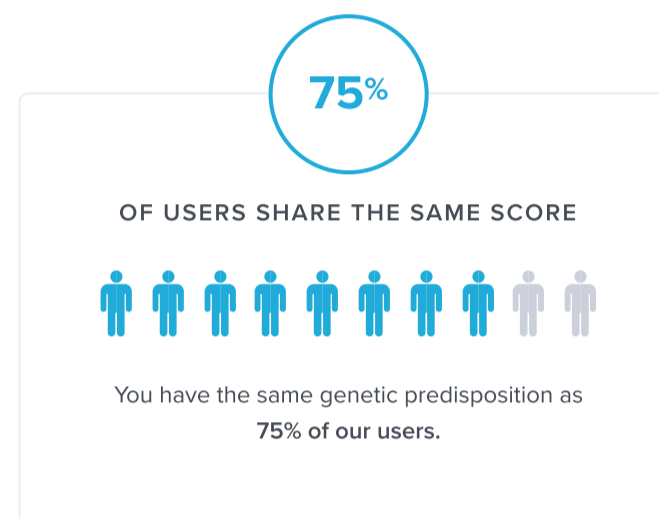
The 'C' variant of [rs74541084](#) tags the DQ8 haplotype, an additional marker for gluten sensitivity in people who don't carry DQ2.5.

**Please note: this report only analyzes the HLA-DQ gene. Variants in many other genes have shown associations with gluten sensitivity.**



TYPICAL GENETICS

### Likely typical HLA-DQ genetics based on the genetic variants we looked at



### Your top variants that most likely impact your genetic predisposition:

| GENE     | SNP                       | GENOTYPE |
|----------|---------------------------|----------|
| HLA-DQB1 | <a href="#">rs2858331</a> | AA       |
| HLA-DQA1 | <a href="#">rs2187668</a> | CC       |
| HLA-DQA2 | <a href="#">rs7454108</a> | TT       |

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

# Iron Overload

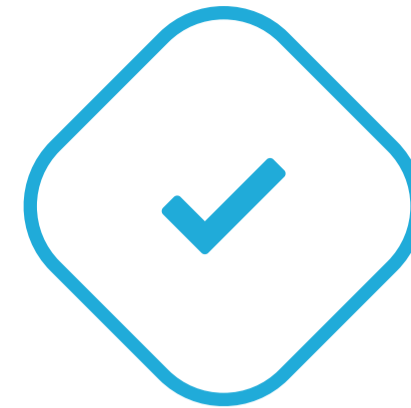
Specific genetic variants in the *HFE* gene are associated with iron overload and play a role in the body's iron absorption and regulation processes.

**HFE (rs1800562, C282Y):** the rs1800562 variant (C282Y) is responsible for most hemochromatosis cases. All people with the **AA** genotype are predisposed to this condition. However, only about **25% of men** and **15% of women** with this genotype are expected to develop the symptoms. People with **one A allele** at rs1800562 may have higher iron stores, but they are not likely to develop iron overload [R, R].

**HFE (rs1799945, H63D):** another *HFE* variant, rs1799945 (H63D), results in a protein that can't properly control the amount of iron released from cells. People with the G allele may be at increased risk of iron overload **if they also carry one copy of the A allele**. However, only 2-3% of them may develop it [R, R].

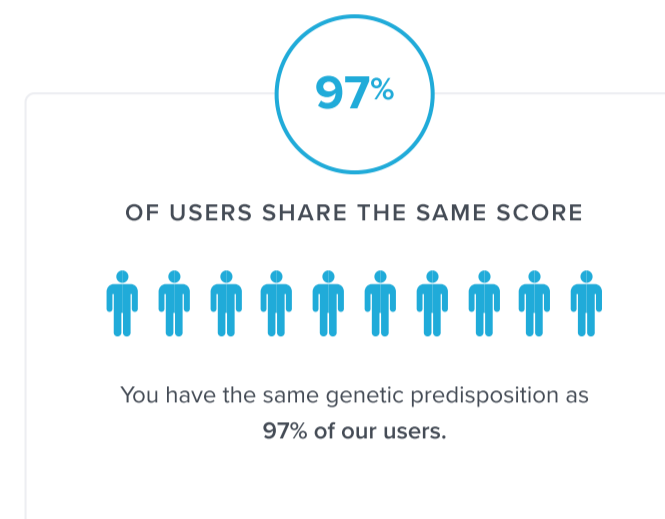
**HFE (rs1800730, S65C):** finally, the *HFE* rs1800730 variant is associated with a small proportion of all hereditary hemochromatosis cases [R].

