

Phosphate

Biohacker Report

REPORT CATEGORIES —



BONE HEALTH



HEART & BLOOD
VESSELS

Sample Client

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DISCLAIMER

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

Personal information

NAME

Sample Client

SEX AT BIRTH

Male

HEIGHT

5ft 5" 165cm

WEIGHT

137lb 62kg



How this works

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



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



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

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



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

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

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



Genotype color info:

AA

You don't have any risk alleles

AA

You have 1 risk allele

AA

You have 2 risk alleles

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

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

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

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



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

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



Impact

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

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

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

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

Recommendation Evidence

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

Genotype-specific Evidence

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

Some things to keep in mind:

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

Introduction

Phosphorus is an essential mineral primarily found in the bones and teeth, but also in muscle and nerve tissue. About 1% of this mineral is in the blood as **phosphate** (phosphorus salts) [\[R\]](#).

Phosphorus levels are tightly controlled by the bones, kidneys, gut, hormones, and more. A doctor may order measuring them if they suspect [\[R\]](#), [\[R\]](#):

- Kidney disease
- Hormonal disorders
- Bone disorders

Excessive phosphorus may remove calcium from the bones and cause calcium buildup in various parts of the body. This can increase the risk of heart disease [\[R\]](#), [\[R\]](#).

Factors Affecting Phosphate Levels

Key Takeaways:

- About **60%** of the differences in people's phosphate levels may be due to genetics.
- Risk factors for high phosphate levels include kidney disease, low parathyroid hormone levels, diabetes, and too much phosphate in the diet.
- Risk factors for low phosphate levels include malnutrition, high calcium levels, low vitamin D or potassium levels, certain medications, and alcoholism.
- Even with a high genetic risk, your overall risk is still low. It is not common for people with normal health and diet.
- Click the **next steps** tab for relevant labs.

About **60%** of the differences in people's phosphate levels may be due to genetics [\[R\]](#).

Genetically higher phosphate levels may play a role in [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Some types of heart disease involving the valves
- Artery hardening
- Prostate cancer

Higher phosphate levels are associated with:

- Higher all-cause (46%), cardiovascular (66%), and lung disease (94%) mortality in men but not in women [\[R\]](#)
- Higher all-cause mortality and atherosclerosis (44%) [\[R\]](#)
- Higher mortality in patients hospitalized due to heart failure and kidney disease [\[R\]](#)



Predisposed to typical phosphate levels based on 5 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
NBPF3	rs1697421	TC
IP6K3	rs9469578	CC
C12ORF4	rs2970818	TT
AHI1	rs947583	TT
CSTA	rs17265703	AA

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

Your Recommendations

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

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

DOSAGE		DOSAGE	
1	Boron	3 mg	
2	Alpha-Ketoglutarate (AKG)	1 g	

1



Boron

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take a boron supplement of 3 to 6 mg daily, with food to enhance absorption. This dosage range is commonly recommended for general health benefits, based on nutritional studies. It's advisable to continue this regimen daily for an extended period, as long-term benefits depend on consistent supplementation.

TYPICAL STARTING DOSE

3 mg

Description

Boron is a trace mineral that plays a role in bone health, cognitive function, and hormone regulation.

Boron is a mineral in many foods, including:

- Fruits and fruit juices
- Avocados
- Potatoes
- Legumes
- Drinks (coffee, milk, cider, wine, and beer)

Scientists aren't sure if boron has any roles in the body, so they don't consider it an essential nutrient.

Some people take boron supplements to balance hormone levels, increase athletic performance, and more. However, the evidence to support these uses is weak.

How it helps

In a [placebo-controlled trial of 28 college-aged women](#), supplementation with boron (3 mg/day) **increased serum magnesium and lowered serum phosphorus**. **Exercise training decreased the effects of boron on phosphorus and magnesium** [\[R\]](#), [\[R\]](#).

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Alpha-Ketoglutarate (AKG)

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Take alpha-ketoglutarate (AKG) as a dietary supplement in a dose of approximately 1-2g per day, preferably with meals to aid in its absorption. The exact dosage may vary based on the specific product and individual health needs, so it's important to follow the label instructions or consult a healthcare provider for personalized advice. This supplementation can be ongoing, with periodic evaluations to assess its effects on your health.

TYPICAL STARTING DOSE

1 g

Description

Alpha-ketoglutarate (AKG) is a key molecule in the Krebs cycle, crucial for energy production in cells. It plays a role in amino acid synthesis and nitrogen transport. In supplement form, it's claimed to improve athletic performance and support recovery, but the scientific evidence for these benefits is limited.

How it helps

AKG, when metabolized, generates bicarbonate, which can increase intestinal pH. A higher pH in the gut reduces the solubility of calcium phosphate, leading to decreased phosphate absorption. Additionally, AKG can chelate divalent cations like calcium in the intestines. This chelation forms insoluble calcium AKG complexes, which bind phosphate and prevent its reabsorption.

It also stimulates collagen synthesis, a crucial component of bone structure. This can lead to increased bone formation and potentially reduce the amount of phosphorus needed for bone mineralization.

Additionally, AKG may influence the activity of osteoclasts, cells responsible for bone resorption, potentially reducing bone breakdown and preserving phosphorus stores.

AKG might impact how the kidneys handle phosphate. The kidneys play a crucial role in maintaining phosphorus balance in the body. By affecting renal function, AKG could potentially enhance the excretion of phosphate. AKG is involved in the Krebs cycle and it might influence the uptake and use of phosphate in this cycle, potentially affecting serum levels.

In hemodialysis patients, a study showed that combining alpha-ketoglutarate with calcium carbonate over one year improved amino acid metabolism. **Plasma urea decreased, while histidine, arginine, proline, and certain keto acids increased.** This combination treatment effectively reduced hyperphosphatemia [R].

In an uncontrolled trial of 14 patients with hyperparathyroidism, supplementation with calcium-alpha-ketoglutarate (4.5 g/day) for 36 months **lowered serum P (by 0.7 mmol/L) and iPTH (by 21 pmol/L), while increasing serum Ca (by 0.47 mmol/L) and the Ca/P ratio (by 0.37)** [R].

Next Steps

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

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

Your lab results

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

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

	Phosphorus	2 mg/dL		9 Nov 2025
	Vitamin D, 25-Hydroxy, Total	58.59 ng/mL		9 Nov 2025
	Calcium	9.2 mg/dL		9 Nov 2025