

# Heart Failure

## Disease Report

REPORT CATEGORY —



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

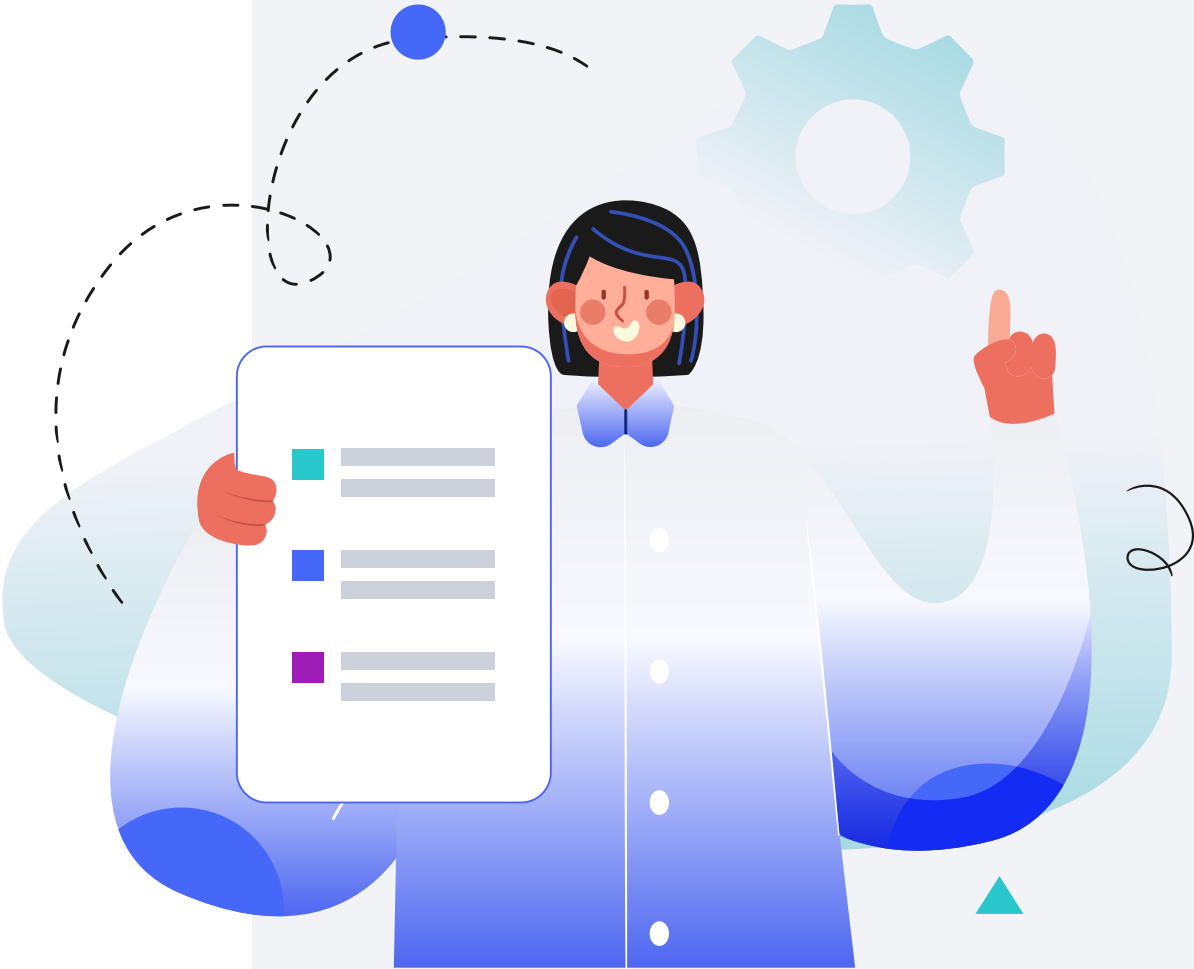
Male

HEIGHT

5ft 5" 165cm

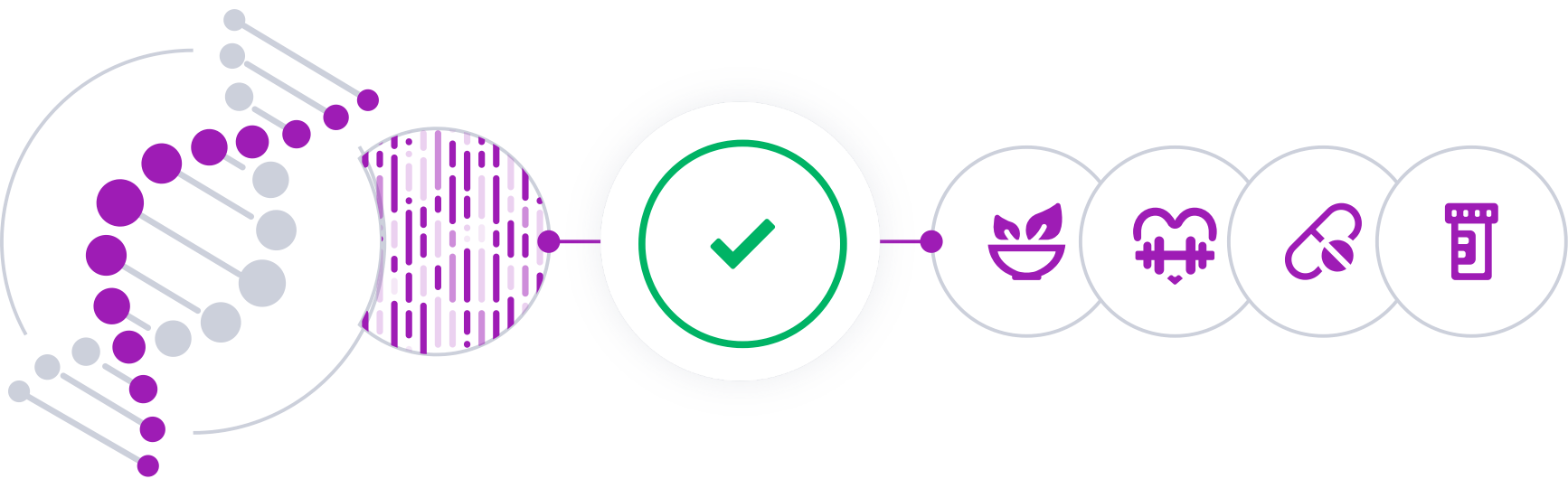
WEIGHT

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.

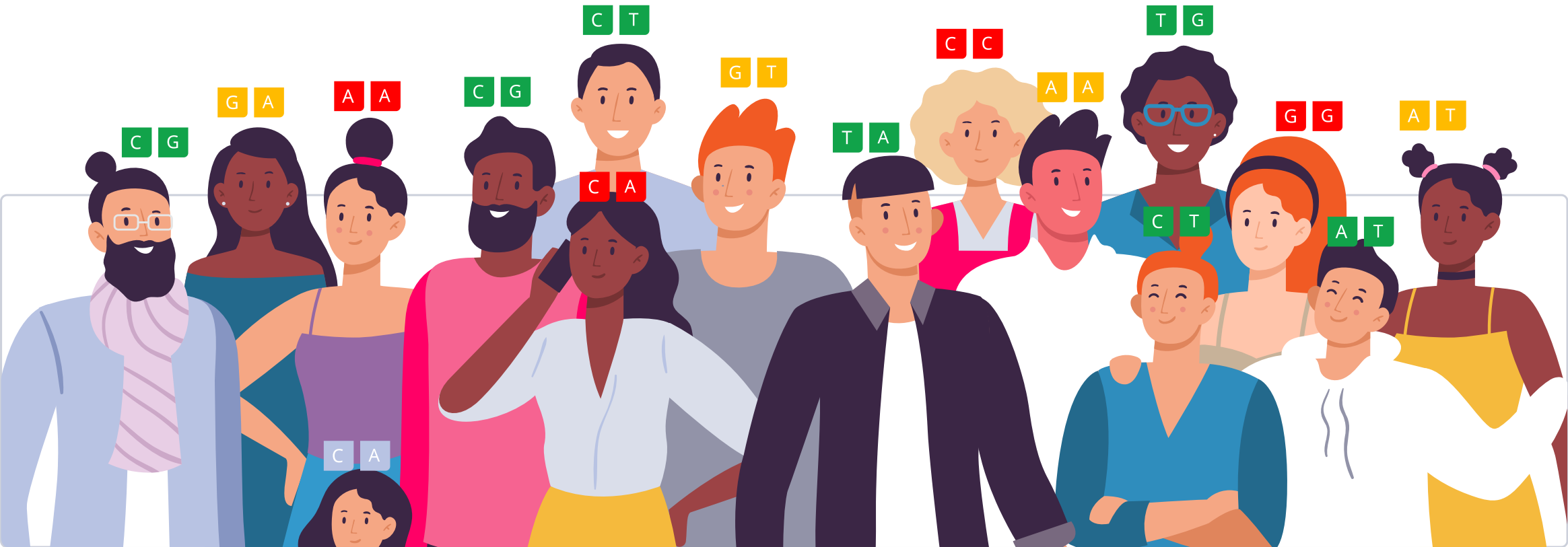


Similarly, our Trait Reports look at how your DNA influences your traits.



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

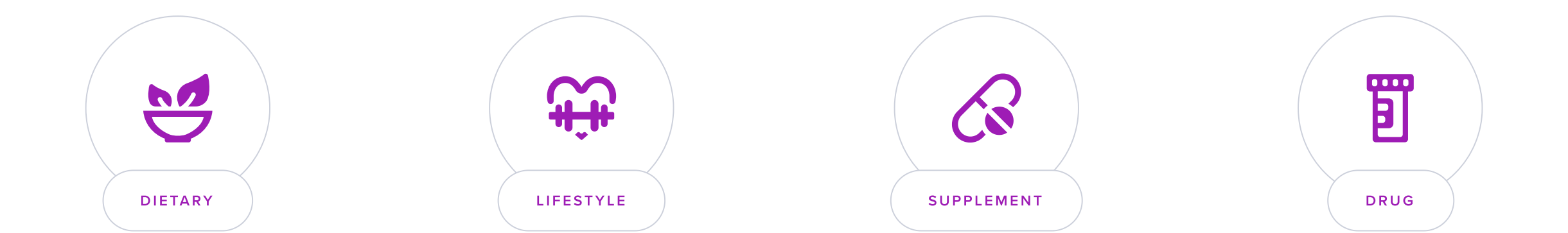
You have 2 risk alleles

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

Your heart is a muscle designed to pump blood. Heart failure is a condition in which the heart is unable to pump enough blood to meet the body's needs.

While heart failure can happen abruptly, there are often signs that there is a problem. The severity of the symptoms can vary depending on the underlying cause and the stage of the condition. **Symptoms of heart failure** can include [\[R\]](#):

- Shortness of breath
- Fatigue
- Swelling in the legs and ankles
- Rapid or irregular heartbeat
- Chest pain
- Rapid weight gain from fluid buildup

Treatment for heart failure can involve anything from lifestyle changes to medications to medical procedures. **A quick response is key to recovery, so seek medical attention if you or someone you know is experiencing symptoms.** Closer monitoring is also important if you have risk factors for heart failure.



# Risk Factors

Key Takeaways:

- Up to **25%** of differences in people's chances of having heart failure may be due to genetics.
- Key risk factors: high blood pressure, diabetes, coronary artery disease, arrhythmias, and infections.
- Heart failure affects about **26 million** people worldwide, with about **6 million** of those in the U.S.
- If your genetic risk is high, you may lower your overall risk by taking action on those risk factors that you can change.
- Make sure to click the **Next Steps** tab for relevant labs.