On the other hand, one BMP2 variant may be linked to a reduced iron overload. People with the "G" allele at [rs235756](#) (especially "GG") have reduced iron storage, which may be beneficial in case of iron overload. This gene affects the production of hepcidin, a crucial iron transporter [R].



TYPICAL LIKELIHOOD

## Typical likelihood of iron overload based on the genetic variants we looked at



### Your top variants that most likely impact your genetic predisposition:

| GENE | SNP       | GENOTYPE |
|------|-----------|----------|
| BMP2 | rs235756  | AG       |
| HFE  | rs1800562 | GG       |
| HFE  | rs1799945 | CC       |
| HFE  | rs1800730 | AA       |
| TF   | rs1049296 | CC       |

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

## Caffeine Sensitivity

Genetic variants may explain about **70%** of the difference in caffeine sensitivity [R, R]. Genes associated with caffeine sensitivity impact how quickly caffeine is broken down and the strength of its effects in different parts of the body.

The **CYP1A2** gene is a **key enzyme responsible for caffeine breakdown**. The **rs762551** variant (-163 A>C) determines whether someone is a “fast” or “slow” caffeine metabolizer. Carriers of the “C” allele are slow metabolisers. This means they caffeine stays in their body for a longer time, increasing their caffeine sensitivity [R, R, R, R].

Other notable genes and variants include:

- **AHR (rs4410790)**: The AHR gene regulates the expression of **CYP1A2**, mentioned above. Certain variants at AHR slow down caffeine metabolism, prolonging the effects caffeine has on the body [R].
- **ADORA2A (rs5751876)**: This ADORA2A gene encodes the adenosine A2A receptor, a primary target of caffeine in the brain. Caffeine may make those with the “T” variant more anxious, especially women. Interestingly, this variant seems to have the opposite effects on sleep problems (“C” carriers may be more affected) [R, R, R, R].
- **COMT (rs4680)**: The COMT gene is involved in the breakdown of the neurotransmitter dopamine. The rs4680 variant (Val158Met G>A) may increase sensitivity to both positive and negative effects of caffeine [R].
- **NAT2 (R/S, rs1495741)**: NAT2 helps break down various substances, including caffeine. Individuals with a “slow” acetylator status in the NAT2 gene may break down caffeine more slowly, leading to prolonged effects and increased sensitivity [R].

These genetic variations collectively influence individual sensitivity to caffeine, determining both the intensity and duration of the response to caffeine in the body. Understanding these genetic factors can help tailor caffeine intake to avoid adverse effects and optimize performance and well-being.



LOWER

**Predisposed to lower caffeine sensitivity based on 5 genetic variants we looked at**

Your top variants that most likely impact your genetic predisposition:

| GENE    | SNP       | GENOTYPE |
|---------|-----------|----------|
| AHR     | rs4410790 | CT       |
| ADORA2A | rs5751876 | CT       |
| NAT2    | rs1495741 | AG       |
| COMT    | rs4680    | GA       |
| CYP1A2  | rs762551  | AA       |

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

# Recommendations Details

**1**

## Strength Training

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**

### Helps with these Symptoms & Conditions:

Anxiety

High Blood Pressure

### Helps with these Goals:

Immunity

Mood

Muscle Growth

### Helps with these DNA Risks:

 Low Mood

### Helps with these Lifestyle Risks:

 Anxiety Depression Low Testosterone**2**

## Aerobic Exercise (Cardio)

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**

### Helps with these Symptoms & Conditions:

Allergies

Anxiety

High Blood Pressure

Migraines

### Helps with these Goals:


- Energy
- Immunity
- Mood

Helps with these DNA Risks:

- ⚠️ Low Mood
- ⚠️ Training Response (Fitness)

Helps with these Lifestyle Risks:

- ⚠️ Anxiety
- ✅ Depression
- ✅ Low Testosterone

**3**  **Cognitive-Behavioral Therapy (CBT)**

Schedule weekly sessions with a certified cognitive-behavioral therapist for a period of 5 to 20 weeks. Engage actively in exercises assigned by your therapist both during sessions and as homework to apply CBT strategies to daily life.

