

Cystatin C

Biohacker Report

REPORT CATEGORY —



Sample Client

Report date: 15 January 2026

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DISCLAIMER

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

Personal information

NAME

Sample Client

SEX AT BIRTH

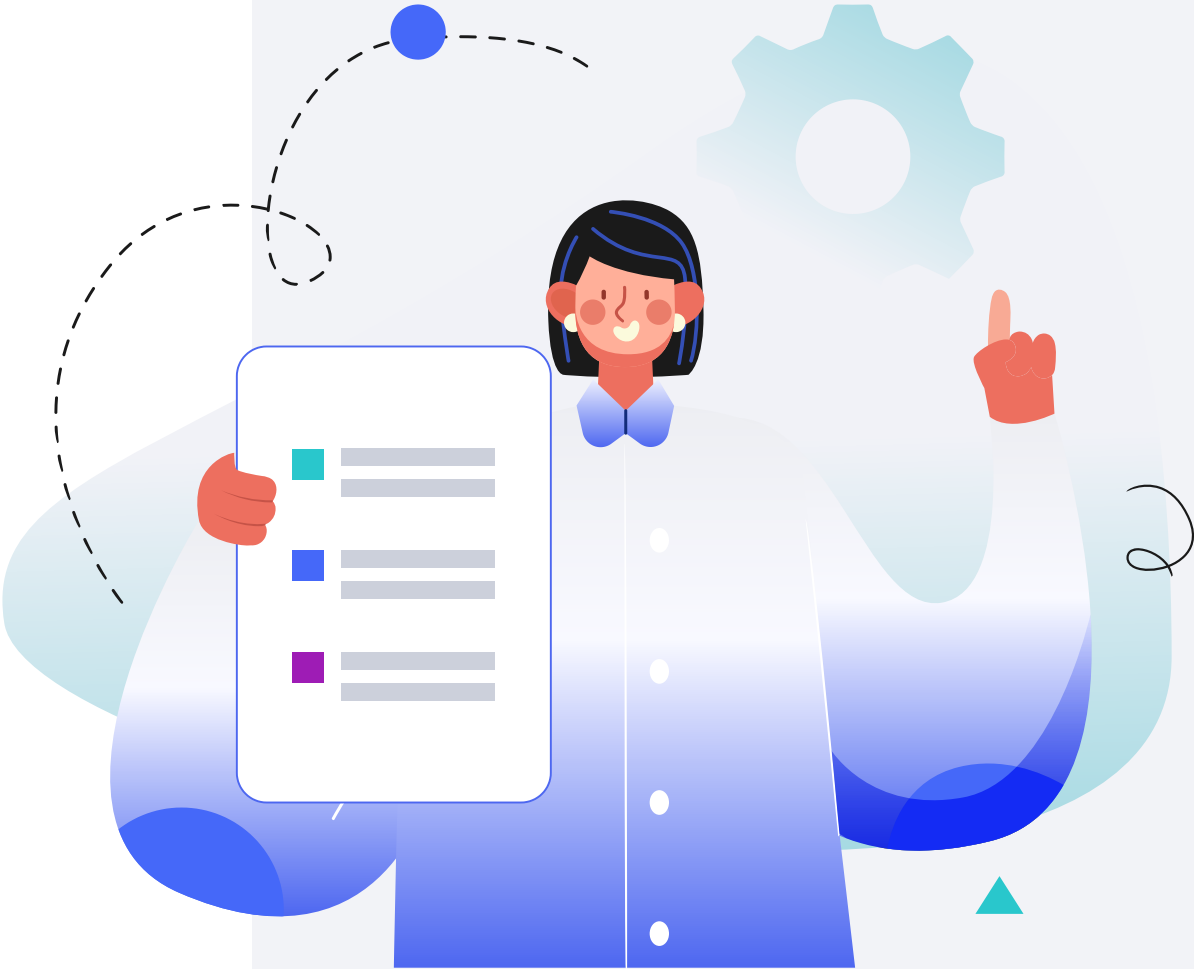