Up to **25%** of differences in people's chances of having heart failure may be due to genetics. For example, genetically high betaine and L-carnitine may be causally associated with a high risk of heart failure. In contrast, genetic predisposition to glucosamine supplement intake may be causally associated with a lower risk of heart failure [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

A variety of health conditions can contribute to heart failure, including [\[R\]](#):

- Coronary artery disease
- High blood pressure
- Diabetes
- Previous heart attacks
- Viral infections
- Heart inflammation (myocarditis)
- Heart rhythm problems
- Over/under-active thyroid



MORE LIKELY

More likely to have heart failure based on **35,698** genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

| GENE     | SNP         | GENOTYPE |
|----------|-------------|----------|
| ABO      | rs600038    | CC       |
| PITX2    | rs1906592   | TG       |
| ZFHX3    | rs12325072  | CC       |
| PITX2    | rs7680240   | AA       |
| HSD17B12 | rs7936836   | CC       |
| CDK6     | rs2282979   | TT       |
| TM2D1    | rs1997997   | AA       |
| CHMP3    | rs4832298   | CC       |
| USP36    | rs2306527   | CC       |
| MYOZ1    | rs4746140   | CG       |
| SPDYE5   | rs6944634   | CG       |
| FAM177A1 | rs1712355   | TT       |
| PITX2    | rs981150    | AG       |
| SH2B3    | rs10774624  | GA       |
| SRR      | rs216193    | AG       |
| KLHL3    | rs11745324  | GA       |
| NPC1     | rs1788826   | GA       |
| DMRTA2   | rs116626164 | TT       |
| PITX2    | rs17513625  | GG       |
| TXNDC12  | rs80061532  | CC       |
| LPA      | rs55730499  | CC       |
| /        | rs114352564 | GG       |
| CTAGE4   | rs117540300 | CC       |
| FTO      | rs56094641  | AA       |
| BAG3     | rs17617337  | TT       |
| GNPDA2   | rs10938398  | GG       |
| PITX2    | rs1823290   | AA       |
| STRN     | rs7605601   | GG       |
| TBX3     | rs35432     | TT       |
| CACNB2   | rs1757223   | 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  | Exercise At Least One Hour a Day  | 1 hour     | 2  | Aerobic Exercise (Cardio)   | 1 hour     |
| 3  | Strength Training                 | 1 hour     | 4  | Dietary Omega-3 Fatty Acids |            |
| 5  | Airway Muscle Training            | 30 minutes | 6  | Tai Chi                     | 1 hour     |
| 7  | Maintain Optimal Vitamin D Levels | 1000 iu    | 8  | DASH Diet                   |            |
| 9  | Avoid Noise Pollution             |            | 10 | Fish                        |            |
| 11 | Hyperbaric Oxygen Therapy         | 90 minutes | 12 | Salvia Miltiorrhiza         |            |
| 13 | Aquatic Exercise                  | 1 hour     | 14 | Hawthorn Extract            |            |
| 15 | Coenzyme Q10 (CoQ10)              | 100 mg     | 16 | Infrared Light Therapy      |            |
| 17 | Progressive Muscle Relaxation     | 10 minutes | 18 | Limit Trans Fats            |            |
| 19 | Mediterranean Diet                |            | 20 | Glucosamine                 | 1500 mg    |
| 21 | Terminalia Arjuna                 |            | 22 | L-Carnitine                 | 500 mg     |
| 23 | L-Citrulline                      | 3 g        | 24 | Dietary Pentadecanoic Acid  |            |
| 25 | Taurine                           | 500 mg     | 26 | Omega-3 (Fish Oil)          | 500 mg     |
| 27 | Ubiquinol                         | 100 mg     | 28 | Yoga                        | 30 minutes |
| 29 | Avoid Betaine (TMG) Supplements   |            | 30 | D-Ribose                    | 15 g       |
| 31 | Whey Protein                      | 25 g       | 32 | Propionyl-L-Carnitine       | 500 mg     |

|    |                                           |            |    |                            |              |
|----|-------------------------------------------|------------|----|----------------------------|--------------|
| 33 | Pilates                                   | 30 minutes | 34 | Dance                      | 30 minutes   |
| 35 | Astragalus                                | 500 mg     | 36 | Gentle Yoga                | 20 minutes   |
| 37 | Pet Therapy                               | 30 minutes | 38 | Magnesium Orotate          | 250 mg       |
| 39 | Avoid Air Pollution                       |            | 40 | Magnesium                  | 250 mg       |
| 41 | Low-Carbohydrate Diet                     |            | 42 | Berberine                  | 500 mg       |
| 43 | Aloe Vera                                 | 50 mg      | 44 | Magnesium Chloride         | 200 mg       |
| 45 | Dietary Thiamine (Vitamin B1)             |            | 46 | Carnosine                  | 1000 mg      |
| 47 | Transcendental Meditation                 | 20 minutes | 48 | Magnesium Sulfate          | 200 mg       |
| 49 | Diaphragmatic Breathing                   | 10 minutes | 50 | Avoid Long Naps            |              |
| 51 | Compression Stockings                     |            | 52 | Limit Salt Intake          |              |
| 53 | Beetroot Juice                            |            | 54 | Meditation                 | 30 minutes   |
| 55 | Legumes                                   |            | 56 | Thiamine Supplements       | 100 mg       |
| 57 | Leafy Green Vegetables                    |            | 58 | Low-Intensity Exercise     | 1 hour       |
| 59 | Balance And Mobility Training             | 30 minutes | 60 | Avoid High-Impact Exercise |              |
| 61 | Salmon                                    |            | 62 | Practice Exercise Snacks   | 1 minutesute |
| 63 | Limit Saturated Fat                       |            | 64 | Oats                       |              |
| 65 | Mindfulness-Based Stress Reduction (MBSR) | 2 hours    | 66 | Avoid Rapid Weight Changes |              |
| 67 | Berries                                   |            | 68 | Sleep for 7+ Hours         |              |
| 69 | Regular Sleep Schedule                    |            | 70 | Avoid Strenuous Activity   |              |



1



Exercise At Least One Hour a Day

IMPACT

5 / 5

EVIDENCE

5 / 5

## How to implement

Dedicate a minimum of 60 minutes to moderate-intensity activities such as brisk walking, swimming, or cycling. Do this most days of the week, aiming for at least 5 days to optimize benefits.

TYPICAL STARTING DOSE

1 hour

## Description

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

There are many ways you can be active. You can walk, run, swim, dance, or play team sports. **Everything counts, and it's never too late to start!**

Try to get at least **60 minutes of moderate physical activity on most days**, including walking. **Getting a mix of cardio (min 150 min/day) and strength training (min 2 times a week) may be optimal.**

## How it helps

Increased physical activity may help **lower the risk of heart failure by 20-35%**. People with high fitness levels may have up to **70%** lower odds of this condition [\[R\]](#).

In people with heart failure, moderate exercise may [\[R, R, R, R, R, R, R, R, R, R, R, R\]](#):

- Improve fitness and quality of life
- Reduce the burden on the heart
- Optimize weight, blood pressure, and blood sugar control
- Improve the function of heart and blood vessels

A **combination of strength and interval training** may be particularly effective. Other potential options include [\[R, R, R, R, R, R\]](#):

- Aquatic exercise [\[R\]](#)
- Tai chi [\[R, R, R\]](#)
- Yoga [\[R, R\]](#)

**All experts recommend moderate exercise for people with heart failure.** They should establish an optimal workout routine **with their doctor**, depending on the severity of their condition and other factors [\[R, R, R\]](#).

2

Aerobic Exercise (Cardio)

IMPACT

4 / 5

EVIDENCE

5 / 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

Increased physical activity may help **lower the risk of heart failure by 20-35%**. People with high fitness levels may have up to **70%** lower odds of this condition [\[R\]](#).

In people with heart failure, moderate exercise may [\[R, R, R, R, R, R, R, R, R, R, R, R\]](#):

- Improve fitness and quality of life
- Reduce the burden on the heart
- Optimize weight, blood pressure, and blood sugar control
- Improve the function of heart and blood vessels

**Interval training may be better for heart failure than moderate cardio.** It may be even more effective when **combined with strength training** [\[R, R, R, R, R, R\]](#).

**All experts recommend moderate exercise for people with heart failure.** They should establish an optimal workout routine **with their doctor**, depending on the severity of their condition and other factors [\[R, R, R\]](#).

3

Strength Training

IMPACT4 / 5

EVIDENCE5 / 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

Increased physical activity may help **lower the risk of heart failure by 20-35%**. People with high fitness levels may have up to **70%** lower odds of this condition [R].

In people with heart failure, moderate exercise may [R, R, R, R, R, R, R, R, R, R, R, R]:

- Improve fitness and quality of life
- Reduce the burden on the heart
- Optimize weight, blood pressure, and blood sugar control
- Improve the function of heart and blood vessels

**Strength training is one of the best options for people with this condition.** It may be even more effective when **combined with interval training** [R, R, R, R, R, R].

**All experts recommend moderate exercise for people with heart failure.** They should establish an optimal workout routine **with their doctor**, depending on the severity of their condition and other factors [R, R, R].



4



Dietary Omega-3 Fatty Acids

IMPACT

4 / 5

EVIDENCE

3 / 5

## How to implement

Incorporate foods high in omega-3 fatty acids into your diet daily. This includes eating fish such as salmon, mackerel, and sardines at least twice a week. Alternatively, include a tablespoon of flaxseed oil or chia seeds in your daily diet.

## Description

[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. **EPA and DHA are vital for mental and heart health** [\[R\]](#), [\[R\]](#), [\[R\]](#).

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

- Salmon
- Tuna
- Herring
- Sardines

For optimal health, 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

Both a high intake and high levels of omega-3 fatty acids are **associated with a 14-45% reduced risk of heart failure** [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

In line with this, **high fish consumption (more than 1x/week)** may reduce the risk of heart failure by 15-30% and mortality by 25% [\[R\]](#), [\[R\]](#).

In people with heart failure, following a **diet rich in unsaturated fats** is linked to a 50% reduced risk of complications and mortality [\[R\]](#).

**Supplementing with fish oil** (1-2 g/day for 3-12 months) may help improve heart function in people with heart failure [\[R\]](#), [\[R\]](#).

**Please note:** *Omega-3s can interact with blood thinners (like aspirin, Plavix, Coumadin). Consult your doctor before taking omega-3s* [\[R\]](#).

5



Airway Muscle Training

IMPACT

3 / 5

EVIDENCE

4 / 5

## How to implement

Perform airway muscle training exercises daily for at least 30 minutes. This can involve using specific devices designed to resist airflow in and out, thereby strengthening the respiratory muscles, or practicing breathing exercises that focus on inhaling and exhaling against resistance. Consistency is key, so aim to integrate this practice into your daily routine for ongoing respiratory health.

TYPICAL STARTING DOSE

30 minutes

## Description

Airway muscle training is exercise that builds strength in the throat and tongue muscles. This can involve anything from controlled breathing to singing long notes. People use airway muscle training to improve sleep apnea, respiratory conditions, and exercise performance.

