SelfDecode™

Oxidative Stress

Biohacker Report

REPORT CATEGORIES

DETOX

LONGEVITY

Sample Client

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Personal information

NAME

Sample Client

SEX AT BIRTH

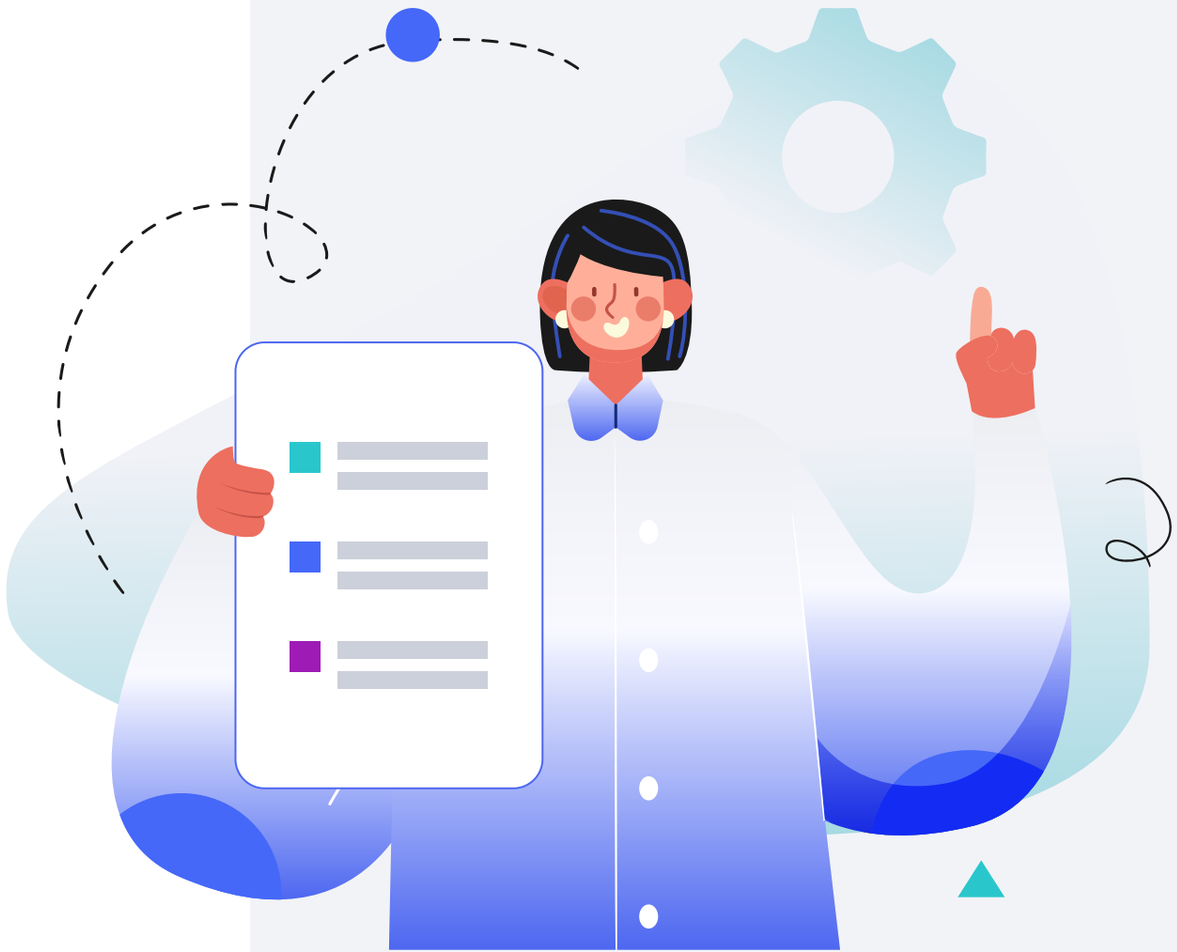
Female

HEIGHT

5ft 9" 175.0cm

WEIGHT

165lb 75.0kg



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.