Male

HEIGHT

5ft 5" 165cm

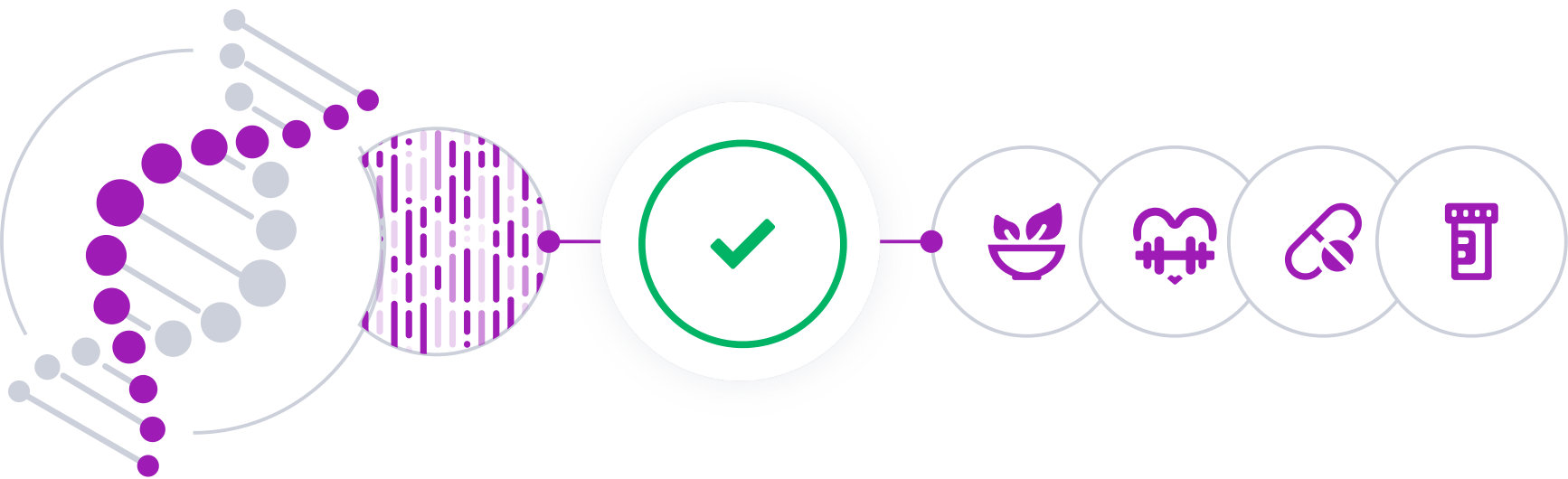
WEIGHT

137lb 62kg



How this works

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

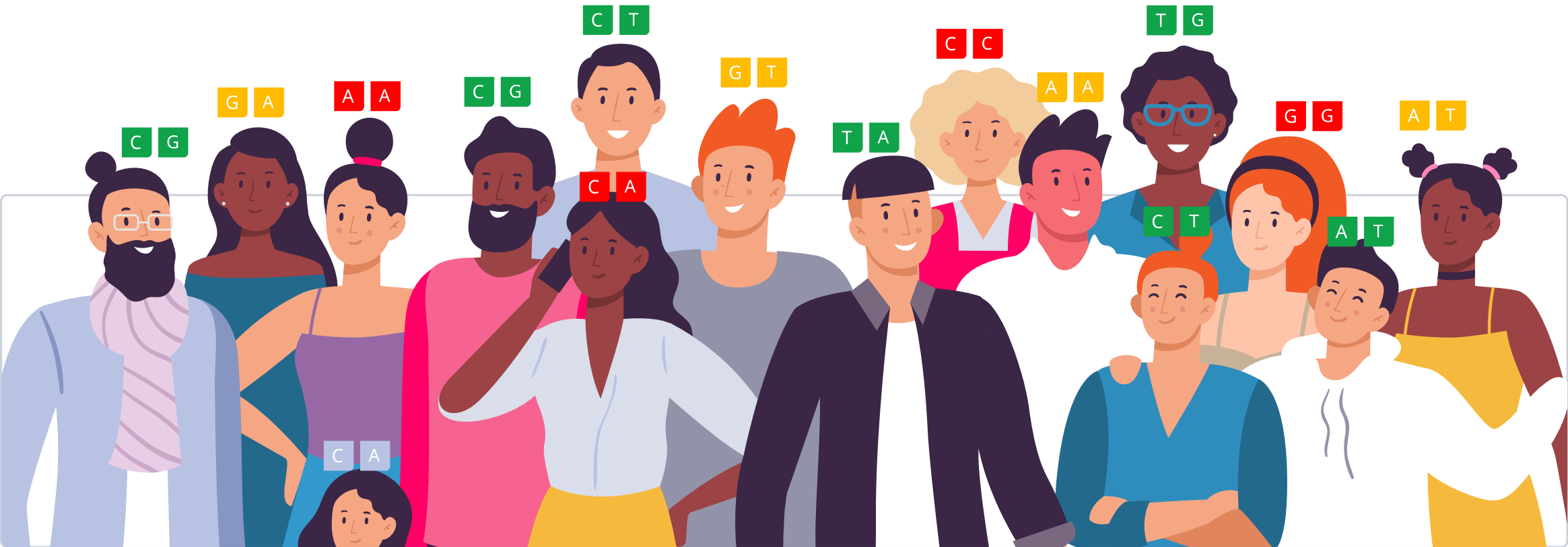


Similarly, our Trait Reports look at how your DNA influences your traits.