Airway muscle training is exercise that builds strength in the throat and tongue muscles. This can involve anything from controlled breathing to singing long notes. People use airway muscle training to improve [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Sleep apnea
- Respiratory conditions like COPD
- Exercise performance

## How it helps

Six meta-analyses (the largest one with 13 studies) found that inspiratory muscle training practiced for 6-12 weeks improves 6-min walking distance (by 11.89-69 m), maximal static inspiratory pressure (by 16.63-25.12 cmH2O), peak oxygen consumption (by 0.49-3.75 mL/kg/min), MLWHFQ (by 4.82), PImax (by 6.05), VE/VCO2 slope (by 0.97), dyspnea, and quality of life in patients with heart failure. Training at 60% of maximal inspiratory pressure, 6x/week for 12 weeks was found most effective [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

The combination of inspiratory muscle training and exercise improves maximal inspiratory pressure weighted mean differences (by 20.89 cm H2O) and MLWHFQ (by 4.43) according to a meta-analysis of 3 trials [\[R\]](#).

Airway muscle training strengthens respiratory muscles, enhancing oxygen delivery to the heart. Over time, this can improve heart function and reduce heart failure symptoms.

6



Tai Chi

IMPACT

3 / 5

EVIDENCE

4 / 5

## How to implement

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

## Description

Tai Chi is a traditional Chinese mind-body practice involving slow, flowing movements and deep breathing. It is known for its potential to reduce stress, improve balance, and enhance overall physical and mental well-being.

**Tai chi involves gentle movements and breathing to strengthen and relax the mind and body.** Practicing tai chi may help [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Manage pain
- Improve fitness
- Increase well-being
- Improve sleep and mood

## How it helps

Increased physical activity may help **lower the risk of heart failure by 20-35%**. People with high fitness levels may have up to **70%** lower odds of this condition [\[R\]](#).

On the other hand, **stress may contribute to heart failure** and worsen its symptoms [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

**Tai chi combines exercise with relaxation** and may thus be a great choice for people with heart failure. It may help them improve [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Heart function
- Fitness
- Quality of life



7



Maintain Optimal Vitamin D Levels

IMPACT3 / 5

EVIDENCE3 / 5

## How to implement

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

TYPICAL STARTING DOSE

1000 iu

## Description

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

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

- Mood
- Immunity
- Heart health
- Blood sugar control

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

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

## How it helps

**Please note:** *Experts recommend getting 600-800 IU of vitamin D per day. Medical bodies recommend against taking more than 4,000 IU per day* [\[R\]](#).

**Genetically predicted higher vitamin D levels may be associated with a lower risk of heart failure.** This study employed extensive genome-wide association data for 25OHD and heart failure (HF). Various MR methods and multivariable MR were used, adjusting for factors like hypertension, BMI, diabetes, and chronic kidney disease. The results consistently showed that a 1 SD increase in log-transformed 25OHD reduced HF risk by 16.5% (OR: 0.835, 95% CI: 0.743-0.938, p = 0.002). Reverse MR also indicated a negative correlation between genetic predisposition to HF and 25(OH)D levels (OR = 0.89, 95% CI: 0.82-0.97, p = 0.009). This suggests a potential causal role of 25(OH)D in reducing HF risk [\[R, R\]](#).

Supplementation with vitamin D in older people may **reduce the risk of heart failure by 20%** [\[R\]](#).

In people with heart failure, vitamin D deficiency is associated with an **increased risk of complications** [\[R, R\]](#).

**Vitamin D supplementation (1,000-4,000 IU/day for 3-12 months)** may help people with heart failure by [\[R, R, R, R\]](#):

- Improving heart function
- Reducing inflammation
- Lowering cholesterol levels
- Reducing the risk of anemia
- Reducing mortality

However, not all studies found these benefits [\[R, R, R, R, R\]](#).

Vitamin D may help by [\[R\]](#):

- Reducing blood pressure
- Improving blood sugar levels

**Please note:** *Experts recommend getting 600-800 IU of vitamin D per day. Medical bodies recommend against taking more than 4,000 IU per day* [\[R\]](#).

8



DASH Diet

IMPACT

3 / 5

EVIDENCE

3 / 5

## How to implement

Adopt a dietary pattern that emphasizes fruits, vegetables, whole grains, lean proteins, and low-fat dairy, while reducing sodium, red meat, sweets, and sugary beverages. Aim for 4-5 servings of both fruits and vegetables per day, 6-8 servings of grains (with at least half being whole grains), and 2-3 servings of low-fat dairy. This diet should be followed daily to manage blood pressure effectively.

## Description

The DASH (Dietary Approaches to Stop Hypertension) diet is a dietary plan designed to reduce high blood pressure. It emphasizes fruits, vegetables, lean proteins, and whole grains while limiting sodium intake.

**Health experts developed the DASH diet to reduce blood pressure.** This diet also helps support weight control while reducing inflammation and cholesterol [\[R\]](#).

It **limits salt, sweets, and saturated fat**, while promoting the intake of [\[R\]](#):

- Fruits (4-5 servings/day)
- Vegetables (4-5 servings/day)
- Whole grains (6-8 servings/day)
- Low-fat dairy (2-3 servings/day)
- Nuts, seeds, and legumes (4-5 servings/week)
- Fish and poultry (up to 6 ounces/day)

The DASH diet focuses on fresh, minimally processed food rich in nutrients. Magnesium, calcium, and potassium-rich foods are particularly important due to their beneficial effects on the heart and blood vessels [\[R\]](#).

Although similar to the [Mediterranean diet](#), DASH is lower in sodium (<2,300 mg a day) and omega-3 fatty acids. On the other hand, it’s higher in red meat and dairy [\[R\]](#).

## How it helps

According to experts, people with heart failure should limit their salt intake (2-3 g/day or less). The newest evidence suggests that **limiting salt intake doesn’t reduce heart failure complications and mortality, but it may improve symptoms and quality of life** [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

Following the DASH diet may **reduce the risk of heart disease by 20% and the risk of heart failure by 29%**. In people with this condition, it may **reduce mortality by 16%**. The DASH diet may help by [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Lowering blood pressure
- Improving blood vessel function
- Decreasing [oxidative stress](#)
- Improving heart function

9



Avoid Noise Pollution

IMPACT3 / 5

EVIDENCE3 / 5

## How to implement

Minimize exposure to loud environments by using noise-cancelling headphones or earplugs, especially in areas known for high noise levels such as construction sites, concerts, and busy urban streets. Aim to keep the volume of personal audio devices below 60% of their maximum. At home, use carpets, curtains, and wall fabrics to reduce indoor noise, and prefer quieter appliances. Try to dedicate at least one hour of quiet time before bed to aid in relaxation and improve sleep quality.

## Description

Noise pollution refers to the presence of excessive, disruptive, or unwanted sound in the environment. It often includes sounds from traffic, industrial machinery, construction, loud music, and other sources that exceed acceptable or comfortable noise levels. Noise pollution disrupts normal activities and can have detrimental effects on human health, well-being, and the natural world.

Prolonged exposure to high noise levels can lead to a range of health issues, including:

- Stress
- Anxiety,
- Sleep disturbances
- High blood pressure
- Heart disease
- Impaired cognitive function

## How it helps

A meta-analysis of 23 studies found that the risk of heart failure increased by 2.3-5% for every 10-dB increment in road traffic and aircraft sound [\[R\]](#).

10



Fish

IMPACT

3 / 5

EVIDENCE

3 / 5

## How to implement

Incorporate two servings of fish into your diet each week, focusing on oily fish like salmon, mackerel, or sardines for their high omega-3 fatty acid content. Each serving should be about 3.5 ounces cooked, or about ¾ cup of flaked fish.

## Description

Fish, particularly fatty fish like salmon and mackerel, is an excellent source of omega-3 fatty acids, which support cardiovascular health, brain function, and inflammation management. Regular consumption of fish can promote heart health and overall well-being.

**Fish is a great source of [omega-3s](#), protein, and other essential nutrients.** Omega-3s from fish (EPA and DHA) are some of the healthiest fats we can eat. They help reduce inflammation and **protect the heart, brain, and eyes** [\[R, R, R\]](#).

**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

Both a high intake and high levels of omega-3 fatty acids are **associated with a 14-45% reduced risk of heart failure** [\[R, R, R, R\]](#).

In line with this, **high fish consumption (more than 1x/week)** may reduce the risk of heart failure by 15-30% and mortality by 25% [\[R, R\]](#).

**Please note:** *Fish is a major source of mercury exposure, especially large fish such as tuna, shark, and swordfish. Smaller fish like salmon, herring, and sardine are equally good sources of omega-3s, and they tend to be lower in mercury* [\[R, R\]](#).



11



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 and 1018 participants concluded that high-flow nasal cannula oxygen therapy is superior to conventional oxygen therapy but not to non-invasive mechanical ventilation in reducing intubation rate in heart failure patients suffering from hypoxia and dyspnea [R].

Hyperbaric oxygen therapy may help by increasing the amount of oxygen that reaches heart tissues, enhancing the capacity for cellular repair.

**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].

12



Salvia Miltiorrhiza

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Take 200-600mg of Salvia miltiorrhiza extract in capsule or tablet form daily, divided into two or three doses. This should be taken with water, preferably 30 minutes before meals. Continue for a period of 8 to 24 weeks for noticeable effects.

Description

Salvia miltiorrhiza, also known as Danshen, is a traditional Chinese medicinal herb. It is primarily used for its potential cardiovascular benefits, including improving blood circulation and reducing the risk of heart-related conditions. It contains various compounds, including tanshinones and salvianolic acids.

How it helps

A meta-analysis of 9 trials and 855 patients with heart failure concluded that *Salvia miltiorrhiza* decoction improves clinical effective rate and heart function, while decreasing CRP levels [R].

*Salvia miltiorrhiza* may help by expanding blood vessels, improving circulation, and reducing the workload of the heart. Additionally, its antioxidant properties help reduce inflammation.

13



Aquatic Exercise

IMPACT

2 / 5

EVIDENCE

4 / 5

## How to implement

Participate in aquatic exercise sessions, such as swimming or water aerobics, for 60 minutes, 3 to 5 times per week. Ensure the exercise intensity is moderate, allowing you to talk but not sing during the activity. Consistency over time is key, so aim to incorporate this into your weekly routine for at least 3 to 6 months to observe benefits.

TYPICAL STARTING DOSE

1 hour

## Description

Aquatic exercise involves physical activity performed in water, such as swimming, water aerobics, or aquatic therapy. It is gentle on the joints, making it suitable for individuals with mobility issues, and can help improve cardiovascular fitness and muscle strength.

**Aquatic exercise is any type of low-impact physical activity performed in a pool.** In this type of cardio exercise, water helps the body float, which reduces gravity and makes the practice more comfortable and tolerable [\[R\]](#), [\[R\]](#).

Compared to land-based exercise, aquatic exercise may be better by [\[R\]](#):

- Reducing the stress and impact on joints
- Lowering fracture risk

Hence, it is usually **recommended for the elderly**. Aquatic exercise is also suitable for people who don't know how to swim [\[R\]](#).

## How it helps

Increased physical activity may help **lower the risk of heart failure by 20-35%**. People with high fitness levels may have up to **70%** lower odds of this condition [\[R\]](#).

In people with heart failure, **aquatic exercise** may improve [\[R\]](#):

- Fitness
- Muscle strength
- Quality of life

**All experts recommend moderate exercise for people with heart failure.** They should establish an optimal workout routine **with their doctor**, depending on the severity of their condition and other factors [\[R\]](#), [\[R\]](#), [\[R\]](#).