Introduction

Oxidative stress is a condition characterized by an imbalance between the production of free radicals and the body's ability to counteract their harmful effects through neutralization by antioxidants. Free radicals are oxygen-containing molecules with an uneven number of electrons, allowing them to easily react with other molecules. These reactions can lead to cellular damage, which contributes to aging and various diseases.

Oxidative stress is established when there is a disproportion, with either excess production of free radicals or a deficiency in antioxidant defenses, or both. As a result, the excess free radicals can damage DNA, proteins, and cell membranes, leading to a range of pathological conditions.

Causes of Oxidative Stress

The causes of oxidative stress can be multifaceted, including environmental factors such as pollution, radiation, and toxins, as well as lifestyle factors like dietary choices, smoking, alcohol consumption, and chronic stress. The body's metabolism also naturally produces free radicals as byproducts. Oxidative stress is implicated in the pathogenesis of numerous diseases, including neurodegenerative diseases like Alzheimer's and Parkinson's, cardiovascular diseases, diabetes, and inflammatory conditions.

It is also involved in the aging process itself. Therefore, maintaining a balance between oxidative stress and antioxidants is critical for health, and enhancing antioxidant defenses through diet and lifestyle changes is often suggested as a preventive strategy.

TYPICAL

Likely typical oxidative stress based on 60 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
SOD2	rs4880	GG
SOD3	rs2536512	AA
CAT	rs769217	CC
FOXO3	rs12212067	TT
FOXO3	rs4946936	CC
PON1	rs662	TT
FOXO3	rs12202234	CC
FOXO3	rs17069665	AA
FOXO3	rs9398171	TT
FOXO3	rs3800230	TT
FOXO3	rs9400239	CC
FOXO3	rs479744	GG
SIRT1	rs7895833	AA
CAT	rs7943316	TA
GPX4	rs713041	CT
CAT	rs1001179	TC
APEX1	rs1130409	GG
NOS3	rs2070744	TC
GCLC	rs1555903	CT
UGT1A6	rs1105879	AA
NOS1	rs1879417	CT
SIRT1	rs12778366	TC
GSTO2	rs156697	GA
UCP2	rs659366	CT
TFAM	rs1937	GC
PPARGC1A	rs8192678	TC
CDKN2A	rs10811661	TT
UCP1	rs1800592	TC

GENE	SNP	GENOTYPE
HNRNPA3	rs13001694	GG
GPX1	rs1050450	GG
MVD	rs9932581	CT
SOD1	rs2234694	AA
NQO1	rs1800566	GG
GSTP1	rs1695	AA
PON1	rs854560	AT
ARMC2	rs6911407	AA
MRPS31	rs4581585	CC
GCLM	rs41303970	GG
FOXO3	rs2802292	GG
MPO	rs2333227	CC
TOM1	rs2071746	AA
OGG1	rs1052133	CC
ARMC2	rs768023	GG
ALDH2	rs671	GG
APOE	rs429358	TT
SLC23A1	rs33972313	CC
FOXO3	rs2802288	AA
NOS2	rs2297518	GG
FOXO3	rs2253310	CC
FOXO3	rs1935952	CC

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
1	Glutathione supplements	
2	Extra Virgin Olive Oil (EVOO)	
3	Garlic Supplement	200 mg
4	Astaxanthin	12 mg
5	Avoid Lead Exposure	
6	Ginger	500 mg
7	Goji Berries	
8	Black Seed (Black Cumin)	1000 mg
9	Taurine	500 mg
10	Cranberry	
11	Cherries	
12	Selenium Supplements	50 mcg
13	N-acetylcysteine (NAC)	1200 mg
14	Curcumin	500 mg
15	Omega-3 (Fish Oil)	2000 mg

1

Glutathione supplements

IMPACT 5 / 5

EVIDENCE 4 / 5

How to implement

Take glutathione supplements orally, usually in pill or powder form, with a recommended dose ranging from 500mg to 1000mg daily, divided into two doses. It's best taken on an empty stomach or as directed by a healthcare professional. Continuous use is advised for sustained benefits, but consulting with a healthcare provider for personalized advice and duration is important.