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

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



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

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

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



Genotype color info:

AA

You don't have any risk alleles

AA

You have 1 risk allele

AA

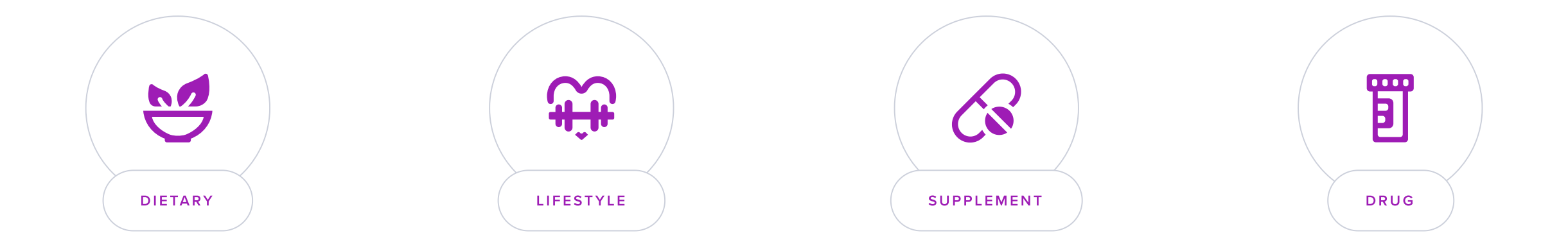
You have 2 risk alleles

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

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

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

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



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

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



Impact

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

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

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

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

Recommendation Evidence

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

Genotype-specific Evidence

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

Some things to keep in mind:

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

Introduction

Cystatin C is a protein produced by nearly all human cells and is found in various body fluids, including blood. It is filtered by the kidneys and is not returned to the bloodstream, making it a marker for glomerular filtration rate (GFR).

Compared to creatinine, its levels in the bloodstream are less influenced by muscle mass, diet, or other external factors. Therefore, cystatin C is sometimes considered a more reliable marker for assessing kidney health.

Increased levels of cystatin C are indicative of decreased kidney function. They have been linked to:

- Cardiovascular events
- Increased mortality risk in the elderly
- Acute kidney injury
- Chronic kidney disease

Conversely, low levels of cystatin C are generally viewed as normal or indicative of good kidney function.

Factors Influencing Cystatin C Levels

Up to 50% of differences in people’s cystatin C levels might be attributed to genetics.

Genetically higher cystatin C levels may suggest an inherited susceptibility to kidney issues, though environmental factors also play a significant role.

Increased cystatin C levels are primarily associated with impaired kidney function. Factors contributing to elevated levels include:

- Medications that affect kidney function
- High blood pressure
- High thyroid hormone levels
- Steroid therapy
- Inflammation
- Older age
- Smoking

Genetically higher cystatin C levels may be causally associated with an increased risk of:

- Stroke [\[R, R\]](#)
- Bone health (osteoporosis [\[R\]](#))
- Shingles [\[R\]](#)

However, higher levels may not be associated with a risk for heart disease. [\[R, R\]](#)

If you are concerned about your kidney function or have risk factors for kidney disease, it might be beneficial to consider both creatinine and cystatin C tests to get a comprehensive assessment of your renal health



Predisposed to typical cystatin C levels based on 967,958 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
PYGB	rs6037004	GG
ISL2	rs932046	TT
MPPED2	rs55733296	GA
PRKAG2	rs7805747	GA
ALDH2	rs11066301	GA
SLC34A3	rs199690076	CC
SH2B3	rs72650673	GG
CST3	rs13043045	CC
NAPB	rs78916169	GG
CST2	rs139220979	CC
CST3	rs60852953	GG
CST8	rs117058259	GG
CST5	rs117552590	TT
CST9L	rs79890466	CC
GGTLC1	rs77581079	CC
HOXD10	rs187355703	CC
FLT3	rs76428106	TT
ACSS1	rs116845677	AA
CD93	rs117893821	AA
SERPINA1	rs28929474	CC
EPB41L5	rs28930677	CC
CST2	rs6076132	AA
CD93	rs73901922	GG
PYGB	rs74853405	GG
CST3	rs118005442	GG
NAPB	rs2995729	AA
CSTL1	rs62208863	CC
TBC1D24	rs72768728	CC
CSTL1	rs6106688	AA
GGTLC1	rs79569524	GG
NSD1	rs114862400	TT
PRKAG2	rs78573217	CC

GENE	SNP	GENOTYPE
CD93	rs17750117	GG
TENT5A	rs16893360	GG
CST1	rs117668737	GG
GGTLC1	rs6114452	GG

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	Practice Exercise Snacks	1 minutesute	
2	N-acetylcysteine (NAC)	1200 mg	
3	Fruits And Vegetables		
4	Selenium Supplements	50 mcg	
5	B Vitamins		
6	Keto Diet		
7	Leucine	2 g	
8	Cordyceps	500 mg	
9	Creatine	4 g	
10	Niacin Supplements	20 mg	
11	Strength Training	1 hour	
12	Omega-3 (Fish Oil)	2000 mg	
13	Avoid Lead Exposure		
14	Soy		
15	Vine Tea		
16	Dietary Selenium		
17	Probiotics	30 billion CFU	
18	Alpha-Lipoic Acid	600 mg	
19	Bacillus Coagulans		
20	Avoid High-Glycemic Index Foods		
21	Mediterranean Diet		
22	L-Carnitine	1 g	
23	Methylsulfonylmethane (MSM)	1 g	

1



Practice Exercise Snacks

IMPACT2 / 5

EVIDENCE1 / 5

How to implement

Integrate short bursts of physical activity, each lasting about 1 to 2 minutes, into your daily routine at least two to three times a day. These 'exercise snacks' can include activities like doing a set of stairs, rapid bodyweight exercises, pull-ups, push-ups, sit-ups, or brisk walking.