14



Hawthorn Extract

IMPACT

2 / 5

EVIDENCE

3 / 5

## How to implement

Take 300mg to 600mg of hawthorn extract divided into two or three doses throughout the day. It's recommended to continue this regimen daily for at least 3 to 6 months to observe potential benefits.

## Description

Hawthorn extract is used in herbal medicine for its potential to support cardiovascular health, including regulating blood pressure and improving circulation. It contains compounds that may help strengthen the heart and promote overall cardiovascular well-being.

[Hawthorns](#) (*Crataegus spp.*) are thorny trees or bushes with white flowers and red berries. Hawthorns are native to Europe, North America, and Asia. They belong to the same family as roses and edible fruits such as apples and pears [\[R, R\]](#).

**Hawthorn is one of the oldest known medicinal plants in Europe.** In European and American folk medicine, it is traditionally used for [\[R, R, R\]](#):

- Heart disease
- Digestive issues
- Anxiety and insomnia
- Diabetes
- Asthma

## How it helps

Hawthorn extract (240-1,800 mg/day for 3-16 weeks) may help **reduce symptoms and mortality** in people with heart failure [\[R, R, R, R, R, R, R, R, R, R, R\]](#).

However, it may not improve symptoms of moderate-to-severe heart failure [\[R, R, R\]](#).

Hawthorn may help by [\[R\]](#):

- Improving the heart’s contractions
- Increasing blood flow

15



Coenzyme Q10 (CoQ10)

IMPACT2 / 5

EVIDENCE3 / 5

## How to implement

Take a 100 mg Coenzyme Q10 (CoQ10) supplement once daily with a meal that contains fat for better absorption.

TYPICAL STARTING DOSE

100 mg

## Description

Coenzyme Q10 (CoQ10) is a naturally occurring antioxidant that plays a crucial role in cellular energy production. It is often taken as a supplement to support heart health, improve energy levels, and provide antioxidant protection, especially for individuals with certain medical conditions or as they age.

[Coenzyme Q10](#) (CoQ10) is a compound that helps enzymes work better. By doing so, CoQ10 helps improve [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Energy levels
- Antioxidant protection
- Heart health
- Muscle strength
- Blood sugar control

**The amount of CoQ10 made by your body decreases as you get older.** Luckily, you can also get it from food or supplements. Good sources of CoQ10 include [\[R\]](#), [\[R\]](#):

- Organ meats
- Fatty fish
- Whole grains

## How it helps

In people with heart failure, coenzyme Q10 (120-400 mg/day for 12 weeks) may improve fitness and **reduce hospitalization risk and mortality by 30%**. However, it may not help improve heart function or symptoms [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

Coenzyme Q10 may help by [\[R\]](#), [\[R\]](#):

- Supplying energy for heart muscle contraction
- Reducing [oxidative stress](#)
- Improving blood vessel function

Note that CoQ10 is fat-soluble. This means that **taking it with a fatty meal should help you absorb it better** [\[R\]](#).

**Please note:** *CoQ10 may reduce the effectiveness of blood thinners such as warfarin. Talk to your doctor before taking CoQ10* [\[R\]](#).



16



Infrared Light Therapy

IMPACT

2 / 5

EVIDENCE

3 / 5

Description

Infrared light therapy is a type of light therapy that uses infrared light to improve circulation, reduce pain, and promote healing. It has been shown to be effective in treating a variety of conditions, including arthritis, chronic pain, and wound healing.

How it helps

A meta-analysis of 9 studies concluded that infrared sauna bath (60°C for 15 minutes, followed by a 30-minute rest in warm environment, 5x/week for 2-4 weeks) is associated with a significant reduction in B-type natriuretic peptide, cardiothoracic ratio, and an improvement in left-ventricular ejection fraction in people with heart failure [\[R\]](#).

17



Progressive Muscle Relaxation

IMPACT

2 / 5

EVIDENCE

3 / 5

## How to implement

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

## Description

Progressive Muscle Relaxation is a relaxation technique involving the systematic tensing and releasing of muscle groups to reduce muscle tension, stress, and anxiety. Regular practice can lead to improved physical and mental relaxation.

**Progressive muscle relaxation is a relaxation technique focused on releasing muscle tension.** In this technique, you focus on tensing and relaxing different parts of your body, one after the other, to relieve stress [R](#), [R](#).

It is common to start with the toes and slowly work your way up to the neck and head. Try to focus on a single muscle group at a time (for example, the calf muscles). Tense these muscles for 5-10 seconds, then relax for 20-30 seconds before moving on to the next muscle group [R](#), [R](#).

## How it helps

People who are more prone to stress may have a **40%** higher risk of heart failure [R](#).

In those with heart failure, stress may [R](#), [R](#), [R](#), [R](#), [R](#):

- Worsen the symptoms
- Increase the risk of complications
- Reduce quality of life

Stress may cause harm by [R](#), [R](#):

- Impairing blood vessel function
- Increasing blood pressure and inflammation
- Promoting blood clotting

Health experts recommend managing stress to relieve heart failure symptoms and anxiety. According to one study, **progressive muscle relaxation** (practiced for 8-14 weeks) may improve mood and social life in people with this condition [R](#), [R](#), [R](#).

18



Limit Trans Fats

IMPACT2 / 5

EVIDENCE3 / 5

## How to implement

To limit trans fats, read food labels and choose products with 0 grams of trans fat. Avoid fried foods, packaged snacks, baked goods, and fast foods, which are common sources of trans fats. Aim to eliminate trans fats from your diet completely.

## Description

Limiting trans fat intake is vital for heart health and reducing the risk of cardiovascular diseases. Avoiding foods high in trans fats and opting for healthier alternatives promotes better cardiovascular well-being.

Based on their structure, the fats in our diet can be broadly divided into *saturated* and *unsaturated* fat. Trans fat is a type of unsaturated fat [\[R, R, R\]](#).

**In large amounts, trans fat and saturated fat may have a negative impact on your heart.** Processed foods and animal products like red meat and dairy are rich in these fats [\[R, R, R\]](#).

## How it helps

Experts recommend eating less saturated and trans fats to reduce the risk of heart failure [\[R\]](#).

Following a diet low in saturated and trans fats may **decrease the risk of heart failure and its complications**. Studied diets that may help include [\[R, R, R\]](#):

- Plant-based diet
- Low-fat diet
- Mediterranean diet

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Mediterranean Diet

IMPACT

2 / 5

EVIDENCE

2 / 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

Following the Mediterranean diet may be linked to a **70% lower risk of heart failure**. Heart-friendly components of this diet include [\[R, R, R\]](#):

- Omega-3 fatty acids
- Olive oil
- Antioxidants

In people with heart failure, following the Mediterranean diet is linked to lower hospitalization risk and mortality [\[R, R, R\]](#).

However, some studies didn’t find these benefits [\[R, R, R, R\]](#).



20



Glucosamine

IMPACT

2 / 5

EVIDENCE

2 / 5

How to implement

Take glucosamine as a dietary supplement, commonly available in capsules or liquid form. The standard dose is 1500 mg per day, which can be taken all at once or divided into multiple doses throughout the day. It's often recommended to continue taking glucosamine for at least 3 to 4 months to evaluate its effectiveness in relieving joint pain or osteoarthritis symptoms.

TYPICAL STARTING DOSE

1500 mg

Description

Glucosamine is a supplement commonly used to support joint health and may help alleviate symptoms of osteoarthritis. It's believed to promote cartilage health and reduce joint discomfort, but individual responses can vary.

[Glucosamine](#) is a compound naturally made by the body. It helps keep the connective tissues, such as the cartilage in the joints, strong and elastic [\[R\]](#).

Many people use glucosamine supplements to support joint health [\[R\]](#), [\[R\]](#), [\[R\]](#).

How it helps

Glucosamine, a substance found naturally in cartilage, has shown potential benefits for individuals with heart failure. Studies suggest that glucosamine supplementation may improve heart function by reducing inflammation, strengthening heart muscles, and improving overall cardiovascular health.

In a study with 479,650 participants, glucosamine use was associated with a reduced risk of heart failure (HF) by 13%. This protective effect was stronger in males and those with an unfavorable lifestyle. Mendelian randomization analysis confirmed this protective effect and suggested that it may be partially mediated by a 10.5% reduction in coronary heart disease risk and a 14.4% reduction in stroke risk, with both mediators contributing to a total of 22.7% reduction in HF risk associated with glucosamine use [\[R\]](#).

21



Terminalia Arjuna

IMPACT2 / 5

EVIDENCE2 / 5

## How to implement

Take 500mg of Terminalia arjuna extract twice daily with water. Continue this supplementation for at least 8 to 12 weeks to observe potential benefits.

## Description

Terminalia arjuna is a tree native to India, and its bark, which contains compounds like arjunolic acid, flavonoids, and tannins. is traditionally used in Ayurvedic medicine for its potential cardiovascular benefits. It may help support heart health by promoting healthy blood pressure and cholesterol levels.

*Terminalia arjuna* is an evergreen tree popularly known as **arjuna**. Its stem bark is traditionally used in Ayurveda (Indian traditional medicine) to help with [R](#), [R](#):

- High blood pressure
- Heart failure
- High cholesterol

## How it helps

Supplementation with ***Terminalia arjuna* extract (750 mg, 2x/day for 2-12 weeks)** may improve heart function and quality of life in people with heart failure. It may help by fighting [oxidative stress](#) and improving the heart contraction [R](#), [R](#).

22



L-Carnitine

IMPACT

2 / 5

EVIDENCE

2 / 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

500 mg

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 people with heart failure, **L-carnitine (1-3 g/day for 1-16 weeks)** may help [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Improve symptoms and heart function
- Improve fitness
- Lower blood cholesterol and triglycerides

L-carnitine may help by supplying energy to the heart [\[R\]](#), [\[R\]](#).

However, **L-carnitine may not help prevent heart failure**. Genetically higher carnitine levels may even be causally associated with an increased risk of heart failure [\[R\]](#), [\[R\]](#), [\[R\]](#).

**Please note:** *Supplementing with carnitine at approximately 3 g/day may cause nausea, vomiting, abdominal cramps, diarrhea, and a "fishy" body smell* [\[R\]](#).

23



L-Citrulline

IMPACT

2 / 5

EVIDENCE

2 / 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

Supplementation with **L-citrulline (3 g/day for 2-4 months)** may improve fitness and heart function in people with heart failure [R](#), [R](#), [R](#).

Citrulline may help by increasing L-arginine and nitric oxide levels [R](#).



24



Dietary Pentadecanoic Acid

IMPACT

2 / 5

EVIDENCE

2 / 5

## How to implement

While there is no officially recommended daily intake for pentadecanoic acid, research suggests that **20–50 mg per day** may support health benefits such as improved metabolism, reduced inflammation, and enhanced cellular health. You can achieve this through a balanced diet rich in full-fat dairy and fatty fish or by taking supplements as directed. Always consult with a healthcare professional before starting supplementation, especially if you have specific health conditions or dietary restrictions.

## Description

Pentadecanoic acid, also known as C15:0, is a 15-carbon saturated fatty acid that belongs to the group of odd-chain fatty acids. It is naturally found in [\[R\]](#):

- Full-fat dairy products (e.g., milk, butter, and cheese)
- Fatty fish (salmon, herring, mackerel, sardines, anchovies, tuna)
- Whole grains
- Seed oils (flaxseed, chia, hemp)
- Legumes (lentils, chickpeas)

Unlike even-chain fatty acids, pentadecanoic acid has unique biological properties that are being increasingly studied for its potential health benefits.

