SelfDecode™

Collagen & Joints (Functional)

Biohacker Report

REPORT CATEGORY

JOINT & TENDON HEALTH

Sample Client

Report date: 15 January 2026

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DISCLAIMER

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

Personal information

NAME

Sample Client

SEX AT BIRTH

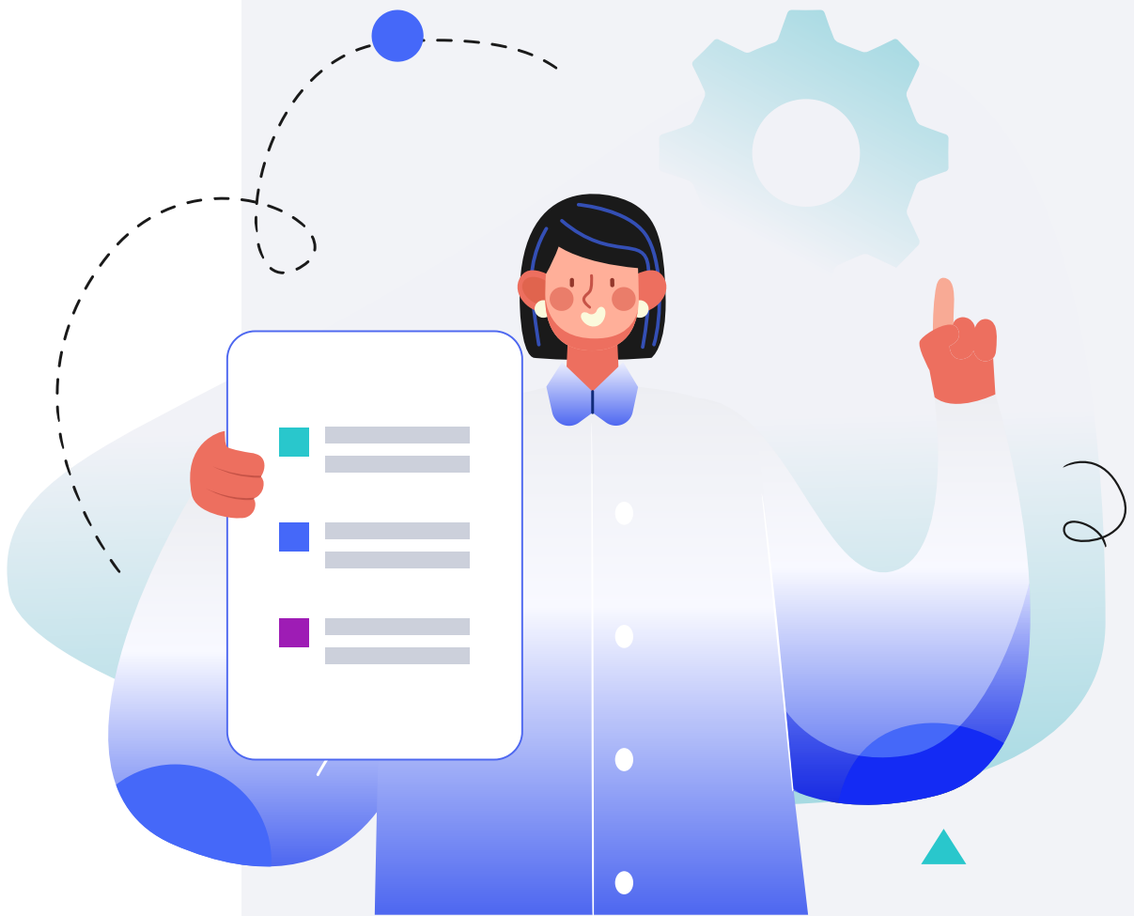
Male

HEIGHT

5ft 5" 165cm

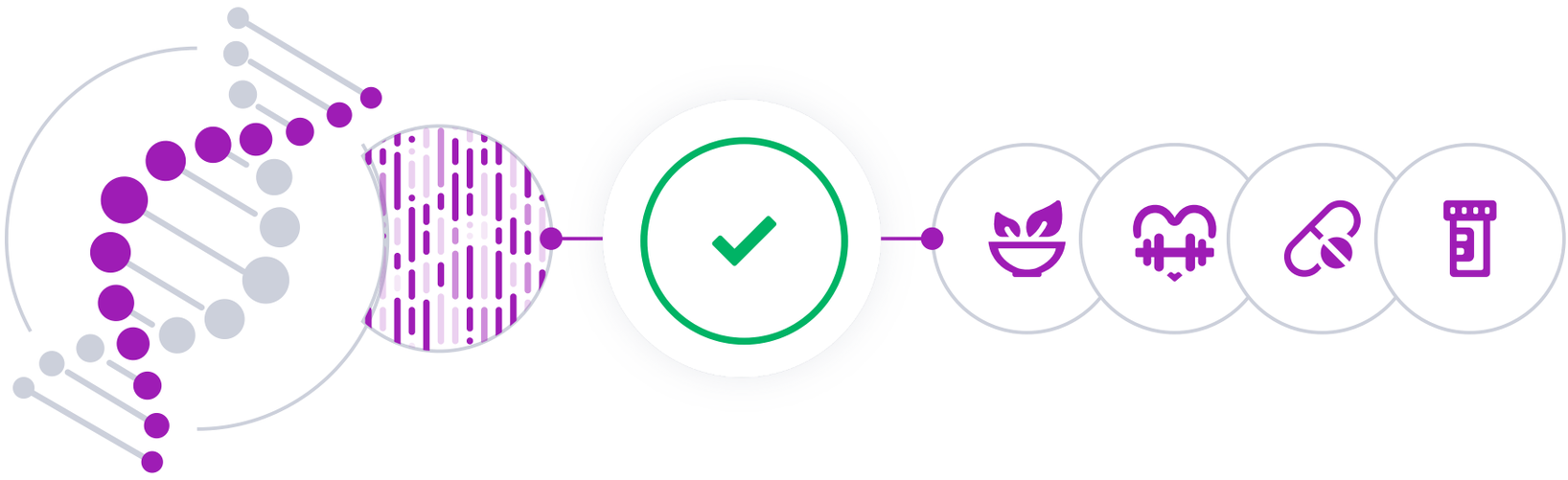
WEIGHT

137lb 62kg



How this works

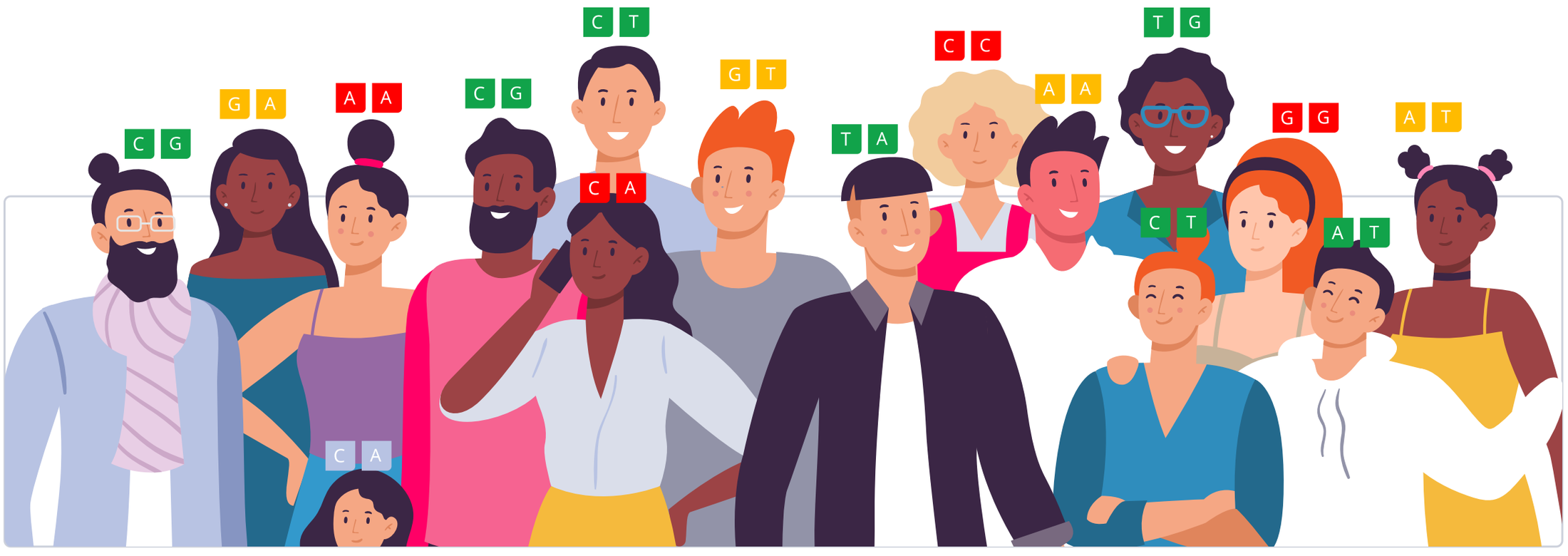
Our Wellness Reports analyze how your DNA influences your health.
We then use this analysis to give you personalized risk estimates and recommendations.