TYPICAL STARTING DOSE

1 minutesute

Description

Staying physically active is essential for maintaining overall health and well-being. **Exercise snacks** are brief, frequent bursts of physical activity integrated into daily routines, helping combat the health risks associated with prolonged sitting and sedentary behavior, such as obesity and cardiovascular issues. Examples include taking the stairs or doing quick exercises during work breaks.

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

Exercise snacks are short, quick bursts of physical activity performed throughout the day, designed to break up prolonged periods of sitting or inactivity. These brief bouts of exercise can be as short as a few minutes and are incorporated into daily routines to boost overall physical activity levels.

Exercise snacks are crucial for health because they combat the negative effects of sedentary behavior, such as prolonged sitting, which is associated with an increased risk of obesity, cardiovascular diseases, diabetes, and musculoskeletal issues. They help improve blood circulation, regulate blood sugar levels, and enhance mood and cognitive function.

Examples of exercise snacks include taking the stairs instead of the elevator, doing a few minutes of bodyweight exercises (e.g., squats or push-ups) during work breaks, or walking briskly for a few minutes after meals. These short, frequent bursts of activity contribute to a more active lifestyle and can significantly benefit overall health by reducing the risks associated with excessive sitting.

How it helps

People who are physically active may have better kidney function [\[R\]](#).

In line with this, prolonged bed rest increased cystatin C levels in a non-placebo-controlled trial of 15 healthy volunteers [\[R\]](#).

Interestingly, a study of 1041 older participants associated low muscle strength with increased cystatin C levels [\[R\]](#).

2



N-acetylcysteine (NAC)

IMPACT1 / 5

EVIDENCE3 / 5

How to implement

Take 600 mg of N-Acetylcysteine (NAC) supplement daily with water. It can be taken at any time of the day, but try to take it at the same time each day for best results.

TYPICAL STARTING DOSE
1200 mg

Description

NAC is a supplement that contains a form of the amino acid cysteine, a protein building block that your body uses to make the antioxidant glutathione. It is used for its potential antioxidant properties and its ability to support lung, gut, and mental health.

[N-acetylcysteine](#) (NAC) is converted to cysteine in the body. Cysteine is a protein building block (amino acid) that helps make the antioxidant glutathione [\[R\]](#).

People take NAC to potentially support [\[R\]](#), [\[R\]](#):

- Mental health
- Ovarian health and pregnancy outcomes
- Lung health
- Gut health

How it helps

Supplementation with NAC may decrease cystatin C levels and improve overall kidney function in patients with cystinosis [\[R\]](#).

NAC may also help prevent contrast-induced kidney injury. However, the evidence is mixed [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

In a placebo-controlled trial of 54 patients receiving amphotericin B, supplementation with NAC (600 mg, 2x/day) during antibiotic treatment did prevent kidney injury but had no effect on blood and urinary cystatin C levels [\[R\]](#).

Moreover, NAC failed to reduce cystatin C in most studies carried out in healthy volunteers and CKD patients [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

3



Fruits And Vegetables

IMPACT

1 / 5

EVIDENCE

2 / 5

How to implement

Increase your intake of fruits and vegetables to at least five servings per day, aiming for a variety of types and colors to ensure a broad range of nutrients. Each serving size should roughly be the amount you can fit in one hand. Try to incorporate at least one serving of fruits or vegetables into every meal and snack throughout the day.

Description

A diet rich in fruits and vegetables provides essential nutrients, antioxidants, and dietary fiber. This combination supports overall health, helps maintain a healthy weight, and reduces the risk of chronic diseases such as heart disease and certain cancers.

How it helps

A study of 2152 participants found an inverse association between dietary intake of fruits and vegetables and markers of rapid kidney function decline, including elevated cystatin C levels [R].

However, the effects of fruits and vegetables on cystatin C levels in patients with chronic kidney disease are mixed [R, R].

4



Selenium Supplements

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

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

TYPICAL STARTING DOSE

50 mcg

Description

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

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

- Reproduction
- Thyroid function
- DNA production
- Immune response

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

How it helps

A study of 172 children found a negative association between blood selenium levels and cystatin C [\[R\]](#).

In a placebo-controlled trial of 215 elderly subjects, supplementation with selenium yeast (200 µg/day) and coenzyme Q10 (200 mg/day) for 48 months significantly improved kidney function as seen by decreased cystatin C and creatinine levels [\[R\]](#).

5



B Vitamins

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Take a B vitamin complex supplement once daily, preferably with your morning meal to enhance absorption. The supplement should include a range of B vitamins such as B1 (thiamine), B2 (riboflavin), B3 (niacin), B5 (pantothenic acid), B6 (pyridoxine), B7 (biotin), B9 (folate), and B12 (cobalamin). Ensure consistency by taking it at the same time each day.