Description

Glutathione (GSH) is your body's strongest antioxidant. It has an enormous capacity to combat oxidative stress and neutralize harmful free radicals. Chemically speaking, glutathione is a tripeptide made up of 3 amino acids [R]:

- Glutamate
- **Cysteine**
- Glycine

Low glutathione levels have been linked to cognitive decline, age-related disease, and general mortality among the elderly [R, R].

People take glutathione supplements to help with:

- Oxidative stress and detox
- Immune system support
- Skin aging and damage
- Exercise recovery
- Chronic diseases such as type 2 diabetes, Alzheimer's disease, Parkinson's disease, or COPD

How it helps

Glutathione reduces reactive oxygen species (ROS) and oxidative stress in the body, which would otherwise damage cells and DNA. This benefit underlies all the other ones, since oxidative stress is associated with cancer, inflammation, brain damage, and a range of other health problems [R, R, R].

Glutathione is equally important for the regeneration of other antioxidants your body needs, such as vitamin C and vitamin E. It increases your overall antioxidant defense, a task that can never be accomplished just with one substance [R].

Daily consumption of glutathione supplements was effective at increasing body compartment stores of glutathione, reducing oxidative stress, and decreasing the oxidized to reduced glutathione ratio in whole blood after 6 months in a placebo-controlled trial of 16 healthy men [R].

Similarly, both oral and transdermal glutathione increased blood glutathione levels in a non-placebo-controlled trial of 26 children with autism spectrum disorder. A case series also found this benefit of glutathione in autism spectrum disorder [R, R].

2

Extra Virgin Olive Oil (EVOO)

IMPACT 4 / 5

EVIDENCE 4 / 5

How to implement

Incorporate 1-2 tablespoons of extra virgin olive oil into your daily diet. Use it as a dressing for salads, vegetables, or incorporate it into cooking, but avoid using it at high temperatures to preserve its health benefits.

Description

Extra virgin olive oil is a high-quality olive oil obtained from the first pressing of olives. It is rich in monounsaturated fats and antioxidants, like polyphenols, and is associated with various health benefits, including heart health and anti-inflammatory properties.

Olive oil is fat from the olive, a traditional tree of the Mediterranean Basin [R].

Olive oil has anti-inflammatory and antioxidant properties. It may also reduce the risk of [R, R]:

- Heart disease
- Diabetes
- Cancer

Olive oil is also the primary fat source in the Mediterranean diet, which may improve brain and heart health [R].

How it helps

Numerous studies demonstrate the cardiovascular benefits of olive oil phenolic compounds by reducing oxidative stress biomarkers. Meta-analyses reveal decreased ox-LDL and MDA levels with high-phenol olive oil consumption. Additionally, interventions with extra virgin olive oil show reductions in postprandial oxidative stress and improvements in antioxidant capacity. Furthermore, consuming olive oil rich in phenols correlates with lower oxidative DNA damage. Substituting saturated fats with olive oil may enhance fat oxidation rates, potentially aiding weight management, particularly in individuals with higher waist circumferences [R, R, R, R, R, R, R, R, R, R, R].

However, in a study with 25 participants who consumed extra virgin olive oil with varying phenol content over three-week periods, no significant difference in antioxidant markers was found between low and high phenol diets in smokers [R].

3

Garlic Supplement

IMPACT 3 / 5

EVIDENCE 3 / 5

How to implement

Take a garlic supplement, such as a garlic extract or aged garlic supplement, in a dosage of 600-1,200 mg per day, divided into separate doses. This should be taken with meals to minimize digestive issues. Continue daily for at least 8-12 weeks to evaluate its effects on health markers like blood pressure or cholesterol.

TYPICAL STARTING DOSE

200 mg

Description

Garlic is a pungent herb known for its potential health benefits, including cardiovascular support and immune system enhancement. It contains bioactive compounds that may help reduce the risk of chronic diseases and support overall well-being.