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

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

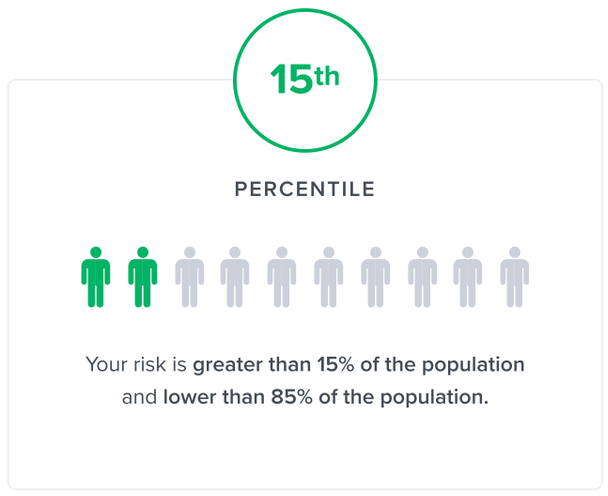
Genetic variants are parts of DNA that differ from person to person. Some can make you more vulnerable to certain health issues, while others may influence traits such as eye color.



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

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

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



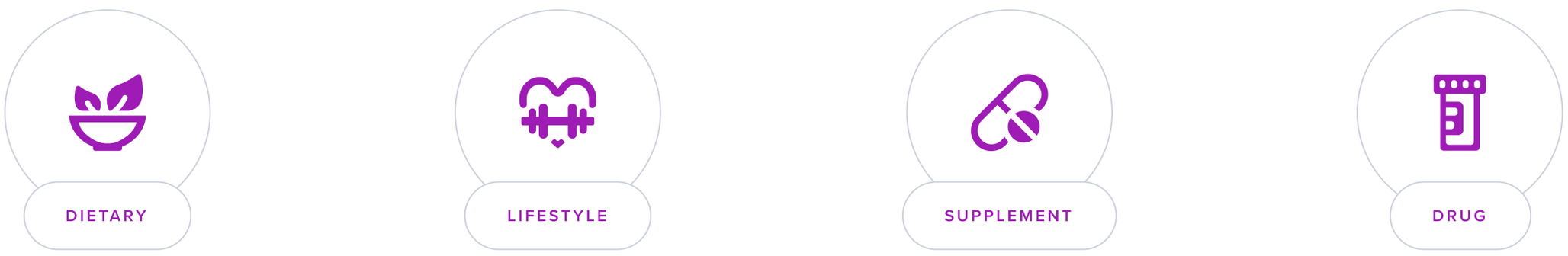
Genotype color info: AA You don't have any risk alleles | AA You have 1 risk allele | AA You have 2 risk alleles

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, afew 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

Collagen is a fundamental structural protein that provides support and strength to various soft tissues in the body, including skin, hair, nails, joints, and organs. The continuous renewal of collagen is essential for maintaining tissue integrity, as old cells are broken down and replaced by new ones.

If there is excessive breakdown of collagen without adequate regeneration, tissues may degenerate over time. Lifestyle factors, such as diet and exercise, play significant roles in collagen synthesis and breakdown.