Description

B vitamins help the body function properly. Two examples are [vitamin B9 \(folate\)](#) and [vitamin B12](#). They play essential roles in [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- DNA formation
- Metabolism
- Energy production

You can get these vitamins from [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Animal products
- Green leafy vegetables
- Citrus fruits
- Fortified foods
- Supplements

Adults should be getting **400 micrograms (mcg) of folate** and **2.4 mcg of vitamin B12** every day [\[R\]](#), [\[R\]](#).

Folate deficiency is rare but can happen in people that don’t eat enough fruits and vegetables. Alcoholics and lactating mothers may also be at an increased risk [\[R\]](#).

Vitamin B12 deficiency often takes years to develop, as the body is able to store large amounts in the liver. Groups that may be at an increased risk include [\[R\]](#), [\[R\]](#):

- Vegans
- Pregnant women
- Older people
- People with gut issues

How it helps

A study of 37 patients with hyperhomocysteinemia and 17 healthy controls found that patients had higher cystatin C levels. Supplementation with B vitamins for 3 months significantly lowered them [\[R\]](#).

Similarly, a B vitamin complex with the vitamins B1, B6, and B12 taken daily for 12 weeks lowered cystatin C levels in a placebo-controlled trial of 80 patients with type 1 diabetes. Cystatin C showed an inverse correlation with blood vitamin B12 [\[R\]](#).

6



Keto Diet

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Adopt a diet that consists of about 70-80% fat, 10-20% protein, and 5-10% carbohydrates. Eliminate or significantly reduce the intake of sugar and starches like bread, pasta, rice, and potatoes, focusing instead on high-fat foods like meats, fatty fish, eggs, butter, and healthy oils, as well as low-carb vegetables like leafy greens. This dietary pattern should be maintained consistently for a period of at least 3-4 weeks to achieve ketosis, after which it can be adjusted based on individual goals and responses.

Description

The keto diet is a high-fat, low-carbohydrate eating plan designed to induce a state of ketosis in the body, where it primarily burns fat for energy. It is often used for weight loss and managing certain medical conditions.

The ketogenic diet, or the ‘keto’ diet, is rich in fat and restricts carb intake [\[R\]](#), [\[R\]](#).

On the ketogenic diet, 50 g of carbs or less are consumed per day. Around 55-80% of the calories come from fat [\[R\]](#).

The ketogenic diet depletes the body of sugars like glucose. When people fast or eat very little carbs, the body makes less insulin. In response, the body starts using fat for energy.

When the body only uses fat for energy, molecules called ketones are formed. This state is called *ketosis*.

The ketogenic diet may help with:

- Seizures [\[R\]](#)
- Excess weight [\[R\]](#)
- Diabetes [\[R\]](#), [\[R\]](#)

How it helps

Weight loss through a 12-week very low-calorie ketogenic diet decreased cystatin C (by 33 mg/L) in a non-placebo-controlled trial of 6 obese subjects [\[R\]](#).

7



Leucine

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 2 to 3 grams of leucine supplement per day, with meals to enhance its absorption, particularly after resistance exercise to stimulate muscle protein synthesis. Consistency is important, so continue daily for at least several months to gauge effectiveness.

TYPICAL STARTING DOSE

2 g

Description

Leucine is an essential, branched-chain amino acid found in protein-rich foods that plays a key role in muscle protein synthesis and overall muscle health. It is commonly used by athletes and fitness enthusiasts to support muscle recovery and growth.

[Leucine](#) is a branched-chain amino acid (BCAA). It's essential, which means we can't produce it and must get it from food. Leucine is found in all protein-rich foods, such as [\[R\]](#):

- Red meat and poultry
- Fish
- Dairy products
- Eggs
- Legumes (e.g., beans and peas)
- Nuts (e.g., pistachios, almonds, and cashews)
- Cereals (e.g., corn, millet, semolina, and spelt)

How it helps

Supplementation with leucine-enriched protein (3 g leucine) for 24 weeks, both alone and combined with omega-3 fatty acids, lowered cystatin C levels in a non-placebo-controlled trial of 107 older participants with low muscle mass [\[R\]](#).

8



Cordyceps

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Take 500-1000 mg of Cordyceps extract in supplement form once daily, preferably with a meal to enhance absorption. This dosage is commonly recommended for general wellness and should be continued on a long-term basis, as effects accumulate over time.

TYPICAL STARTING DOSE
500 mg

Description

Cordyceps is a type of medicinal mushroom known for its potential to boost endurance and enhance respiratory function. It's used in traditional medicine and dietary supplements to support physical performance and overall vitality.

[Cordyceps](#) are a group of fungi (mushrooms) that grow on insects. Some species, like *O. sinensis* and *C. militaris*, are used in supplements [\[R\]](#).

O. sinensis grows on a moth caterpillar. Extracts and teas made from the fungus-caterpillar combination are often used in traditional Chinese medicine. They are thought to boost sex drive, reduce fatigue, and support kidney health [\[R\]](#), [\[R\]](#), [\[R\]](#).

