

Pulmonary Hypertension

Disease Report

REPORT CATEGORY —



HEART & BLOOD
VESSELS

Sample Client

Report date: 15 January 2026

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DISCLAIMER

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

Personal information

NAME

Sample Client

SEX AT BIRTH

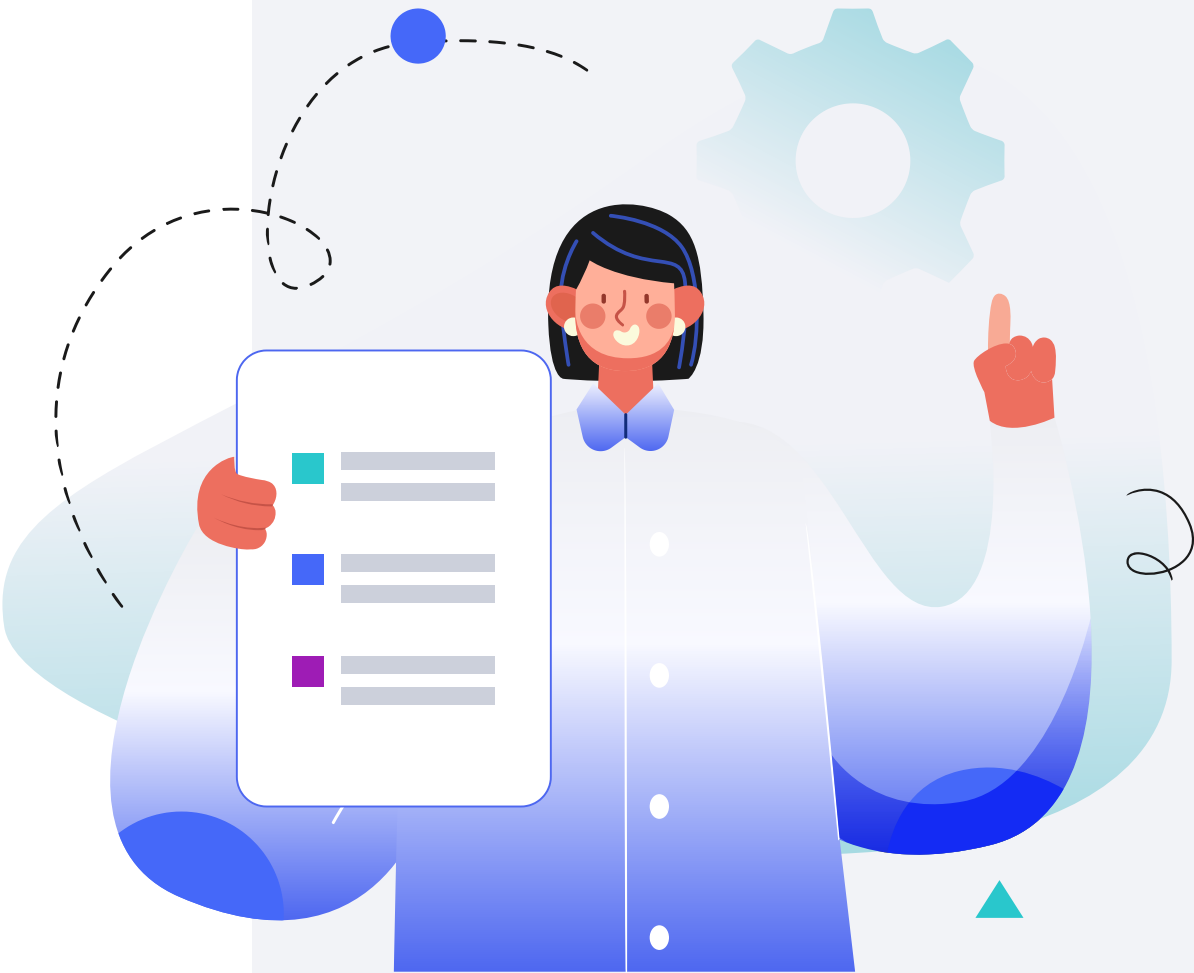
Male

HEIGHT

5ft 5" 165cm

WEIGHT

137lb 62kg



How this works

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



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



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

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



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

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

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



Genotype color info:

AA

You don't have any risk alleles

AA

You have 1 risk allele

AA

You have 2 risk alleles

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

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

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

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



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

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



Impact

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

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

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

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

Recommendation Evidence

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

Genotype-specific Evidence

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

Some things to keep in mind:

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

Introduction

Pulmonary arterial hypertension (PAH) is a type of high blood pressure that affects the arteries in the lungs and the right side of the heart. In PAH, the small arteries (pulmonary arterioles) in the lungs become narrowed or blocked. This hinders blood flow and leads to increased blood pressure within the lungs.