Moreover, **variations in collagen-related genes can affect the structural stability and function of these tissues**, influencing the body's ability to maintain healthy connective tissues and making it possible to optimize tissue health through personalized strategies.

Genetics of Collagen and Joints

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

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

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

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

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

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

MMP1 (rs1799750, -1607 1G/2G): The *MMP1* gene encodes an enzyme involved in collagen breakdown. The

LIKELY TYPICAL

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

Your top variants that most likely impact your genetic predisposition:

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

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

rs1799750 variant (-1607 1G/2G) can influence the rate of collagen degradation, affecting tissue renewal and potentially increasing susceptibility to tissue degeneration.

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

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
1	Gelatin Powder	
2	Proline Supplement	
3	Connective tissue massage	
4	Chondroitin	800 mg
5	Collagen (Non-Hydrolyzed)	5 g
6	Topical Hyaluronic Acid	
7	Topical Vitamin C	
8	Hyaluronic Acid	120 mg
9	Collagen Peptides	10 g
10	Glucosamine	1500 mg
11	Dietary Protein	
12	Dietary Vitamin C	
13	Hydroxyproline Supplements	
14	Essential Amino Acids (EAA)	10 g

1

Gelatin Powder

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Dissolve one to two tablespoons of gelatin powder in a cup of hot water, tea, or juice and drink it daily. Ensure to consume it consistently for at least one month to observe benefits.

Description

Gelatin powder is a source of collagen and protein that can support joint health, skin elasticity, and nail strength. It's often used as a dietary supplement to promote overall connective tissue well-being.

Gelatin powder is an excellent source of proline, with some protein (mainly collagen) and a bit of selenium.

How it helps

Gelatin powder serves as a concentrated source of collagen, which is vital for maintaining the integrity of cartilage and connective tissues in the joints. Its supplementation can enhance joint mobility and reduce discomfort associated with degeneration, improving functional outcomes.

2

Proline Supplement

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Take a proline supplement in a dosage of 500mg to 1g per day, preferably with a meal to enhance absorption. This can be divided into two doses taken at different times of the day. Consistent daily intake is recommended for at least several months to assess its benefits.

Description

Proline is an amino acid that helps build collagen and elastin. These are important for joint, skin, and gut health.

How it helps

Proline plays a crucial role in the synthesis of collagen, which is essential for maintaining the structural integrity of joints and connective tissues. By promoting collagen production, proline supplementation may help enhance joint flexibility and reduce discomfort associated with degeneration.

3 Connective tissue massage

IMPACT 1 / 5

EVIDENCE 1 / 5

Description

Connective tissue massage focuses on the layers of connective tissues surrounding muscles, bones, and joints. The technique involves firm, flowing strokes to help release tension, reduce pain, and improve flexibility [R].

It's particularly beneficial for those with chronic pain or stiffness, aiming to restore body movement and alleviate discomfort by targeting deeper layers of tissue.

How it helps

Connective tissue massage enhances blood circulation to the joints and surrounding tissues, promoting nutrient delivery and waste removal. This therapy reduces muscle tension and pain while increasing flexibility, which is crucial for maintaining joint function and overall mobility.

4 Chondroitin

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Take 400 mg of chondroitin sulfate orally, three times a day or 800 mg once daily. This supplement regimen is typically followed for up to 6 months to support joint health.

TYPICAL STARTING DOSE

800 mg

Description

Chondroitin is often used as a supplement to support joint health and reduce the symptoms of osteoarthritis. It may help improve joint mobility and reduce discomfort in individuals with joint-related issues.

Chondroitin is a major component of cartilage. It helps keep cartilage healthy, and it provides the building blocks for the body to produce new cartilage.

People often combine chondroitin with glucosamine as supplements for joint health [R, R].

How it helps

Chondroitin supplements help by providing essential building blocks for cartilage, enhancing its resilience and elasticity. This supports joint health, reduces pain, and improves mobility, which is crucial for individuals experiencing collagen-related joint conditions.

5

Collagen (Non-Hydrolyzed)

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Take 5 grams of non-hydrolyzed collagen supplement daily. You can mix it with a beverage of your choice, such as water or juice, for easier consumption.