Garlic is a delicious aromatic herb that adds flavor to your food. But did you know that garlic has been a part of traditional medicine for thousands of years? **From ancient Egypt and Rome to China, people have praised garlic for its many health benefits.** Today, we can trace many of those benefits to sulfur-rich compounds found in garlic. People take garlic to help control their blood pressure and cholesterol [R].

Please note: *Garlic can interact with blood thinners (like aspirin, Plavix, Coumadin). If you are on blood thinners, consult your doctor before supplementing with garlic [R].*

How it helps

Supplementation with garlic may improve total antioxidant capacity (by 11.03 mmol/L) while decreasing malondialdehyde levels (by 1.88 mmol/L) [R].

Please note: *Garlic can interact with blood thinners (like aspirin, Plavix, Coumadin). If you are on blood thinners, consult your doctor before supplementing with garlic [R].*

4

Astaxanthin

IMPACT 3 / 5

EVIDENCE 3 / 5

How to implement

Take an astaxanthin supplement daily, with a typical dosage ranging from 4 to 12 mg. It is best taken with a fat-containing meal to enhance absorption.

TYPICAL STARTING DOSE

12 mg

Description

Astaxanthin is a powerful antioxidant found in certain microalgae and seafood. It is known for its potential benefits in reducing oxidative stress, supporting skin health, and promoting eye health.

Astaxanthin is a naturally-occurring orange-red pigment carotenoid found in algae, shrimp, lobster, crab, and salmon [R].
As an antioxidant, astaxanthin is **10 times stronger than zeaxanthin, lutein and beta-carotene, and 100 times stronger than vitamin E** [R].
People take astaxanthin to:

- Support skin health [R, R]
- Reduce exercise fatigue [R, R]
- Prevent heart disease [R, R, R]

How it helps

In 2 placebo-controlled trials of 72 soccer players, supplementation with astaxanthin for 45-90 days increased SH (free thiol) groups, improved PON1 activity, and reduced free radical production and non-enzymatic antioxidant depletion [R, R].

However, in a placebo-controlled trial of 14 active men, supplementation with astaxanthin (6 mg/day) for 4 weeks increased glutathione by 7% but did not affect oxidative stress markers or substrate utilization during exercise [R].

Astaxanthin supplementation shows promise in reducing oxidative stress markers in various conditions. It increases total antioxidant capacity (TAC) and superoxide dismutase (SOD) while decreasing malondialdehyde (MDA) levels in type 2 diabetes, PCOS, endometriosis, and smokers [R, R, R, R, R, R].

5

Avoid Lead Exposure

IMPACT 3 / 5

EVIDENCE 3 / 5

How to implement

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

Description

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

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

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

How it helps

A study of 94 male coal miners from Velenje Coal mine found that miners working for three consecutive days had elevated blood lead levels and increased oxidative stress (8-isoprostane) compared to a control group [R].

Subacute lead exposure increased blood lead levels significantly in 36 male workers. Oxidative stress (LPH) rose, while MDA remained unchanged [R].

In a study of 65 healthy males (auto technicians and controls), increased oxidative stress, elevated blood lead levels, and urinary lead/cadmium were observed in auto technicians, particularly in panel beaters [R].

Another study found elevated lead and cadmium levels in blood and urine among subjects near a discharge site, leading to oxidative stress and potential early signs of kidney dysfunction [R].

6

Ginger

IMPACT 3 / 5

EVIDENCE 3 / 5

How to implement

Take a 500 mg ginger supplement daily, preferably with a meal to enhance absorption and minimize potential stomach discomfort.

TYPICAL STARTING DOSE

500 mg

Description

Ginger is a versatile spice known for its potential anti-inflammatory and digestive benefits. It may help alleviate nausea, reduce muscle soreness, and support gastrointestinal comfort when consumed as part of a balanced diet.

Ginger root is a cooking spice and a traditional remedy. People mostly use it to relieve [R]:

- Nausea
- Menstrual cramps
- Joint pain

How it helps

A systematic review and meta-analysis of 12 trials found ginger intake significantly increased glutathione peroxidase activity and total antioxidant capacity while decreasing malondialdehyde levels, indicating its efficacy in improving oxidative stress levels. This suggests ginger supplementation could offer clinical benefits in managing chronic diseases [R].