The resulting increased strain on the right side of the heart forces it to pump harder to move blood through the lungs. Ultimately, this may weaken the heart muscle over time.

Common manifestations of PAH include:

- **Shortness of breath during routine activity.**
- Fatigue.
- Chest pain or pressure.
- Racing heartbeat.
- Swelling in the ankles, legs, and abdomen.
- Pain on the upper right side of the abdomen.
- Decreased appetite.
- Fainting.

Early detection and treatment of PAH can improve symptoms and slow the progression of the disease.

Risk Factors and Genetics

Genetics influences the risk of PAH. Around **6–10%** of people with a diagnosis of PAH have a family history of the disease [\[R\]](#).

Factors that might increase the risk of developing PAH include:

- Certain drugs (e.g., diet drugs, drugs for irregular heartbeat, methamphetamines, cocaine)
- Living at a high altitude.

The following health conditions may also increase the risk:

- Connective tissue disorders (e.g., scleroderma)
- Liver disease
- HIV
- Congenital heart disease
- Sickle cell anemia.
- History of pulmonary embolism or blood clots.



TYPICAL LIKELIHOOD

Typical likelihood of pulmonary hypertension based on 22,528 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
SOX17	rs13266183	CC
HLA-DPA1	rs2856830	CT
DNAJC10	rs71427857	GG
CBLN2	rs2217560	AA
SOX17	rs10103692	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	Hyperbaric Oxygen Therapy	90 minutes	2	Avoid PCBs	
3	L-Citrulline	3 g	4	Yoga	30 minutes
5	Dietary Nitrates		6	Avoid L-Serine Supplements	
7	Walking	30 minutes	8	Oxygen Therapy	15 hours
9	Stress Management Therapy	1 hour	10	Aerobic Exercise (Cardio)	1 hour

1



Hyperbaric Oxygen Therapy

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Schedule and attend sessions in a hyperbaric oxygen therapy chamber as your doctor prescribes, typically for about 60 to 90 minutes per session. The exact number of sessions required can vary based on the condition being treated, but it often ranges from 20 to 40 sessions, which may be conducted daily or a few times a week.

TYPICAL STARTING DOSE

90 minutes

Description

Hyperbaric oxygen therapy increases the amount of oxygen in the blood and tissues, which can help to improve circulation, reduce inflammation, and promote healing.

How it helps

A meta-analysis of 15 studies concluded that short-term supplemental oxygen therapy significantly improves mean pulmonary artery pressure and exercise performance in patients with main pulmonary vascular diseases [\[R\]](#).

Please note: Hyperbaric oxygen therapy is a potentially dangerous procedure that should only be performed under medical supervision. People with pneumothorax or congestive heart failure are at especially high risk of adverse effects. Because highly concentrated oxygen can easily catch on fire, avoid potential fire sources around hyperbaric oxygen chambers, oxygen gas cylinders, tanks, and concentrators [\[R\]](#), [\[R\]](#).

2



Avoid PCBs

IMPACT2 / 5

EVIDENCE2 / 5

How to implement

To avoid PCBs (Polychlorinated Biphenyls), do not use old electrical equipment manufactured before 1977, avoid consuming fish from contaminated waters, especially larger species such as shark and swordfish which are higher in the food chain, and check for and properly dispose of any old fluorescent lighting fixtures that may contain PCBs. Pay attention to local advisories regarding the safety of locally caught fish and wildlife.

Description

PCBs are toxic chemicals that can cause cancer, reproductive problems, and developmental problems. Avoiding exposure to PCBs is important for protecting your health.

Polychlorinated biphenyls (PCBs) are man-made chemicals. They were used in the industry until their **ban in 1979**. PCBs are considered **persistent organic pollutants** (POPS) due to their slow degradation in the environment. They may also **accumulate** in the food chain and the human body [\[R, R\]](#).

We may be exposed to PCBs through contaminated [\[R, R\]](#):

- **Food** (e.g., fish, meat, rice)
- Soil
- Air

PCBs may have toxic effects on [\[R, R\]](#):

- Immunity
- Nervous system
- Reproductive system
- Hormone levels

They may also increase the risk of cancer and reduce lifespan [\[R, R\]](#).

How it helps

A [study of 4210 participants](#) found **higher PBC levels in people with pulmonary hypertension and a higher risk of this condition in people with high exposure** [\[R\]](#).

3



L-Citrulline

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 1.5 to 5 grams of L-citrulline supplements per day, orally, with or without food. This dosage can be taken all at once or divided into two to three smaller doses throughout the day. It's generally recommended to start at the lower end of the dosage range and adjust based on your body's response.