TYPICAL STARTING DOSE

5 g

Description

Collagen is a protein that plays a crucial role in maintaining skin, joint, and connective tissue health. Collagen supplements are believed to support skin elasticity, joint mobility, and overall skin and joint health.

Collagen is a protein that helps build skin, bones, and joints [R, R].

People use collagen supplements for [R, R, R, R]:

- Joint pain
- Skin health
- Hair growth

How it helps

Non-hydrolyzed collagen supplements promote the synthesis of collagen in the body, which is vital for maintaining the integrity and elasticity of joints and connective tissues. This support can alleviate joint pain and enhance overall joint function, benefiting those with joint-related issues.

6

Topical Hyaluronic Acid

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Apply a few drops of hyaluronic acid serum directly to your clean, damp skin twice a day, in the morning and before bedtime. Gently massage it into your face and neck until fully absorbed. Follow up with your regular moisturizer to seal in the hydration.

Description

Hyaluronic acid is a naturally occurring substance in the skin that is used topically to enhance skin hydration, reduce fine lines, and improve overall skin texture. It can be derived from various sources, including microbial fermentation.

Hyaluronic acid is a compound naturally found in the body. It helps the skin, eyes, connective tissues, and joints retain water [R, R].

By doing so, hyaluronic acid can help keep the [R]:

- Joints moving smoothly
- Skin and eyes moist
- Skin flexible

Hyaluronic acid is popular as a topical serum. It is also available as an injection, supplement, and eye drop.

How it helps

Topical hyaluronic acid enhances hydration in the skin and may promote the elasticity and resilience of connective tissues critical for joint function. Improved moisture retention can contribute to better joint lubrication and overall comfort during movement.

7 Topical Vitamin C

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Apply a vitamin C serum to your face and neck once a day, preferably in the morning before applying sunscreen and makeup. It should be left on the skin, not washed off. Consistent daily use is needed for best results.

Description

Topical vitamin C, often in the form of ascorbic acid, is used for its antioxidant properties to protect the skin from environmental damage and promote collagen synthesis, benefiting overall skin health. It can be sourced from various natural plant extracts, such as citrus fruits.

Vitamin C is an essential nutrient. This means that our bodies can't produce it on their own, so we have to get it from food or supplements [R].

Vitamin C has antioxidant properties. It supports immunity, heart health, and wound healing [R, R].

Vitamin C deficiency is called *scurvy.* In the past, many sailors suffered from it [R].

How it helps

Topical Vitamin C enhances collagen production in joint tissues, which supports structural integrity and may alleviate discomfort associated with joint degeneration. Its antioxidant properties also protect against oxidative stress, promoting overall joint health.

8 Hyaluronic Acid

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Take 120-240 mg of oral hyaluronic acid supplement daily, ideally with or after a meal to enhance absorption. Consistent use for at least one month is recommended to evaluate its effects on skin hydration and joint health.

TYPICAL STARTING DOSE

120 mg

Description

Hyaluronic acid is a natural substance that plays a key role in joint and skin health. As a supplement or topical application, it may help support joint mobility and skin hydration.

How it helps

Hyaluronic acid enhances synovial fluid viscosity in joints, promoting lubrication and reducing friction during movement. This leads to improved joint mobility and alleviation of discomfort associated with collagen degradation in connective tissues.

9

Collagen Peptides

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Take 10-20 grams of collagen peptides daily, mixing the powder into a glass of water, juice, or a smoothie. It is recommended to consume this supplement on an empty stomach to improve absorption, ideally first thing in the morning or right before bedtime for a period of at least 8-12 weeks to observe beneficial effects.

TYPICAL STARTING DOSE

10 g

Description

Collagen peptides are a form of collagen that is broken down into smaller, more easily absorbed molecules. They are commonly used in supplements and skincare products for their potential to promote skin elasticity, hair strength, and nail health.

Collagen is a protein that helps build skin, bones, and joints [R, R].