How it helps

In a placebo-controlled trial of CKD patients, supplementation with *Cordyceps militaris* (100 mg/day) for 3 months lowered cystatin-C levels by 14% [\[R\]](#).

9



Creatine

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 4 grams of creatine supplement daily, ideally mixed with water or juice. This dosage can be maintained consistently without needing specific periods of cycling on or off.

TYPICAL STARTING DOSE

4 g

Description

Creatine is a popular dietary supplement among athletes and bodybuilders, known to enhance muscle performance during short bursts of high-intensity activities. It may help improve exercise performance and support muscle growth when used as directed.

[Creatine](#) is a compound naturally produced by the body. It’s stored in the muscles and brain [\[R\]](#).

During exercise, creatine is released to boost performance and help build muscles. For this reason, it’s a popular supplement among athletes [\[R, R\]](#).

Sources of creatine include [\[R\]](#):

- Red meat
- Seafood
- Supplements

How it helps

In a placebo-controlled trial of 18 healthy sedentary men, supplementation with creatine (10 g/day) for 3 months was safe and even lowered cystatin C levels by 0.17 mg/L [\[R\]](#).

10



Niacin Supplements

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Take a 20 mg niacin supplement daily, preferably with a meal to aid in absorption and minimize potential stomach upset.

TYPICAL STARTING DOSE

20 mg

Description

Niacin is an essential B vitamin that plays a vital role in metabolism, supporting heart health, maintaining healthy cholesterol levels, and promoting overall cellular function when included in a balanced diet or as a supplement.

[Niacin](#) (vitamin B3) is found in many foods. It supports your nervous system, skin, gut, and more [\[R\]](#).

Adults should get **16 mg** of niacin a day, and most people get enough from their diets [\[R\]](#).

Experts recommend getting niacin from food rather than supplements [\[R\]](#), [\[R\]](#).

How it helps

In an uncontrolled trial of 19 obese, nondiabetic, hypertriglyceridemic males, receiving extended-release nicotinic acid for 8 weeks helped normalize atherogenic mixed dyslipidemia by improving cystatin C among other markers [\[R\]](#).

11

Strength Training

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

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

TYPICAL STARTING DOSE

1 hour

Description

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

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

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

The benefits of strength training are numerous, and include [R]:

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

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

How it helps

People who are physically active may have better kidney function [R].

In line with this, prolonged bed rest increased cystatin C levels in a non-placebo-controlled trial of 15 healthy volunteers [R].

Interestingly, a study of 1041 older participants associated low muscle strength with increased cystatin C levels [R].

12



Omega-3 (Fish Oil)

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

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

TYPICAL STARTING DOSE

2000 mg

Description

Omega-3 fatty acids are essential fats found in fatty fish like salmon, flaxseeds, and walnuts. They are known for their potential cardiovascular and brain health benefits, including reducing the risk of heart disease and supporting cognitive function.

[Omega-3 fatty acids](#) are some of the healthiest fats we can eat. They help lower inflammation and protect the heart, brain, and eyes. Our bodies produce less omega-3s than we need for optimal health, so it's important to get enough through food or supplements [\[R\]](#), [\[R\]](#), [\[R\]](#).

There are three major types of omega-3s: ALA, EPA, and DHA [\[R\]](#), [\[R\]](#).

Fatty fish are rich in EPA and DHA. They include [\[R\]](#):

- Salmon
- Tuna
- Herring
- Sardines

For optimal protection, try to get at least **two servings of fatty fish per week**. Fish oil supplements are available for those who don't eat fish regularly [\[R\]](#).

How it helps

In a non-placebo-controlled trial on heart surgery patients with hypertriglyceridemia, both EPA alone (1.8 g, 3x/day) and EPA plus DHA (2 g/day) lowered cystatin-C levels but the combination was more effective [\[R\]](#).

However, omega-3 fatty acids (4 g/day for 6 weeks) had no effect on serum cystatin C in a placebo-controlled trial of 29 diabetic patients [\[R\]](#).

13



Avoid Lead Exposure

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Prevent lead exposure by using cold water for drinking and cooking, regularly cleaning dust from windowsills and floors, and ensuring that your home's paint is not chipping if it was built before 1978. For occupations involving potential lead exposure, use protective gear and follow safety protocols. Test your home for lead if it's old or you're concerned about contamination.

Description

Lead is a heavy metal. It is naturally found in the environment in small amounts [\[R\]](#), [\[R\]](#).

Exposure to lead can cause it to build up in the body. A buildup of lead can contribute to oxidative stress and cell damage. This is called **lead poisoning** [\[R\]](#), [\[R\]](#).

Lead is no longer used in the manufacturing of some products like gasoline and paint. However, it can still be found in some pipes, batteries, and the wall paint of older homes [\[R\]](#), [\[R\]](#), [\[R\]](#).

How it helps

A study of 3941 participants associated high blood lead levels with increased cystatin C and decreased eGFR [\[R\]](#).

14



Soy

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Incorporate soy-based products such as tofu, soy milk, and edamame into your daily diet. Aim for at least one serving per day, equivalent to about a cup of soy milk, a half-cup of cooked soybeans, or a 3-ounce piece of tofu.