Supplementation with pentadecanoic acid has shown promise in supporting metabolic health by improving cholesterol levels, enhancing insulin sensitivity, and reducing inflammation. It may also promote cellular health by stabilizing cell membranes and improving mitochondrial function. Additionally, C15:0 has been linked to better immune system regulation, neuroprotection, and potentially reducing the risk of chronic diseases like diabetes and cardiovascular conditions. As an emerging "essential fatty acid," it is gaining attention for its role in promoting long-term health and wellness.

## How it helps

High dietary intake of pentadecanoic acid is not associated with an increased overall risk of cardiovascular disease. On the contrary, it has even been associated with a decreased risk of heart failure [\[R\]](#).



25



Taurine

IMPACT2 / 5

EVIDENCE2 / 5

## How to implement

Take 1-4 g of taurine supplement daily, divided into two or three doses with meals for optimal absorption. It can be taken continuously, with periodic evaluations of its effects and benefits.

TYPICAL STARTING DOSE

500 mg

## Description

Taurine is an amino acid found in various foods and often used in energy drinks and supplements. It plays a role in neurological and cardiovascular health and can help support energy metabolism.

[Taurine](#) is the most abundant free amino acid in humans. It's not essential, which means we can produce it. We can also get it from protein-rich foods, such as [\[R\]](#):

- Seafood
- Meat
- Dairy

Taurine is a popular additive in energy drinks and can also be taken as a supplement [\[R\]](#).

Taurine plays an important role in [\[R\]](#), [\[R\]](#):

- Bile production
- Calcium metabolism

It is also well-known for its antioxidant and anti-inflammatory properties [\[R\]](#).

## How it helps

Supplementing with **taurine (1.5-4 g/day for 2-8 weeks)** may improve heart function and fitness in people with heart failure. Taurine may help by [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Fighting [oxidative stress](#) and inflammation
- Reducing artery hardening

26



Omega-3 (Fish Oil)

IMPACT2 / 5

EVIDENCE2 / 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

500 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

Fish oil supplementation (1-2 g/day for 3-12 months) appears to have positive effects on heart function in people with chronic heart failure. These benefits may be greater in people with non-ischemic heart failure. Omega-3 polyunsaturated fatty acids may help by [\[R\]](#), [\[R\]](#):

- Reducing brain natriuretic peptide
- Lowering norepinephrine levels
- Improving left ventricular ejection fraction

Omega-3s may help by reducing inflammation and preventing the formation of harmful blood clots. Additionally, they aid in lowering high blood pressure and LDL cholesterol levels, key contributing factors to heart failure.

27



Ubiquinol

IMPACT

2 / 5

EVIDENCE

2 / 5

How to implement

Take 100 to 200 mg of ubiquinol daily, preferably with a fatty meal to enhance absorption. This dosage can be adjusted based on individual health needs and under the guidance of a healthcare professional. Continue this supplementation daily for ongoing support of heart health and energy levels.

TYPICAL STARTING DOSE  
100 mg

Description

Ubiquinol is the reduced form of coenzyme Q10 (CoQ10), a compound that plays a crucial role in energy production within cells. It is used as a supplement to support heart health, improve energy levels, and combat oxidative stress.

How it helps

Ubiquinol may help treat heart failure by enhancing the heart's capacity to produce energy and neutralize harmful free radicals. It enhances cardiovascular function, which supports optimally pumping blood throughout the body.

In a Phase 2 trial involving 216 patients with HFpEF over 50 years old, treated with ubiquinol and/or d-ribose supplements for 12 weeks, symptoms improved and left ventricular ejection fraction increased. A separate study with 14 stable HFrEF patients showed that ubiquinol supplementation for 3 months improved peripheral endothelial function. Another randomized trial with 31 heart failure patients demonstrated that carni Q-gel (L-carnitine and hydrosoluble ubiquinol) led to reduced pro-inflammatory cytokines, improved quality of life, and decreased NYHA-defined heart failure, without affecting IL-10 levels [R, R, R].

28



Yoga

IMPACT

2 / 5

EVIDENCE

2 / 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

Increased physical activity may help **lower the risk of heart failure by 20-35%**. People with high fitness levels may have up to **70%** lower odds of this condition [\[R\]](#).

On the other hand, **stress may contribute to heart failure** and worsen its symptoms [\[R, R, R, R\]](#).

Practicing **yoga** is a great way to increase physical activity and reduce stress at the same time. In people with heart failure, yoga may improve [\[R, R\]](#):

- Fitness
- Flexibility
- Inflammation

However, the available evidence is limited.



29



Avoid Betaine (TMG) Supplements

IMPACT

1 / 5

EVIDENCE

3 / 5

## How to implement

Do not purchase or consume any dietary supplements that list betaine (also known as trimethylglycine or TMG) among their ingredients. Check the labels of supplements you currently use or plan to buy to ensure they are free of betaine.

## Description

Avoiding excessive betaine supplements is recommended, as very high intake may have potential side effects. Betaine can be obtained naturally from foods like beets and spinach without the risk of overconsumption.

## How it helps

Genetic prediction results suggested that for every 1 unit increase in betaine, the relative risk of heart failure and myocardial infarction increased by 1.4% and 1.7%, respectively [\[R\]](#).

A [meta-analysis of 16 prospective studies, 19 256 participants, and 3315 incident cases](#) found that people with elevated concentrations of TMAO precursors (l-carnitine, choline, or betaine) had an approximately **1.3 to 1.4 times higher risk for major adverse cardiovascular events (MACE)** compared to those with low concentrations [\[R\]](#).



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D-Ribose

IMPACT1 / 5

EVIDENCE2 / 5

## How to implement

Take 5 grams of D-Ribose powder mixed with water or juice, three times a day. Start with this dosage for at least 3 weeks to help improve energy levels and heart function, then adjust as needed.

TYPICAL STARTING DOSE

15 g

## Description

D-ribose is a sugar molecule that plays a role in energy production in cells. It is sometimes used as a supplement to support muscle recovery, reduce fatigue, and improve exercise performance.

[D-ribose](#) is a sugar involved in the production of energy in the body. It is also the structural basis of DNA and RNA [\[R\]](#).

People use it as a supplement to help with heart disease and [chronic fatigue syndrome](#) [\[R\]](#), [\[R\]](#), [\[R\]](#).

## How it helps

In people with heart failure, supplementation with **D-ribose (5 g, 3x/day for 3-8 weeks)** may improve [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Heart function
- Blood pressure
- Fitness
- Quality of life

D-ribose may help by supplying the heart with energy [\[R\]](#).

**Please note:** *The long-term safety of D-ribose in daily doses above 36 mg/kg (2.5 g for a 70-kg person) is not unknown. Consult your doctor before supplementing* [\[R\]](#).

31



Whey Protein

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Mix one scoop (approximately 25-30 grams) of whey protein powder with 8-12 ounces of water, milk, or your preferred beverage. Consume this drink 1-2 times per day, ideally post-workout or as a meal replacement.

TYPICAL STARTING DOSE

25 g

Description

Whey protein is a complete protein derived from milk during cheese production. It is rich in essential amino acids and is used to support muscle recovery, promote muscle growth, and provide a convenient protein source for athletes and fitness enthusiasts.

Whey is the liquid that separates from milk when cheese is made. [Whey protein](#) is full of amino acids (protein building blocks) that the body needs [\[R\]](#), [\[R\]](#).

Whey protein usually comes in the form of a powder that can be added to soft foods and drinks. People often use it to help with [\[R\]](#), [\[R\]](#):

- Athletic performance
- Nutritional deficiencies

How it helps

Whey protein increases the levels of amino acids needed for heart muscle function and energy. However, it's essential to consult your healthcare provider before making any significant dietary changes, especially if you have heart failure.

In a [placebo-controlled trial of 33 patients with heart failure](#), supplementation with whey protein (30 g/day) for 12 weeks **increased endothelial-dependent microvascular vasodilation** [\[R\]](#).

32



Propionyl-L-Carnitine

IMPACT

1 / 5

EVIDENCE

1 / 5

## How to implement

Take 500 mg to 2 g of propionyl-L-carnitine orally with meals to enhance absorption, divided into two or three doses throughout the day. Continue this regimen daily for a minimum of several weeks to observe benefits.

TYPICAL STARTING DOSE

500 mg

## Description

Propionyl-L-carnitine is a naturally occurring compound that plays a role in energy production and cardiovascular health. It is often used as a dietary supplement to support circulation and reduce symptoms of conditions like peripheral artery disease.

**Propionyl-L-carnitine** is a supplement that people use to improve athletic performance, heart health, and more. It provides [L-carnitine](#), a compound that helps your body get energy from fat [\[R, R\]](#).

## How it helps

Propionyl-carnitine (1.5 g/day for 1-6 months) may help improve fitness and heart function in people with heart failure [\[R, R\]](#).

However, genetically higher carnitine levels may be causally associated with an increased risk of heart failure [\[R\]](#).

33



Pilates

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

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

Description

Pilates is a form of exercise that focuses on strengthening the core, improving flexibility, and enhancing overall body awareness through controlled movements and breathing techniques. Its health benefits include increased core strength, improved posture, enhanced flexibility, and better balance, making it a popular choice for those seeking a holistic approach to fitness.

**Pilates is a type of exercise that emphasizes proper alignment, breathing techniques, and precise movements.**

It involves a series of controlled movements performed on a mat or with specialized equipment, such as a reformer or Cadillac. Pilates helps strengthen the core muscles, improve flexibility, and promote mind-body awareness.

How it helps

In a non-placebo-controlled trial of 16 heart failure patients, practicing mat Pilates training (20 min/day for 16 weeks) improved ventilation (by 13 L/min), peak VO2 (by 3.9 mL/kg/min), and O2 pulse (by 1.9 mL/bpm) [R].

Pilates may help by strengthening the heart muscle and improving breathing control. Moreover, it aids in weight management and reducing stress, significant risk factors for heart failure.



34



Dance

IMPACT

1 / 5

EVIDENCE

1 / 5

## How to implement

Engage in dance activities for at least 30 minutes, three times per week. You can choose any form of dance you enjoy, such as ballroom, hip hop, or salsa, and you can dance at home, in a studio, or in a group class setting.

TYPICAL STARTING DOSE

30 minutes

## Description

**Dancing involves moving your body to music.** Many people take dance classes to learn various styles of dance and improve their skills. Examples include:

- Ballet
- Zumba
- Belly dancing
- Hip hop
- Salsa

**Dancing is a fun, creative, and relaxing activity.** It can also provide a range of health benefits, improving your heart health, brain health, fitness, and more.

## How it helps

Dancing is a form of cardiac exercise that improves heart health by increasing heart efficiency, thereby reducing the workload of your heart. It also promotes increased blood circulation and lung capacity, which can reduce symptoms associated with heart failure and improve your overall health.

A [meta-analysis of 2 studies](#) concluded that dance therapy **increases VO2 max and quality of life in patients with heart failure** [\[R\]](#).



35



Astragalus

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take a 500 mg astragalus supplement once daily with a meal. Continue this regimen for at least 4 to 6 weeks to evaluate its effectiveness on your overall health.

TYPICAL STARTING DOSE

500 mg

Description

Astragalus is an herb used in traditional Chinese medicine. It is believed to have immune-boosting properties and may help reduce stress and support overall vitality.