In a meta-analysis of 11 RCTs, ginger supplementation significantly increased glutathione peroxidase (GPx) levels and decreased malondialdehyde (MDA) levels, but did not significantly change total antioxidant capacity (TAC). Subgroup analysis revealed greater MDA reduction with lower ginger doses, shorter duration, older participants, smaller sample sizes, and mixed genders. Higher doses of ginger and longer durations increased TAC, especially in older participants and larger sample sizes, including both genders and females specifically [R].

A meta-analysis found ginger supplementation significantly reduces serum CRP, TNF-α, IL-6, TAC, and MDA levels, with marginal effect on PGE2. Subgroup analysis supports these findings [R].

7

Goji Berries

IMPACT 3 / 5

EVIDENCE 3 / 5

How to implement

Incorporate goji berries into your daily diet by adding a handful (about 1 ounce or 28 grams) to your morning cereal, yogurt, or smoothie. You can also snack on dried goji berries throughout the day. Aim to include them in your diet consistently for at least a month to observe potential health benefits.

Description

Goji berries are a nutritious fruit known for their high antioxidant content. They may support immune health, provide essential nutrients, and be incorporated into a healthy diet as a snack or ingredient.

How it helps

A meta-analysis of 10 studies showed that consuming wolfberry significantly reduces blood triglycerides, increases HDL cholesterol, and lowers oxidative stress, particularly when consumed as whole fruits, suggesting benefits for cardiovascular health [R].

In an 8-week double-blind study with 53 participants, wolfberry fruit extract (WBE) significantly improved antioxidant and anti-inflammatory responses in mildly hypercholesterolemic and overweight subjects by reducing DNA damage and altering mRNA expression related to oxidative and inflammatory stress [R].

In a 90-day randomized, placebo-controlled trial with elderly subjects, goji berry supplementation stabilized macular pigmentation and soft drusen, significantly increased plasma zeaxanthin by 26%, and total antioxidant capacity by 57%, suggesting protective ocular and systemic effects [R].

Goji-based GoChi significantly enhanced antioxidant markers in a 30-day study, suggesting its potential to boost human antioxidant capacities and prevent oxidative stress-related conditions [R].

8

Black Seed (Black Cumin)

IMPACT 3 / 5

EVIDENCE 3 / 5

How to implement

Take 1000 mg of black seed (black cumin) supplement daily, preferably split into two doses of 500 mg each, one in the morning and one in the evening.

TYPICAL STARTING DOSE

1000 mg

Description

Black seed, also known as black cumin or Nigella sativa, has been used for its potential health benefits in traditional medicine. It is believed to have anti-inflammatory, antioxidant, and immune-boosting properties.

Black seed (black cumin) and its oil are used in cooking and traditional medicine [R].

People use black seed for [R, R, R, R, R]:

- Asthma
- Allergies
- High blood sugar
- High blood pressure
- Joint pain

How it helps

Nigella sativa supplementation shows significant reductions in cholesterol, triglycerides, and glucose levels, along with improvements in antioxidant capacity across various studies. However, the impact on inflammatory markers like CRP and TNF-α varies. While some trials report significant reductions, others show insignificant changes. Overall, it suggests potential benefits for cardiovascular health and antioxidant status, but further research is needed to clarify its effects on inflammation [R, [R, R, R, R, R].

9

Taurine

IMPACT 3 / 5

EVIDENCE 3 / 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

A meta-analysis based on PRISMA guidelines assessed Tau's impact on inflammatory and oxidative stress biomarkers. Tau supplementation decreases malondialdehyde (MDA) and C-reactive protein (CRP), but not tumor necrosis factor-alpha (TNF-α) or interleukin-6 (IL-6). More pronounced effects were observed after eight weeks [R].