Helps with these Symptoms & Conditions:

- Anxiety
- Migraines

Helps with these Goals:


- Energy
- Mood

Helps with these DNA Risks:

- ⚠️ Low Mood

Helps with these Lifestyle Risks:

- ⚠️ Anxiety
- ✅ Depression

**4**  **Psychotherapy**

Schedule and attend regular sessions with a licensed psychotherapist, typically once a week for 50-60 minutes, over a period of several months to years depending on your individual needs and progress. Consistency is key, and the duration can vary widely based on personal goals and the type of psychotherapy being practiced.

**TYPICAL STARTING DOSE**  
**1 hour**

**Helps with these Symptoms & Conditions:**

Anxiety

**Helps with these Goals:**

Energy

Mood

**Helps with these DNA Risks:** Low Mood**Helps with these Lifestyle Risks:** Anxiety Depression

5

**Probiotics**

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

TYPICAL STARTING DOSE

**10 billion****Helps with these Symptoms & Conditions:**

Allergies

Anxiety

**Helps with these Goals:**

Immunity

Mood

Muscle Growth

**Helps with these DNA Risks:** Low Mood**Helps with these Lifestyle Risks:** Anxiety Depression

6



## Curcumin

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

TYPICAL STARTING DOSE

500 mg

### Helps with these Symptoms & Conditions:

Allergies

Anxiety

High Blood Pressure

### Helps with these Goals:

Energy

Exercise Recovery

Immunity

Mood

### Helps with these DNA Risks:

 Low Mood

### Helps with these Lifestyle Risks:

 Anxiety

 Depression

7



## Relaxation Techniques

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

### Helps with these Symptoms & Conditions:

Anxiety

High Blood Pressure

Migraines

### Helps with these Goals:

Energy

Immunity


Mood

### Helps with these DNA Risks:

- ⚠ Low Mood
- ⚠ Methylation

Helps with these Lifestyle Risks:

- ⚠ Anxiety
- ✔ Depression

**8**  **Meditation**

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

**TYPICAL STARTING DOSE**  
**30 minutes**

Helps with these Symptoms & Conditions:

- Anxiety
- Migraines

Helps with these Goals:


- Energy
- Immunity
- Mood

Helps with these DNA Risks:

- ⚠ Low Mood

Helps with these Lifestyle Risks:

- ⚠ Anxiety
- ✔ Depression

**9**  **Yoga**

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**

Helps with these Symptoms & Conditions:

Anxiety

High Blood Pressure

Migraines

## Helps with these Goals:

Energy

Exercise Recovery

Immunity

Mood

Muscle Growth

## Helps with these DNA Risks:

 Low Mood Methylation

## Helps with these Lifestyle Risks:

 Anxiety Depression

10

**Omega-3 (Fish Oil)**

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

TYPICAL STARTING DOSE

500 mg

## Helps with these Symptoms &amp; Conditions:

Anxiety

High Blood Pressure

Migraines

## Helps with these Goals:

Exercise Recovery

Immunity

Mood

## Helps with these DNA Risks:

 Low Mood

## Helps with these Lifestyle Risks:

 Anxiety Depression

11



## Acceptance and Commitment Therapy (ACT)

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.

### Helps with these Symptoms & Conditions:

Anxiety

### Helps with these Goals:

Mood

### Helps with these DNA Risks:

 Low Mood

### Helps with these Lifestyle Risks:

 Anxiety

 Depression

12



## Tai Chi

Practice Tai Chi for 30 to 60 minutes at least twice a week. Choose a quiet, spacious area and follow along with a qualified instructor, either in person at a class or through an online video tutorial, to ensure proper technique and maximum benefit.

TYPICAL STARTING DOSE

1 hour

### Helps with these Symptoms & Conditions:

Anxiety


High Blood Pressure

### Helps with these Goals:



Energy


Mood

### Helps with these DNA Risks:

 Low Mood

Helps with these Lifestyle Risks:

 Anxiety  Depression

**13**  **Progressive Muscle Relaxation**

Set aside at least 10-15 minutes daily in a quiet, comfortable spot where you won't be disturbed. Start by tensing the muscles in your feet for 5 seconds, then relax for 30 seconds, and progressively work your way up through the major muscle groups of your body, tensing then relaxing each for 5 and 30 seconds respectively.