[Astragalus](#) (*Astragalus membranaceus*) is an herb used in traditional Chinese medicine. It is commonly used for “tonifying Qi” or fatigue. It may help [\[R\]](#), [\[R\]](#):

- Reduce inflammation
- Fight [oxidative stress](#)

Astragalus root is a staple of traditional Chinese medicine, where it is also known as *Huang Qi*.

How it helps

A [randomized controlled trial with 90 patients with chronic heart failure \(CHF\)](#) found that Astragalus granule along with perindopril tablets (for 30 days) may **improve heart contraction, left ventricular ejection fraction (LVEF), walking distance in 6 minutes (6mWD), and QOL**, especially with higher dosages [\[R\]](#).

36



Gentle Yoga

IMPACT

1 / 5

EVIDENCE

1 / 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

20 minutes

## Description

[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

Gentle yoga is practiced at a slower pace, with less intense positions, and usually including more time for meditation, breathing, and relaxation. It's a great choice for people who feel they are not fit or flexible enough to do all yoga poses, as well as for those with injuries, pain, impaired mobility, or health issues.

## How it helps

Gentle yoga helped with routine disease management, prevention of fluid retention, and improvement of depression and quality of life in a pilot study of 14 chronic heart failure patients [\[R\]](#).

37



Pet Therapy

IMPACT

1 / 5

EVIDENCE

1 / 5

## How to implement

Engage with a pet, such as a dog or cat, for at least 15-30 minutes a day. This can include activities like playing, petting, or simply sitting together. It's beneficial to do this regularly, aiming for daily interactions, to maximize the emotional and physical health benefits.

TYPICAL STARTING DOSE

30 minutes

## Description

Pet therapy, also known as animal-assisted therapy, involves the interaction between trained animals and individuals to provide emotional and physical benefits. Spending time with therapy animals, typically dogs or cats, can reduce stress, improve mood, and enhance overall well-being by promoting relaxation and social interaction, making it particularly beneficial for people facing mental health challenges or chronic conditions.

Animal-assisted therapy, also known as **pet therapy**, involves human-animal interaction to foster physical and emotional healing and provide social support. This therapy may use different animals, such as [R](#), [R](#):

- Dogs
- Horses
- Dolphins

Animal-assisted therapy may involve touching, playing, grooming, and talking with the animal [R](#).

## How it helps

In a non-placebo-controlled trial of 76 patients with heart failure, receiving animal therapy with a dog for 12 minutes improved cardiopulmonary pressures, neurohormone levels, and anxiety [R](#).

In another non-placebo-controlled trial of 69 patients with heart failure, dog-assisted ambulation increased walking distance and decreased hospital stay length [R](#).

38



Magnesium Orotate

IMPACT

1 / 5

EVIDENCE

1 / 5

## How to implement

Take 250-500 mg of magnesium orotate daily, with a meal to minimize stomach upset. This supplement should be consumed consistently for at least one month to observe benefits.

TYPICAL STARTING DOSE

250 mg

## Description

Magnesium orotate is a supplemental form of magnesium that is believed to have better bioavailability and may support heart health by promoting normal cardiac function and reducing the risk of arrhythmias.

## How it helps

In a placebo-controlled trial of 79 patients with severe congestive heart failure, those who took magnesium orotate for a year had a higher survival rate (75.7%) and improved clinical symptoms compared to the placebo group (51.6% survival rate, worsening symptoms) [R].

Magnesium orotate may help by supporting heart muscle function and aiding in the production of energy in heart cells.



39



Avoid Air Pollution

IMPACT

1 / 5

EVIDENCE

1 / 5

## How to implement

**Stay indoors** on days when air quality indexes (AQI) indicate high pollution levels, which are often reported by weather services or government environmental agencies. **Install air purifiers** in your home, especially in bedrooms, to reduce indoor pollutants. Limit outdoor exercise when air pollution warnings are issued, opting for indoor activities instead.

## Description

Avoiding air pollution by reducing exposure to pollutants in the environment is essential for respiratory and overall health. It can help lower the risk of respiratory diseases, cardiovascular conditions, and other health issues associated with poor air quality.

**While city life is convenient in a lot of ways, it comes with some health hazards.** Cars, factories, and other sources increase air [pollution](#) [\[R\]](#).

Air pollution plays a role in [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Lung disease
- Heart disease
- Diabetes
- Asthma
- Skin conditions

## How it helps

A meta-analysis of 51 studies with 7,555,442 participants found that short-term exposure to carbon monoxide, sulfur dioxide, nitrogen dioxide, ozone, PM2.5, and PM10 was associated with increased heart failure hospitalization or death [\[R\]](#).

A meta-analysis of 35 studies found that heart failure hospitalization or death was linked to increased carbon monoxide (3.52%), sulfur dioxide (2.36%), and nitrogen dioxide (1.70%) concentrations, but not ozone. Particulate matter had significant associations (PM2.5 2.12%, PM10 1.63%), with the strongest effects on the day of exposure [\[R\]](#).

A global review of 100 studies across 20 countries found that various air pollutants were linked to higher heart failure risk, particularly with short-term exposure over 2 days. These associations were more pronounced in low- and middle-income nations [\[R\]](#).

Inhaling polluted air can cause inflammation and damage to the cardiovascular system, exacerbating heart failure symptoms.



40



Magnesium

IMPACT

1 / 5

EVIDENCE

1 / 5

## How to implement

Take up to 350 mg of magnesium daily as a supplement, preferably with a meal to enhance absorption.

TYPICAL STARTING DOSE

250 mg

## Description

Magnesium is an essential mineral involved in various bodily functions, including muscle contractions, nerve signaling, and bone health. Maintaining adequate magnesium levels through diet or supplements can support overall well-being and reduce the risk of magnesium deficiency-related health issues.

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

- Muscle, nerve, and bone function
- Blood sugar and blood pressure control
- DNA and protein production
- Strong immunity

Women need **310-320 mg** of magnesium per day, while men need **400-420 mg** [\[R\]](#).

Foods rich in magnesium include **nuts, seeds, and leafy greens**. Magnesium is also available as a supplement [\[R\]](#).

## How it helps

In a placebo-controlled trial of 79 patients with severe congestive heart failure, those who took magnesium orotate for a year had a higher survival rate (75.7%) and improved clinical symptoms compared to the placebo group (51.6% survival rate, worsening symptoms) [\[R\]](#).

In a placebo-controlled trial of 21 patients with stable congestive heart failure, supplementation with enteric-coated magnesium chloride (15.8 mmol/day for 6 weeks) decreased mean arterial pressure (by 4 mmHg), systemic vascular resistance (by 85 dynes s cm-5), the frequency of isolated ventricular premature complexes (by 23%), couplets (by 52%), nonsustained ventricular tachycardia episodes (by 24%), and plasma epinephrine (by 263 pg/mL). An acute dose of magnesium chloride (0.3 mEq/kg over 10 minutes followed by a maintenance infusion of 0.08 mEq/kg per hour for 24 hours) decreased total ventricular ectopy per hour and episodes of ventricular tachycardia in a placebo-controlled trial of 30 symptomatic heart failure patients [\[R\]](#), [\[R\]](#).

Magnesium is essential for healthy heart muscle contractions and blood pressure regulation. It also assists in maintaining a normal heart rhythm.

41



Low-Carbohydrate Diet

IMPACT

1 / 5

EVIDENCE

1 / 5

## How to implement

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

## Description

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

## How it helps

A low-carbohydrate diet can help manage heart failure by reducing fluid build-up in the body, which lessens the heart's workload. Moreover, by aiding in weight loss, it decreases obesity related risks, further improving heart health.

In a [non-placebo-controlled trial of 88 patients with heart failure](#), eating a low-carb diet for 2 months **improved oxygen saturation** [\[R\]](#).

42



# Berberine

IMPACT

1 / 5

EVIDENCE

1 / 5

## How to implement

Take 500 mg of berberine two times a day before meals. Continue this regimen for up to three months, then evaluate its effects with your healthcare provider.

TYPICAL STARTING DOSE

500 mg

## Description

Berberine is a compound found in certain plants, known for its potential to support blood sugar control and heart health.

[Berberine](#) is an active compound of some plants used in traditional medicine, such as [\[R\]](#):

- European barberry
- Oregon grape
- Goldenseal
- Chinese goldthread
- Tree turmeric

Berberine is also available as a supplement. People use it to help with [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Diabetes
- High cholesterol
- High blood pressure
- PCOS

## How it helps

According to one study, supplementing with **berberine (1,200-1,500 mg/day for 8 weeks)** may improve fitness and reduce complications in people with heart failure [\[R\]](#).

Berberine may help by [\[R\]](#):

- Improving heart function
- Reducing blood pressure

43



Aloe Vera

IMPACT

1 / 5

EVIDENCE

1 / 5

## How to implement

Take a 50 mg Aloe vera supplement daily, with a glass of water, preferably at the same time each day to maintain consistency.

TYPICAL STARTING DOSE

50 mg

## Description

Aloe vera is a succulent plant native to arid regions and contains a gel-like substance in its leaves that is rich in vitamins, minerals, and antioxidants, making it beneficial for soothing skin irritations, promoting wound healing, and providing relief from conditions such as sunburn and minor burns. The primary active compounds in aloe vera gel include polysaccharides, vitamins like vitamin C and E, and minerals such as zinc, which contribute to its healing and anti-inflammatory effects.

[Aloe vera](#) lives in the desert, and its thick leaves store water in the form of a gel [\[R\]](#).

People use aloe gel to help soften the skin and soothe burns [\[R\]](#).

**Oral aloe supplements may help with blood sugar and gut health [\[R\]](#).**

## How it helps

In a placebo-controlled trial of 40 patients with heart failure, supplementation with *Aloe vera* gel capsules (150 mg, 2x/day) as an add-on to conventional therapy for 8 weeks further reduced the symptoms, improved insomnia and sleep apnea, and increased sleep quality [\[R\]](#).

*Aloe vera* may help improve heart health by reducing cholesterol levels and blood pressure, both of which can contribute to heart failure.



44



Magnesium Chloride

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 200-400 mg of magnesium chloride daily, ideally in divided doses with meals to reduce the risk of stomach upset. It can be taken indefinitely as part of a daily supplementation routine to support magnesium levels in the body.

TYPICAL STARTING DOSE

200 mg

Description

Magnesium chloride is a magnesium supplement that can be used to support magnesium levels in the body. It may help alleviate symptoms of magnesium deficiency, such as muscle cramps and fatigue.

How it helps

In a placebo-controlled trial of 21 patients with stable congestive heart failure, supplementation with enteric-coated magnesium chloride (15.8 mmol/day for 6 weeks) decreased mean arterial pressure (by 4 mmHg), systemic vascular resistance (by 85 dynes s cm-5), the frequency of isolated ventricular premature complexes (by 23%), couplets (by 52%), nonsustained ventricular tachycardia episodes (by 24%), and plasma epinephrine (by 263 pg/mL). An acute dose of magnesium chloride (0.3 mEq/kg over 10 minutes followed by a maintenance infusion of 0.08 mEq/kg per hour for 24 hours) decreased total ventricular ectopy per hour and episodes of ventricular tachycardia in a placebo-controlled trial of 30 symptomatic heart failure patients [R, R].

Magnesium chloride may help to regulate the heartbeat and reduce arrhythmias, which often occur in those suffering from heart failure.