Description

Soy is a legume native to East Asia, and its health benefits include being a source of plant-based protein, fiber, and various vitamins and minerals. It is known for its potential to support heart health, reduce cholesterol levels, and provide essential nutrients in vegetarian and vegan diets.

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

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

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

Soy-based foods include [\[R\]](#):

- Soy beverages
- Tofu
- Tempeh
- Edamame
- Miso
- Natto

Soy protein and soy isoflavones are also available as supplements.

How it helps

In a non-placebo-controlled trial of 270 prehypertensive postmenopausal women with lowered renal function, consuming soy flour (40 g/day) for 6 months slightly improved kidney function markers (including cystatin C) [\[R\]](#).

15



Vine Tea

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Vine tea is available in the form of capsules, tablets, or powdered extract. Take 100-500 mg/day as needed. If you are using a powdered form, you can mix it into water, tea, or a smoothie. Capsules and tablets should be taken with a glass of water. If you're using it for alcohol-related symptoms, take it shortly before or after consuming alcohol.

Description

Vine tea (*Ampelopsis grossedentata*, also known as Teng Cha, is a plant native to China and parts of Southeast Asia that belongs to the grape family (*Vitaceae*) and has been used in traditional Chinese medicine for centuries.

Its leaves are rich in flavonoids, particularly dihydromyricetin (DHM). This flavonoid has been studied for its potential antioxidant, anti-inflammatory, and liver-protecting properties.

People traditionally take vine tea to help with:

- Sore throat
- Fever
- Hypertension
- Cardiovascular health
- Immune function

How it helps

In a placebo-controlled trial of 80 patients with type 2 diabetes, supplementation with vine tea (10 g/day, containing 970 mg dihydromyricetin) for 1 month significantly lowered cystatin C levels [\[R\]](#).

16



Dietary Selenium

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Incorporate selenium-rich foods into your daily diet, such as Brazil nuts, seafood, and organ meats. Eating 1-2 Brazil nuts a day can meet the daily selenium requirement for most adults.

Description

Selenium is a trace mineral found in various foods, including nuts, seeds, and seafood. It is an essential nutrient that plays a crucial role in maintaining the body's antioxidant defenses and supporting thyroid function.

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

- Reproduction
- Thyroid function
- DNA production
- Immune response

Adults should be getting **55 micrograms** of selenium per day. Good sources of selenium include [\[R\]](#):

- Brazil nuts
- Fish
- Meat
- Eggs
- Rice
- Oatmeal

How it helps

A study of 172 children found a negative association between blood selenium levels and cystatin C [\[R\]](#).

17



Probiotics

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

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
30 billion CFU

Description

Probiotics are live beneficial bacteria and yeasts that can support gut health and digestive function when consumed as supplements or found in fermented foods like yogurt and sauerkraut. They may be beneficial to gut health, immune function, blood sugar, and mood.

[Probiotic bacteria](#) are “good” bacteria found mainly in the large intestine. They support your body and mind by [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Maintaining gut health
- Supporting a healthy immune system
- Improving your mood
- Helping to maintain healthy blood sugar

Prebiotics are certain types of fiber and other complex carbs that serve as food for gut bacteria. **They support gut health by helping boost the activity and growth of “good” bacteria** [\[R\]](#), [\[R\]](#).

Prebiotics are also added to foods and supplements. Common prebiotic ingredients are [\[R\]](#), [\[R\]](#):

- Oligo-fructose
- Oligo-galactose
- [Inulin](#)

Mixtures of probiotics and prebiotics are known as **synbiotics** [\[R\]](#).

How it helps

A meta-analysis of 2 trials concluded that probiotics decrease cystatin C (by 29.50 ng/mL) [\[R\]](#).

In a placebo-controlled trial of 48 patients with diabetic nephropathy, drinking probiotic soy milk (200 mL/day) for 8 weeks lowered cystatin C levels compared to drinking regular soy milk [\[R\]](#).

18



Alpha-Lipoic Acid

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 600-1800 mg of alpha-lipoic acid daily, preferably with a meal to enhance absorption.

TYPICAL STARTING DOSE

600 mg

Description

[Alpha-lipoic acid](#) is a natural antioxidant found in almost every cell in your body. People use alpha-lipoic acid to help with issues like skin aging, weight loss, and high blood sugar [\[R\]](#), [\[R\]](#), [\[R\]](#).

People use alpha-lipoic acid to help with [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Complications of high blood sugar
- Skin aging
- Weight loss
- Carpal tunnel syndrome

How it helps

In a non-placebo-controlled trial of 102 patients with early-stage diabetic kidney disease, adding alpha-lipoic acid to valsartan treatment further lowered cystatin C, inflammatory markers, and other markers of poor kidney function [\[R\]](#).

However, alpha-lipoic acid (600 mg, 3x) failed to prevent contrast-induced kidney injury and lower cystatin C levels in a non-placebo-controlled trial of 78 diabetic patients [\[R\]](#).