**TYPICAL STARTING DOSE**  
**10 minutes**


Helps with these Symptoms & Conditions:

Anxiety High Blood Pressure Migraines


Helps with these Goals:


Energy Exercise Recovery Mood

Helps with these DNA Risks:

 Low Mood

Helps with these Lifestyle Risks:

 Anxiety  Depression

**14**  **Green Tea**

Consume 400 mg of green tea extract daily. This can be taken in the form of capsules or tablets available that specify the amount of green tea extract. Ensure the supplement is taken according to the product's specific instructions, usually once a day with water.

**TYPICAL STARTING DOSE**  
**400 mg**

Helps with these Symptoms & Conditions:

Anxiety

High Blood Pressure

**Helps with these Goals:**

Energy

Immunity

Mood

**Helps with these DNA Risks:** Low Mood**Helps with these Lifestyle Risks:** Anxiety Depression

15

**Pilates**

Engage in Pilates exercises for at least 20-30 minutes, 3 times a week. Focus on core strength, flexibility, and mindful breathing. It is suitable for both beginners and advanced individuals, adjusting the difficulty of exercises as necessary.

TYPICAL STARTING DOSE

**30 minutes****Helps with these Symptoms & Conditions:**

Anxiety

High Blood Pressure

**Helps with these Goals:**

Energy

Mood

**Helps with these DNA Risks:** Low Mood**Helps with these Lifestyle Risks:** Anxiety Depression

# 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 Lifestyle Assessments

Ever heard of the term Nature vs. Nurture?

The thing is, both DNA and environment play a role in determining your health risks. The following assessments shows how much of an impact your lifestyle, environment and medical history are having on your health risks.



### LIFESTYLE

You have a **slightly increased risk** of anxiety based on the answers you provided.



### Factors impacting your risk:

Have either of your biological parents ever suffered from anxiety?

**Yes**

Increasing Risk

What is your current marital status?

**Single or not living with partner**

Increasing Risk

Do you consume at least 1000 mg caffeine per week (equivalent to 2 cups of coffee, 4 cups of tea, 6 cans of cola, or 1 energy drink per day)?

**Yes**

Increasing Risk

What is your sex?

**Male**

Increasing Risk

Do you regularly use drugs such as cannabis, cocaine, amphetamines, or opioids in a way that appreciably harms your health, social relationships, or occupational duties?

**Yes**

Increasing Risk

Have you ever struggled with substance misuse?

**Yes**

Increasing Risk

In a typical week, how many times do you participate in any physical activities or exercise for 30 minutes at a time? (such as walking, running, bike riding, weight training, yoga, etc.)

Decreasing Risk 

\*Note: longer exercise equals more sessions (e.g., 1 hour = 2 sessions)

**8 or more**

Do you smoke tobacco?

Decreasing Risk **No, never**

Do you often experience periods of low mood?

Decreasing Risk **No**

How much alcohol do you drink on a typical day?

Calculate your alcohol consumption in units here

Decreasing Risk **0 units**

Did you ever suffer from physical abuse or physical bullying during your childhood?

Decreasing Risk **No**

Did you ever suffer from sexual abuse during your childhood?

Decreasing Risk **No**

Have you ever been diagnosed with rheumatoid arthritis (autoimmune joint inflammation)?

Decreasing Risk **No**

What is your ethnicity?

Decreasing Risk **Other**

Do you suffer from chronic pain?

Decreasing Risk **No**

What is your current employment status?

Decreasing Risk **Self-employed**

Did you ever suffer from emotional or physical neglect during your childhood?

Decreasing Risk **No**

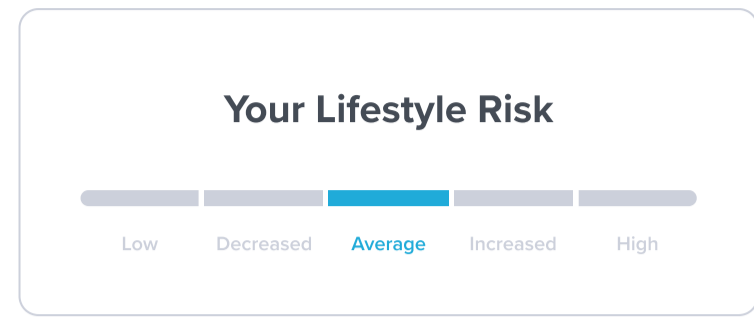
Have you ever been diagnosed with alcohol use disorder?