45



Dietary Thiamine (Vitamin B1)

IMPACT

1 / 5

EVIDENCE

1 / 5

## How to implement

Incorporate foods high in thiamine into your daily diet, such as whole grains, meat (particularly pork), nuts, and legumes. Aim to meet the recommended dietary allowance for thiamine, which is 1.1 mg per day for adult women and 1.2 mg per day for adult men.

## Description

Thiamine, also known as vitamin B1, is a water-soluble nutrient found in various foods, like whole grains, legumes, and pork. It plays a crucial role in energy metabolism and nerve function. Thiamine supplements have been used for many years to treat conditions like beriberi, which is caused by thiamine deficiency.

Thiamine ([vitamin B1](#)) is an essential nutrient. Our body needs it for basic cell function and energy production from nutrient breakdown. It is found in a number of foods, such as [\[R\]](#):

- Meat
- Fish
- Beans
- Whole grains

## How it helps

Thiamine deficiency is more common in people with heart failure. Thiamine deficiency may result from [\[R\]](#):

- Insufficient thiamine intake
- Malabsorption
- Excessive alcohol intake
- Certain drugs (e.g., diuretics)

According to limited evidence, supplementation with **thiamine (200-300 mg/day for 1-4 weeks)** may improve heart function in people with heart failure and thiamine deficiency [\[R, R, R\]](#).

However, it failed to improve acute heart failure in people with normal thiamine levels [\[R\]](#).



46



Carnosine

IMPACT1 / 5

EVIDENCE1 / 5

## How to implement

Take 500 mg of carnosine twice daily with meals. Continue this regimen for at least 2 to 4 weeks to start noticing benefits. It can be taken as a capsule or powder form mixed with water or juice.

TYPICAL STARTING DOSE  
1000 mg

## Description

Carnosine is a naturally occurring compound found in muscle tissues and certain foods. It is believed to have antioxidant properties and may support muscle function and overall cellular health.

[Carnosine](#) ( $\beta$ -alanine-l-[histidine](#)) is a compound naturally produced by the body. We also get it from eating meat and fish. Carnosine is abundant in our [\[R\]](#), [\[R\]](#):

- Muscles
- Heart
- Brain
- Nose

Carnosine has several important functions in the body, including [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Being an antioxidant
- Improving muscle function
- Removing toxic metals

During exercise, **carnosine may prevent muscle fatigue and boost athletic performance**. It may also help improve sugar metabolism [\[R\]](#), [\[R\]](#), [\[R\]](#).

## How it helps

According to one study, supplementation with **carnosine (500 mg/day for 6 months)** may improve fatigue, fitness, and quality of life in people with heart failure [\[R\]](#).

47



Transcendental Meditation

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Practice transcendental meditation for 20 minutes twice a day, once in the morning before breakfast and once in the afternoon or early evening. Sit comfortably in a quiet place, close your eyes, and silently repeat a mantra given to you by a certified transcendental meditation teacher.

TYPICAL STARTING DOSE

20 minutes

Description

Transcendental Meditation is a technique for mindfulness and stress reduction that involves silently repeating a specific mantra to attain a state of deep relaxation and heightened awareness. It is associated with reduced stress, improved focus, and enhanced overall well-being.

How it helps

Transcendental Meditation helps reduce stress and anxiety, both of which can contribute to heart failure. Over time, this practice can lower high blood pressure, a key risk factor for heart failure.

In a non-placebo-controlled trial of 23 patients with congestive heart failure, practicing transcendental meditation for 6 months improved quality of life and functional capacity [\[R\]](#).

48



Magnesium Sulfate

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 200-400 mg of magnesium sulfate orally with water once daily, ideally in the evening or as directed by your healthcare provider. Continue this supplementation as recommended by your healthcare provider, often for several weeks to months for optimal benefits.

TYPICAL STARTING DOSE

200 mg

Description

Magnesium sulfate, also known as Epsom salt, is used in baths and topical applications to soothe sore muscles, alleviate stress, and promote relaxation. It is believed to be absorbed through the skin, providing a calming effect on muscles and the nervous system.

How it helps

In a placebo-controlled study of 15 patients with compensated heart failure due to ischemic heart disease, a prolonged infusion of magnesium sulfate reduced the QT variability index at 48 hours. However, this index returned to baseline at 168 hours. Magnesium sulfate administration strengthened the correlation between QT and RR intervals, indicating potential utility in stabilizing cardiac repolarization and mitigating proarrhythmic tendencies in heart failure [\[R\]](#).

Magnesium sulfate dilates the blood vessels, which eases the heart's workload and improves its efficiency. It also helps in maintaining an even heart rhythm.

49



Diaphragmatic Breathing

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Practice diaphragmatic breathing for 10-15 minutes per day. Sit or lie down in a comfortable position, place one hand on your chest and the other on your belly. Breathe in slowly through your nose, ensuring your belly moves out more than your chest. Exhale slowly through your mouth or nose, consciously relaxing the belly. Repeat this process, focusing on the movement of your belly rather than your chest.

TYPICAL STARTING DOSE

10 minutes

Description

Diaphragmatic breathing, also known as deep breathing, can help reduce stress and anxiety by activating the body's relaxation response. It promotes better oxygen exchange, reduces muscle tension, and supports overall mental and physical well-being.

How it helps

Diaphragmatic breathing strengthens your diaphragm muscle, which significantly participates in the respiratory process, reducing the workload of your heart. It also stimulates the relaxation response, which can lower your heart rate and blood pressure, critical for managing heart failure.

In a non-placebo-controlled trial of 36 patients with heart failure, receiving a diaphragmatic breathing retraining intervention for 8 weeks improved breathing difficulties, physical activity, and functional status [\[R\]](#).

50



Avoid Long Naps

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Limit your daily naps to 20-30 minutes. Try to nap before 3 pm to avoid interfering with nighttime sleep.

Description

Limiting long naps during the day can help improve nighttime sleep quality and reduce the risk of sleep disturbances. Shorter naps are generally more beneficial for enhancing daytime alertness without interfering with nighttime rest.

How it helps

Prolonged napping may disrupt night-time sleep and can lead to fluid retention in heart failure patients.

51



Compression Stockings

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Wear compression stockings during the day, especially when you expect to be sitting or standing for long periods. They should be put on before getting out of bed in the morning and removed before going to bed at night. Ensure they are the correct size and compression level as advised by a healthcare professional.

Description

Compression stockings are often worn to improve blood circulation in the legs and reduce the risk of conditions like varicose veins and deep vein thrombosis. They can be beneficial for individuals who spend long periods sitting or standing and those with certain medical conditions that affect blood flow.

How it helps

Compression stockings can help prevent fluid accumulation in the legs of heart failure patients.



52



Limit Salt Intake

IMPACT

0 / 5

EVIDENCE

0 / 5

## How to implement

Reduce your daily salt intake to less than 2,300 milligrams (mg), equivalent to about one teaspoon of table salt. This includes all salt consumed, whether added during cooking, at the table, or present in processed and ready-to-eat foods.

## Description

Limiting salt intake involves lowering the amount of sodium in the diet, which can help lower blood pressure and reduce the risk of heart disease. It often involves avoiding processed and other high-sodium foods such as cured meats, soups and sauces, and various pickled foods.

**Your body needs a certain amount of sodium to function.** For example, it helps support your blood pressure. This sodium usually comes from [salt](#). However, eating too much salt is linked to an increased risk of stroke and heart disease [\[R\]](#), [\[R\]](#).

Foods higher in salt include [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Prepared soups, broths, gravies, and sauces
- Fermented or pickled foods (such as pickles, soy sauce, olives, and [capers](#))
- Cured meats and sausages (such as bacon, salt pork, and salami)
- Cheese (such as Roquefort and Parmesan)

**Try to limit your daily intake to 1 teaspoon of salt (2,400 mg of sodium)** [\[R\]](#).

## How it helps

Genetically higher urinary sodium may be causally associated with heart failure [\[R\]](#).

Reducing salt intake may help by preventing fluid buildup in the body, lessening the burden on your heart.

**Please note:** *There is no evidence from controlled clinical trials to support this recommendation. It is included based on uncontrolled clinical trials, animal or cell studies, or non-scientific criteria. Please take this recommendation with a grain of salt until more research is available.*

53



Beetroot Juice

IMPACT

0 / 5

EVIDENCE

0 / 5

## How to implement

Consume 200-250ml of beetroot juice daily, at least 1-2 hours before engaging in physical activity or as part of your breakfast routine. This regimen should be maintained consistently for at least 2 weeks to start noticing benefits in terms of increased stamina and blood pressure regulation.

## Description

Beetroot juice is a concentrated source of dietary nitrates, known for their potential to enhance athletic performance and improve blood pressure regulation. It is often consumed by athletes to enhance stamina and aid in recovery.

Beetroot (*Beta vulgaris*) contains iron, nitrates, sodium, potassium, and betalaine [\[R\]](#).

Beets are an inexpensive and mineral-rich vegetable that are widely used in Western cooking. Compared to other vegetables with high iron content, beets have a low price and are easy to store [\[R\]](#).

## How it helps

Beetroot juice contains nitrates that improve blood flow, which can benefit heart health by lowering blood pressure and enhancing exercise capacity in patients with heart failure.



54



Meditation

IMPACT

0 / 5

EVIDENCE

0 / 5

## How to implement

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

## Description

Meditation is a mindfulness practice that can reduce stress, improve mental clarity, and promote relaxation. Regular meditation is associated with numerous mental and emotional health benefits, including reduced anxiety and enhanced emotional well-being.

**Meditation** is a relaxation technique that trains your mind to focus and redirect your thoughts. Some of the main types of meditation are [\[R\]](#):

- Mindfulness
- Focused
- Transcendental
- Mantra
- Moving

People use meditation to improve [\[R\]](#), [\[R\]](#):

- Stress and anxiety
- Mood
- Sleep disturbances
- Pain

## How it helps

Meditation can reduce stress and improve mental health, which may positively influence heart failure outcomes.

55



Legumes

IMPACT

0 / 5

EVIDENCE

0 / 5

## How to implement

Incorporate a serving of legumes, such as beans, lentils, chickpeas, or peas, into your diet at least four times a week. A serving size is approximately half a cup cooked. Ensure to prepare them properly by soaking and rinsing beans, if applicable, to reduce anti-nutrients and improve digestibility.

## Description

Legumes, such as beans, lentils, and chickpeas, are excellent sources of plant-based protein, fiber, and various vitamins and minerals. Including legumes in your diet can promote satiety and support digestive health.

Legumes are plants from the *Fabaceae* family. Their edible seeds are called **pulses**. Legumes are important food staples and sources of carbohydrates, fiber, protein, iron, and other key nutrients.

Common legumes include:

- Peanuts
- Beans
- Chickpeas
- Peas
- Lentils

## How it helps

Legumes, such as beans and lentils, are a good source of protein and fiber, which can help control blood sugar and improve cholesterol levels, thus supporting heart health.

56



Thiamine Supplements

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Take thiamine supplements orally, starting with a dose of 100 mg daily. This can be taken with or without food, but consistently at the same time each day for at least one month to help improve deficiency symptoms.

TYPICAL STARTING DOSE

100 mg

Description

Your doctor may recommend thiamine supplements. You can also discuss magnesium supplements with your doctor if your magnesium levels are low [\[R\]](#).

How it helps

Thiamine, or Vitamin B1, may benefit those with heart failure, especially when there is a deficiency, as it helps in maintaining proper cardiac function and energy production.