TYPICAL STARTING DOSE

3 g

Description

L-citrulline is an amino acid that may help improve blood flow and reduce muscle soreness, making it a popular supplement for athletes and individuals with certain cardiovascular conditions. Its potential to enhance nitric oxide production supports vascular health and overall circulation.

[Citrulline](#) is an amino acid (protein building block). Citrulline can be found in foods like [R](#), [R](#), [R](#), [R](#), [R](#):

- Watermelon
- Pumpkins
- Cucumber
- Bitter melon

The body uses L-citrulline to produce nitric oxide, a compound that helps widen blood vessels. It is important for heart and sexual health [R](#), [R](#), [R](#).

L-citrulline is commonly used as supplement to support [R](#):

- Blood vessel health
- Muscle health
- Metabolic health
- Sexual health

How it helps

In a non-placebo-controlled trial of 16 children with coronary heart disease undergoing cardiopulmonary bypass, supplementation with citrulline reduced postoperative pulmonary hypertension and prevented the children from reaching 20 mmHg [R](#).

4



Yoga

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

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

TYPICAL STARTING DOSE

30 minutes

Description

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

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

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

How it helps

Yoga combines physical postures and breathing exercises which can help reduce stress and improve flexibility and lung function in individuals with pulmonary hypertension.

5



Dietary Nitrates

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Incorporate foods high in dietary nitrates, such as beets, spinach, arugula, and celery, into your daily meals. Aim for about 300-400 mg of dietary nitrates daily, which equates to roughly 2 cups of nitrate-rich vegetables.

Description

Nitrates found in foods like leafy greens and beets can convert into nitric oxide in the body, which may help dilate blood vessels, lower blood pressure, and enhance exercise performance.

How it helps

Dietary nitrates, found in leafy green vegetables and beets, can help relax and widen blood vessels, reducing blood pressure and easing symptoms of pulmonary hypertension.

6



Avoid L-Serine Supplements

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Do not consume supplements that contain L-serine. This means checking the labels of any dietary supplements you are considering or currently taking to ensure they do not list L-serine as an ingredient.

Description

L-Serine is a type of supplement often taken to promote brain health. But not everyone should take them because they might interfere with certain existing health conditions or medications. So, for safety, it's best to stick to getting nutrients directly from a balanced diet unless advised otherwise by a health professional.

How it helps

Genetically higher l-serine levels may be causally associated with an increased risk of pulmonary hypertension. [\[R\]](#)

7



Walking

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Incorporate at least 30 minutes of brisk walking into your daily routine, aiming for a minimum of five days a week. This can be done in one continuous session or broken into shorter periods, such as three 10-minute walks throughout the day.

TYPICAL STARTING DOSE

30 minutes

Description

Walking is a low-impact form of exercise that can contribute to cardiovascular fitness, weight management, and improved overall health. It is used to support physical activity goals, enhance mood, and promote better cardiovascular health.

How it helps

Regular walking can help improve exercise capacity and reduce symptoms in people with pulmonary hypertension, enhancing overall cardiovascular health.

8



Oxygen Therapy

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Use oxygen therapy by inhaling supplemental oxygen through a mask or nasal prongs for at least 15 hours daily, as prescribed by a healthcare provider. This is typically a continuous treatment for individuals with chronic respiratory conditions and should be followed every day, under medical supervision, to ensure proper oxygen levels in the blood.

TYPICAL STARTING DOSE

15 hours

Description

Oxygen therapy involves the administration of supplemental oxygen to individuals with breathing difficulties or low oxygen levels. It is used to improve oxygen intake, promote tissue healing, and enhance overall respiratory function.

How it helps

Oxygen therapy provides extra oxygen, which can help those with pulmonary hypertension by improving oxygen levels in the blood and reducing the workload on the heart.

9



Stress Management Therapy

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Engage in stress management therapy sessions, such as cognitive-behavioral therapy (CBT), for at least 1 hour per week over a course of 8 to 12 weeks. Techniques can include mindfulness, deep breathing exercises, and identifying stressors to develop coping strategies.

TYPICAL STARTING DOSE

1 hour

Description

Stress management therapy refers to various techniques and approaches aimed at reducing and coping with stress. It can improve mental and physical well-being by helping individuals better manage the effects of stress on their health.

How it helps

Managing stress is essential for people with pulmonary hypertension, as stress can worsen symptoms and negatively impact heart health.

10



Aerobic Exercise (Cardio)

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

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

TYPICAL STARTING DOSE

1 hour

Description

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

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

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

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

How it helps

Aerobic exercise like walking or cycling helps improve heart and lung efficiency. It can reduce symptoms and improve quality of life in people with pulmonary hypertension.

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 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.