Double-blind study with 24 women (61.4 ± 4.2 y) assigned to taurine (GTAU) or placebo (GC) groups for 16 weeks. Taurine supplementation increased plasma taurine and superoxide dismutase (SOD), suggesting its potential in controlling oxidative stress [R].

A randomized double-blind placebo-controlled study with 16 obese and 8 normal-weight women. Obese subjects received either a placebo or taurine (3 g/day) for 8 weeks. Taurine supplementation increased plasma taurine and adiponectin, and decreased hs-CRP and TBARS, suggesting anti-inflammatory and antioxidant effects [R].

Double-blind randomized placebo-controlled trial on elderly hip fracture patients. Taurine supplementation didn't improve in-hospital morbidity, comorbidities, or mortality during the first year. However, it reduced postoperative oxidative stress [R].

10

Cranberry

IMPACT 3 / 5

EVIDENCE 2 / 5

How to implement

Consume one to two 8-ounce servings of unsweetened cranberry juice daily, or take 500 mg of cranberry supplements twice daily. Continue this practice consistently for at least several weeks to potentially observe benefits.

Description

Cranberries are known for their high antioxidant content and potential to promote urinary tract health by preventing bacterial adhesion. Consuming cranberries or cranberry products may help reduce the risk of urinary tract infections and provide antioxidant benefits.

Cranberries are fruits rich in vitamins, minerals, and antioxidants. They are available in different forms, including [R]:

- Dried fruits
- Juice
- Powder
- Pills

How it helps

In an 8-week double-blind study, low-calorie cranberry juice significantly enhanced plasma antioxidant capacity and reduced lipid oxidation in women with metabolic syndrome. While it lowered oxidized LDL and malondialdehyde levels, it did not significantly impact blood pressure, glucose levels, lipid profiles, or inflammation markers like C-reactive protein and interleukin-6 [R].

Cranberry juice significantly enhanced plasma antioxidant capacity and vitamin C levels in a study where volunteers consumed 500 ml after fasting overnight. These effects peaked between 60-120 minutes post-consumption. In contrast, blueberry juice, despite its high phenolic content but lower vitamin C levels, did not show similar antioxidant improvements, indicating the pivotal role of vitamin C in boosting plasma antioxidant capacity [R].

In a double-blind study, 16 Polish rowers received either 1200 mg of cranberry extract or a placebo for 6 weeks. Cranberry supplementation significantly enhanced antioxidant levels but not other exercise-related biomarkers [R].

11

Cherries

IMPACT 3 / 5

EVIDENCE 2 / 5

How to implement

Incorporate a serving of cherries, which is about 1 cup or 21 cherries, into your daily diet. You can eat them fresh, frozen, dried, or in juice form. If opting for juice, ensure it's 100% cherry juice without added sugars.

Description

Cherries are a stone fruit that comes in numerous varieties. They are a natural source of antioxidants and anti-inflammatory compounds. They may help reduce inflammation, promote better sleep, and support overall health.

A cherry is a stone fruit with numerous varieties. Cherries are native to parts of Europe and Asia [R, R].

People consume sweet cherries (*Prunus avium*) and tart cherries (*Prunus cerasus*) to help with [R]:

- Gout
- Exercise recovery
- Blood sugar control
- Blood pressure

How it helps

A study suggests that daily consumption of tart cherry juice for 12 weeks can enhance DNA repair activity and reduce inflammation markers like CRP and oxidative stress markers like MDA in older adults, potentially aiding in the management of cardiovascular risk factors [R].

MCC supplementation enhanced muscle recovery and strength retention post-exercise, upregulated antioxidant gene and protein expression, and increased phenolic acid levels in plasma, highlighting its potential benefits in reducing exercise-induced oxidative stress and improving muscle function [R].

Another study demonstrated that tart cherry juice, rich in anthocyanins, enhances the ability of older adults to resist oxidative damage, evidenced by reduced plasma F2-isoprostane levels and lower oxidative damage to nucleic acids during acute stress [R].

Consuming Jerte Valley cherry cultivars enhanced sleep quality and increased urinary levels of 6-sulfatoxymelatonin and total antioxidant capacity in middle-aged and elderly participants [R].