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Leafy Green Vegetables

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Incorporate at least one serving of leafy green vegetables, such as spinach, kale, or Swiss chard, into your diet daily. This can be done by adding them to salads, smoothies, or as a side dish to your meals.

Description

Leafy green vegetables like spinach and kale are packed with vitamins, minerals, and antioxidants. Incorporating them into your diet can promote overall health by providing essential nutrients, supporting digestion, and reducing the risk of chronic diseases like heart disease and certain cancers.

Leafy green vegetables, also called leafy greens, or greens, are edible plant leaves, which can include stalks and shoots as well. Common examples include: lettuce, spinach, kale, chard, endive, and fennel.

Leafy greens contain a host of vitamins and minerals, as well as fiber. Most of them are a particularly good source of vitamin K.

How it helps

These vegetables are rich in vitamins, minerals, and antioxidants. Vitamin K in leafy greens helps protect arteries and promote proper blood clotting.

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Low-Intensity Exercise

IMPACT

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EVIDENCE

0 / 5

How to implement

Incorporate 60 minutes of low-intensity activities, such as walking or gentle yoga, into your daily routine. Aim to do this 5 days a week to achieve the best results.

TYPICAL STARTING DOSE

1 hour

Description

Low-intensity exercise, such as walking or gentle yoga, provides numerous health benefits, including improved cardiovascular health, stress reduction, and enhanced overall fitness without the strain of high-intensity workouts.

How it helps

Low intensity activities like walking can improve heart health and function without overstraining the heart.

59



Balance And Mobility Training

IMPACT

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EVIDENCE

0 / 5

How to implement

Incorporate balance and mobility exercises into your routine three to four times per week. Each session should last approximately 30 minutes and include activities such as standing on one foot, walking heel to toe, and tai chi or yoga. Start with simple exercises and gradually increase difficulty as your balance improves.

TYPICAL STARTING DOSE

30 minutes

Description

Balance and mobility training exercises, such as yoga or tai chi, can improve stability and reduce the risk of falls, particularly among older adults. These exercises enhance overall physical function.

How it helps

Improving balance and mobility can reduce fall risk and enhance quality of life in heart failure patients.



60



Avoid High-Impact Exercise

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Opt for low-impact activities such as swimming, cycling, or walking instead of running or jumping exercises. Engage in these alternative exercises for at least 150 minutes per week, spread out over several days to ensure rest periods between sessions.

Description

For individuals with certain medical conditions or joint issues, avoiding high-impact exercise can help prevent injuries and joint strain. Choosing lower-impact activities like swimming or cycling can provide similar cardiovascular benefits while minimizing the risk of overuse injuries.

How it helps

Patients with heart failure are generally advised to avoid high-impact activities that could overstrain the heart.

61



Salmon

IMPACT

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EVIDENCE

0 / 5

How to implement

Incorporate at least two servings of salmon into your weekly diet, aiming for each serving to be about 3.5 ounces (100 grams), cooked. Choose wild-caught salmon when possible for higher omega-3 content.

Description

Salmon is a nutrient-rich fish known for its high content of omega-3 fatty acids, which can support heart health and reduce inflammation. It's also an excellent source of protein, vitamin D, and various minerals.

How it helps

Salmon is an excellent source of omega-3 fatty acids, which have been shown to decrease the risk of arrhythmias, reduce atherosclerosis, and slightly lower blood pressure.

62



Practice Exercise Snacks

IMPACT

0 / 5

EVIDENCE

0 / 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

Regular, moderate physical activity can improve heart function and reduce heart failure symptoms.



63



Limit Saturated Fat

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Reduce your intake of saturated fats by choosing lean cuts of meat, opting for low-fat or fat-free dairy products, and using cooking oils high in unsaturated fats (like olive or canola oil) instead of butter or lard. Aim to keep saturated fat to less than 10% of your total daily calories. For someone consuming 2000 calories a day, this means 20 grams or less of saturated fat per day.

Description

Limiting saturated fat intake is crucial for managing cholesterol levels and reducing the risk of heart disease. Choosing lean protein sources and incorporating unsaturated fats into the diet supports cardiovascular health and overall well-being.

How it helps

Limiting saturated fat helps with heart failure and its prevention by reducing cholesterol and plaque buildup in the arteries. This in turn improves blood flow and reduces the strain on your heart, preventing heart failure.

64



Oats

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Incorporate oats into your diet daily by having them for breakfast as oatmeal, or adding them to smoothies, baking recipes, or overnight oats. Aim for at least a half-cup (40 grams) of dry oats to reap the health benefits.

Description

Oats are a whole grain known for their high fiber content and nutritional value, like zinc, iron, and manganese. Including oats in one's diet can promote heart health, stabilize blood sugar levels, and provide sustained energy.

**Oats** are a good source for manganese, zinc, iron, magnesium, and vitamins B1 and B5. A ½ cup serving provides 0.7 mg of manganese or 30%DV.

How it helps

Oats contain beta-glucan, a type of soluble fiber that can lower bad LDL cholesterol levels, which is beneficial for heart health.

65



## Mindfulness-Based Stress Reduction (MBSR)

IMPACT

0 / 5

EVIDENCE

0 / 5

## How to implement

Enroll in an 8-week MBSR course, which includes a weekly 2.5-hour class, one all-day class after the sixth week, and 45 minutes of daily home practice guided by assignments and instructional recordings.

TYPICAL STARTING DOSE

2 hours

## Description

Mindfulness-Based Stress Reduction (MBSR) is a structured program that teaches mindfulness techniques to reduce stress and improve overall mental and emotional health. MBSR has been shown to help individuals cope with chronic pain, anxiety, and other stress-related conditions.

## How it helps

MBSR can lower stress levels, which may help in managing the psychological aspects of heart failure.

66



Avoid Rapid Weight Changes

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Maintain a consistent, healthy weight by avoiding extreme dieting or sudden increases in food intake. Aim for gradual weight changes, not exceeding 1-2 pounds per week, by adjusting your diet and physical activity levels accordingly. This approach should be sustained over a long-term period to ensure health and prevent potential adverse effects on the body.

Description

Avoiding extreme and rapid weight changes, whether through crash diets or excessive calorie restriction, is essential for preventing negative health consequences such as nutritional deficiencies and metabolic disruptions.

Your weight is determined by the number of calories you consume compared to those you burn. Changes in exercise frequency, amount and type of food consumed, and alcohol intake may alter your energy expenditure. This may cause small weight fluctuations [\[R\]](#).

Some people may gain or lose weight at a faster rate. Rapid weight fluctuations may be due to [\[R\]](#), [\[R\]](#):

- Very drastic diets
- Water retention or dehydration
- Hormonal changes
- Pregnancy
- Taking certain medications
- Certain health conditions

How it helps

Rapid weight gain can be a sign of fluid retention, and rapid weight loss may be indicative of inadequate calorie intake in heart failure.

67



Berries

IMPACT

0 / 5

EVIDENCE

0 / 5

## How to implement

Incorporate a variety of berries such as strawberries, blueberries, raspberries, and blackberries into your daily diet. Aim for at least one cup of fresh or frozen berries every day, either as a snack, part of your breakfast (such as in oatmeal or yogurt), or as a dessert.

## Description

Berries, such as strawberries, blueberries, and raspberries, are packed with antioxidants, vitamins, and fiber. Regular consumption of berries may support heart health, improve cognitive function, and contribute to overall well-being.

## How it helps

Berries, like blueberries, strawberries, and blackberries, are high in antioxidants, including vitamin C and beta-carotene, as well as fiber. They help to reduce inflammation and oxidative stress.



68



Sleep for 7+ Hours

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

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

Description

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

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

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

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

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

How it helps

Quality sleep is essential for cardiac health, and good sleep practices can improve outcomes in heart failure.

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Regular Sleep Schedule

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Go to bed and wake up at the same time every day, even on weekends and holidays. This helps regulate your body's internal clock, leading to better sleep quality. Aim for 7-9 hours of sleep per night.

Description

Maintaining a regular sleep schedule involves going to bed and waking up at consistent times each day. This practice helps regulate the body's internal clock and promotes better sleep quality, mood, and cognitive function.

How it helps

A consistent sleep routine can improve sleep quality and overall heart health in heart failure patients.



70



Avoid Strenuous Activity

IMPACT

0 / 5

EVIDENCE

0 / 5

## How to implement

Refrain from participating in high-intensity physical activities such as running, heavy weightlifting, and high-impact sports. Opt instead for low-impact exercises like walking, swimming, or yoga. It's important to listen to your body's signals and rest as needed, avoiding these strenuous activities until advised otherwise by a health professional.

## Description

Avoiding strenuous physical activity in certain medical conditions or during illness can help prevent injury and promote better recovery. It allows the body to conserve energy and supports the healing process.

Strenuous activity is physical activity that requires a lot of effort. Exercise done at 70-85% of a person’s heart rate is considered strenuous. Examples include [\[R\]](#):

- Running, cycling, or swimming at high speed
- Running or hiking uphill
- Jumping rope
- Single tennis
- Sports that involve a lot of running (soccer, basketball, hockey, etc.)

On the other hand, strenuous daily activities include [\[R\]](#):

- Lifting and carrying heavy objects
- Gardening with heavy digging
- Shoveling snow
- Fast dancing

## How it helps

Strenuous activity may exacerbate heart failure symptoms by increasing the workload of an already compromised heart.

# Next Steps

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

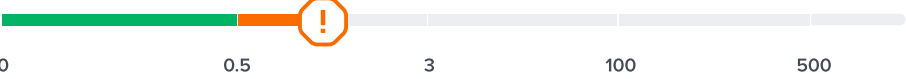
Now that you've seen your DNA-based results for this health topic, let's take a look at other contributing factors.

## 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.

|                                                                                     |                  |                   |                                                                                       |             |
|-------------------------------------------------------------------------------------|------------------|-------------------|---------------------------------------------------------------------------------------|-------------|
|  | TSH              | 2.76 mIU/mL       |  | 9 Nov 2025  |
|  | Chloride         | 97 mmol/L         |  | 9 Nov 2025  |
|  | % Saturation     | 60 %              |  | 9 Nov 2025  |
|  | WBC              | 6.92 x10^3/mm3    |  | 9 Nov 2025  |
|  | eGFR             | 71 mL/min/1.73 m2 |  | 29 Aug 2025 |
|  | Ferritin         | 102.2 ng/mL       |  | 9 Nov 2025  |
|  | Glucose, Fasting | 97 mg/dL          |  | 9 Nov 2025  |
|  | Sodium           | 137 mmol/L        |  | 9 Nov 2025  |
|  | Magnesium        | 2.17 mg/dL        |  | 9 Nov 2025  |

|                                                                                     |                              |              |                                                                                       |            |
|-------------------------------------------------------------------------------------|------------------------------|--------------|---------------------------------------------------------------------------------------|------------|
|    | Vitamin D, 25-Hydroxy, Total | 58.59 ng/mL  |    | 9 Nov 2025 |
|    | Homocysteine                 | 12.84 umol/L |    | 9 Nov 2025 |
|    | Creatinine                   | 1.08 mg/dL   |    | 9 Nov 2025 |
|    | Potassium, Serum             | 5.2 mmol/L   |    | 9 Nov 2025 |
|    | hs-CRP                       | 1.6 mg/L     |    | 9 Nov 2025 |
|   | Iron                         | 228 mcg/dL   |  | 9 Nov 2025 |
|  | BUN                          | 14 mg/dL     |  | 9 Nov 2025 |