Decreasing Risk **No**



LIFESTYLE

You have an **average risk** of depression based on the answers you provided.



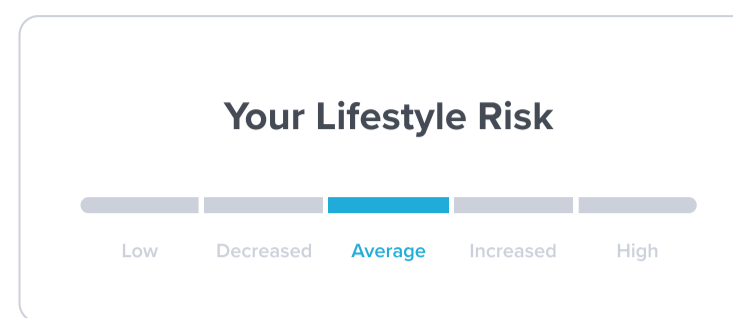
Factors impacting your risk:

|   |                 |
|---|-----------------|
| What is your age?<br><b>41</b>  | Increasing Risk |
| Do you have a parent or sibling who has ever suffered from depression?<br><b>Yes</b>  | Increasing Risk |
| Your BMI:<br><b>30.77</b>   | Increasing Risk |
| In a typical week, how many times do you participate in any physical activities or exercise for 30 minutes at a time? (such as walking, running, bike riding, weight training, yoga, etc.)<br><br>*Note: longer exercise equals more sessions (e.g., 1 hour = 2 sessions)<br><b>8 or more</b> | Decreasing Risk |
| Do you smoke tobacco?<br><b>No, never</b>   | Decreasing Risk |
| Did you ever suffer from physical abuse or physical bullying during your childhood?<br><b>No</b>  | Decreasing Risk |
| Did you ever suffer from sexual abuse during your childhood?<br><b>No</b>   | Decreasing Risk |
| What is your height?<br><b>178 cm</b>   | No impact       |
| What is your current weight?<br><b>97.5 kg</b>  | No impact       |



LIFESTYLE

You have an **average risk** of low testosterone based on the answers you provided.



Factors impacting your risk:

|   |                 |
|---|-----------------|
| What is your age?<br><b>41</b>  | Increasing Risk |
| Have you recurrently been diagnosed with high cholesterol?<br><b>Yes</b>  | Increasing Risk |
| Your BMI:<br><b>30.77</b>   | Increasing Risk |
| Have you ever been diagnosed with diabetes?<br><b>No</b>  | Decreasing Risk |
| In a typical week, how many times do you participate in any physical activities or exercise for 30 minutes at a time? (such as walking, running, bike riding, weight training, yoga, etc.)<br><br>*Note: longer exercise equals more sessions (e.g., 1 hour = 2 sessions)<br><b>8 or more</b> | Decreasing Risk |
| Do you smoke tobacco?<br><b>No, never</b>   | Decreasing Risk |
| Have you recurrently been diagnosed with high triglycerides?<br><b>No</b>   | Decreasing Risk |
| Have you ever been diagnosed with high blood pressure (hypertension)?<br><b>No</b>  | Decreasing Risk |
| Have you ever been diagnosed with a stroke?<br><b>No</b>  | Decreasing Risk |
| Have you ever been diagnosed with prostate disease (prostatitis, benign prostate hyperplasia, prostate cancer)?<br><b>No</b>  | Decreasing Risk |
| What is your height?<br><b>178 cm</b>   | No impact       |
| What is your current weight?<br><b>97.5 kg</b>  | No impact       |



LIFESTYLE

You have a **slightly reduced risk** of obesity based on the answers you provided.



Factors impacting your risk:

What is your age?

41

Increasing Risk

What is your current marital status?

Single or not living with partner

Decreasing Risk

How would you describe the environment you live in?

Suburban

Decreasing Risk

On a scale of 1 to 5, how would you rate the amount of stress in your life in the past month (at home and at work)?

2

Decreasing Risk

In a typical week, how many times do you participate in any physical activities or exercise for 30 minutes at a time? (such as walking, running, bike riding, weight training, yoga, etc.)

\*Note: longer exercise equals more sessions (e.g., 1 hour = 2 sessions)

8 or more

Decreasing Risk