People use collagen supplements for [R, R, R, R]:

- Joint pain
- Skin health
- Hair growth

How it helps

Collagen peptides enhance joint health by improving collagen synthesis in cartilage, thereby reducing pain and inflammation. Their bioavailability ensures effective absorption, promoting overall joint function and supporting the integrity of connective tissues.

10

Glucosamine

IMPACT 1 / 5

EVIDENCE 1 / 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 aids in the maintenance and repair of cartilage, helping to preserve joint function and reduce pain associated with osteoarthritis. This support is crucial for enhancing collagen synthesis and improving overall joint health.

11

Dietary Protein

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Include a variety of protein sources such as meat, fish, eggs, dairy, beans, and nuts in your diet every day, aiming for at least 0.8 grams of protein per kilogram of body weight. For more active individuals or those looking to build muscle, increase intake to 1.2 to 2.0 grams per kilogram of body weight daily, spread out over all meals to maximize absorption.

Description

Protein is essential for building and repairing tissues, supporting muscle growth, and maintaining overall bodily functions. Adequate protein intake is crucial for overall health and well-being.

Foods that are high in protein include:

- Eggs
- Nuts
- Beef
- Chicken
- Fish
- Yogurt
- Tofu
- Pork
- Cottage cheese

How it helps

Consuming adequate dietary protein aids in the synthesis of collagen, essential for maintaining joint health and the integrity of connective tissues. This support is crucial in mitigating joint degeneration and promoting overall functional mobility.

12 Dietary Vitamin C

IMPACT 1 / 5 EVIDENCE 1 / 5

How to implement

Incorporate foods rich in Vitamin C into your daily diet, such as oranges, strawberries, red peppers, kale, and broccoli. Aim to consume 5 servings of fruits and vegetables per day to meet the recommended dietary allowance of Vitamin C, which is 90 mg for adult men and 75 mg for adult women.

Description

Vitamin C is an antioxidant that supports the immune system, collagen production, and wound healing. It also enhances iron absorption from plant-based foods and contributes to overall health.

Vitamin C is an essential nutrient. This means that our bodies can't produce it on their own, so we have to get it from food or supplements [R].

Vitamin C has antioxidant properties. It supports immunity, heart health, and wound healing [R, R].

Vitamin C deficiency is called *scurvy.* In the past, many sailors suffered from it [R].

How it helps

Dietary Vitamin C is essential for the synthesis of collagen, which is critical for maintaining joint structure and integrity. By promoting collagen production, it aids in the regeneration of connective tissues, thus potentially alleviating joint pain and enhancing mobility.

13 Hydroxyproline Supplements

IMPACT 1 / 5 EVIDENCE 1 / 5

Description

Hydroxyproline is an amino acid that plays a crucial role in collagen stability and is abundant in collagen-rich foods, such as gelatin and certain types of meat and fish. Collagen is vital for maintaining the strength and flexibility of bones, skin, muscles, tendons, and ligaments.

Hydroxyproline supplements might be considered by individuals looking to support skin health, wound healing, and the maintenance of strong connective tissues.

However, it's important to remember that the body generally produces hydroxyproline from proline, another amino acid, as part of collagen synthesis. Therefore, ensuring adequate intake of vitamin C and proline-rich foods could be just as important for collagen production.

How it helps

Hydroxyproline supplements may enhance collagen stability and synthesis, promoting joint health and potentially reducing symptoms of collagen deficiency, which is crucial for maintaining the structural integrity of joints and surrounding tissues.

14

Essential Amino Acids (EAA)

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Take a supplement containing all nine essential amino acids, aiming for a total of 10-20 grams per day. This can be divided into 2-3 doses throughout the day, ideally around exercise sessions or with meals. Continue as long as you are seeking to enhance muscle recovery, growth, or overall protein intake.

TYPICAL STARTING DOSE

10 g

Description

Essential amino acids are crucial for building and repairing tissues, supporting immune function, and maintaining overall health. Obtaining these amino acids through a balanced diet or supplementation can promote muscle growth, better immune response, and overall well-being.

How it helps

Supplementing with essential amino acids (EAA) aids in the synthesis of collagen, a key structural protein in joints, thereby enhancing joint function and promoting tissue repair. This supports overall joint health and can alleviate discomfort associated with collagen degradation.