19



Bacillus Coagulans

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Take a Bacillus coagulans supplement containing 1 to 2 billion CFUs (colony forming units) daily, with a glass of water, preferably with meals. This routine should be consistently followed for at least four weeks to potentially see benefits.

Description

Bacillus coagulans is a probiotic strain believed to support digestive health and boost the immune system. It's used in various probiotic supplements and may aid in maintaining gut balance.

How it helps

In a placebo-controlled trial of 60 patients with diabetic nephropathy, consuming 25 g/day of probiotic honey with *Bacillus coagulans* T11 (10^8 CFU/g) for 12 weeks lowered cystatin C levels [\[R\]](#).

20



Avoid High-Glycemic Index Foods

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Substitute high glycemic foods, typically those that are processed, sugary, and low in fiber, with lower glycemic options like most fruits, vegetables, beans, and whole grains. This means avoiding white bread, candies, and sugary drinks in your daily diet, and instead opting for options like whole wheat bread, nuts, and water. It's a continuous adjustment to be made with every meal and snack.

Description

Choose foods with a lower glycemic index. These are foods that don't cause spikes in your blood sugar [\[R\]](#).

How it helps

In a non-placebo-controlled trial of 163 overweight or obese adults, reducing dietary glycemic index increased eGFR and decreased cystatin C [\[R\]](#).

21



Mediterranean Diet

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Incorporate a variety of primarily plant-based foods, such as fruits, vegetables, whole grains, nuts, and legumes, into every meal. Choose healthy fats, like olive oil, over saturated fats and consume fish and poultry at least twice a week. Limit red meat to a few times a month and include a moderate amount of dairy products. Opt for water and red wine in moderation as your beverages.

Description

The [Mediterranean diet](#) is based on the traditional cuisine from the Mediterranean regions. It moderates the intake of red meat and dairy, while being rich in fruits and vegetables, whole grains, and healthy fats ([olive oil](#)).

The [Mediterranean diet](#) focuses on traditional cuisine from the Mediterranean regions. It’s rich in [\[R\]](#):

- [Olive oil](#)
- Fruits and vegetables
- Whole grains
- Nuts and seeds
- Fish

This type of diet may **reduce inflammation and protect the brain and heart** [\[R, R, R, R\]](#).

Limited intake of animal products, saturated fat, and refined sugar likely contribute to the health benefits of the Mediterranean diet [\[R\]](#).

How it helps

A study of 490 participants found an inverse association between adherence to a Mediterranean diet and cystatin C levels [\[R\]](#).

22



L-Carnitine

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 500 mg of L-carnitine supplement daily with a glass of water, preferably with a meal to enhance absorption.

TYPICAL STARTING DOSE

1 g

Description

L-carnitine is an amino acid-like compound that plays a role in energy metabolism and helps prevent toxic substances from building up in cells. It is often used in dietary supplements for its potential to support muscle recovery, reduce fatigue, and enhance athletic performance.

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

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

People use L-carnitine for [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Heart problems
- Overactive thyroid
- Fertility problems
- Blood sugar control
- Weight control

How it helps

In a placebo-controlled trial of 48 patients with pemphigus vulgaris, supplementation with L-carnitine (2 g/day) for 8 weeks lowered cystatin C levels [\[R\]](#).

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Methylsulfonylmethane (MSM)

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Take 1 to 3 grams of Methylsulfonylmethane (MSM) per day, divided into three doses. This can be in the form of capsules or powder that is mixed with water. It is recommended to start with a lower dose to assess tolerance, then gradually increase to the desired dose over a period of 1 to 2 weeks.

TYPICAL STARTING DOSE

1 g

Description

MSM is a naturally occurring sulfur compound found in foods and used in dietary supplements. It has anti-inflammatory properties and may be used to support joint health and reduce exercise-related muscle soreness.

A molecule of MSM is broken down in the body into a sulfate (sulfur) group and two methyl groups.

The following may increase people’s needs for sulfur and methyl groups: physical activity, recovery from injuries, inflammation, infections/sickness, toxins, etc.

People also need more sulfur when taking hormones (DHEA, pregnenolone, etc.), drugs (Aspirin, Tylenol, NSAIDs, birth control, etc.) or supplements (flavonoids & polyphenols - resveratrol, quercetin, curcumin, etc.) that undergo sulfation.

How it helps

There's no direct evidence or widely accepted mechanism linking MSM supplementation to decreased cystatin C levels. However, considering MSM's potential health benefits, we can speculate on possible mechanisms through which MSM might influence cystatin C levels indirectly, especially through its effects on kidney health and inflammation:

- Anti-inflammatory effects:** MSM has been shown to have anti-inflammatory properties. Inflammation can impair kidney function, which in turn could affect cystatin C levels. By reducing inflammation, MSM might help maintain kidney health and thus potentially influence cystatin C levels.
- Antioxidant properties:** MSM also has antioxidant properties, which can protect tissues (including the kidneys) from damage caused by free radicals. This protection might help preserve kidney function and, consequently, impact cystatin C levels.

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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.