12

Selenium Supplements

IMPACT 2 / 5

EVIDENCE 3 / 5

How to implement

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

TYPICAL STARTING DOSE

50 mcg

Description

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

Selenium supports [R]:

- Reproduction
- Thyroid function
- DNA production
- Immune response

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

How it helps

A meta-analysis of 13 studies found that selenium supplementation had positive effects on reducing oxidative stress. It helps by [R]:

- Increasing total antioxidant capacity
- Increasing glutathione peroxidase levels
- Decreasing malonaldehyde levels

13

N-acetylcysteine (NAC)

IMPACT 2 / 5

EVIDENCE 3 / 5

How to implement

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

TYPICAL STARTING DOSE

1200 mg

Description

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

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

People take NAC to potentially support [R, R]:

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

How it helps

A meta-analysis of 28 studies concluded that supplementation with NAC lowers homocysteine (by 1.45 pg/mL), IL-8 (by 2.56 pg/mL), and MDA (by 1.44 µmol/L), and TNF-α and IL-6 after sensitivity analysis [R].

NAC helps replenish glutathione, one of the body's most potent antioxidants.

14

Curcumin

IMPACT 2 / 5

EVIDENCE 3 / 5

How to implement

Take a 500 mg curcumin supplement daily with food. To enhance absorption, take it with a meal that contains fats or oils since curcumin is fat-soluble.

TYPICAL STARTING DOSE

500 mg

Description

Curcumin is a compound found in turmeric known for its anti-inflammatory and antioxidant properties. It has been studied for its potential to reduce inflammation, support joint health, and contribute to overall well-being.

Turmeric is a yellow spice from India. It may reduce inflammation and oxidative stress [R].

The most important active compound in turmeric is **curcumin.** People use curcumin for [R, R, R, R, R, R]:

- Joint pain
- Hay fever
- Mood
- High blood sugar
- Gut health
- Liver health

How it helps

Curcumin, the active component found in turmeric, has strong antioxidant properties. It can decrease inflammation and oxidative stress by neutralizing free radicals and stimulating the body's own antioxidant defenses.

Curcumin supplementation (at least 600 mg/day for at least 4 weeks) may help with oxidative stress by [R]:

- Reducing malondialdehyde (MDA) levels, a marker of oxidative damage
- Increasing the activity of superoxide dismutase (SOD), an antioxidant enzyme

The benefits may be greater when combined with piperine, a compound in black pepper.

Please note: *curcumin may interfere with iron absorption due to its iron-chelating properties, potentially exacerbating anemia or making it harder to manage. If you have anemia, consult your healthcare provider before using curcumin or turmeric supplements* [R, R, R].

15

Omega-3 (Fish Oil)

IMPACT 2 / 5

EVIDENCE 2 / 5

How to implement

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

TYPICAL STARTING DOSE

2000 mg

Description

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

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

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

Fatty fish are rich in EPA and DHA. They include [R]:

- Salmon
- Tuna
- Herring
- Sardines

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

How it helps

A meta-analysis of 39 trials (2,875 participants) assessed omega-3 fatty acid (omega-3 FAs) supplementation's impact on oxidative stress. Omega-3 FAs increased serum total antioxidant capacity (TAC) and glutathione peroxidase (GPx) activity while reducing malondialdehyde (MDA). No significant effects were observed on nitric oxide (NO), reduced glutathione (GSH), superoxide dismutase (SOD), and catalase (CAT). Omega-3 FAs enhanced antioxidant defenses against reactive oxygen species (ROS) [R].

We conducted a meta-analysis of nine randomized controlled trials (RCTs) exploring the impact of omega-3 fatty acids (omega-3 FAs) combined with vitamin E on oxidative stress (OS) parameters. The combination significantly improved total antioxidant capacity (TAC) and nitric oxide (NO) levels while reducing malondialdehyde (MDA). However, there were no significant differences in glutathione (GSH), superoxide dismutase (SOD) activity, and catalase (CAT) activity between the groups [R].