

Executive Function

DNA Health Report

REPORT CATEGORY —



COGNITION

Sample Client

Report date: 15 January 2026

Powered by

 omicsege

Table of Contents

03 How this works

- 04 Impact
- 05 Evidence
- 06 Some things to keep in mind

07 Introduction

08 Your genetics

10 Your recommendations

96 Next Steps

- 96 Your Lab Results

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

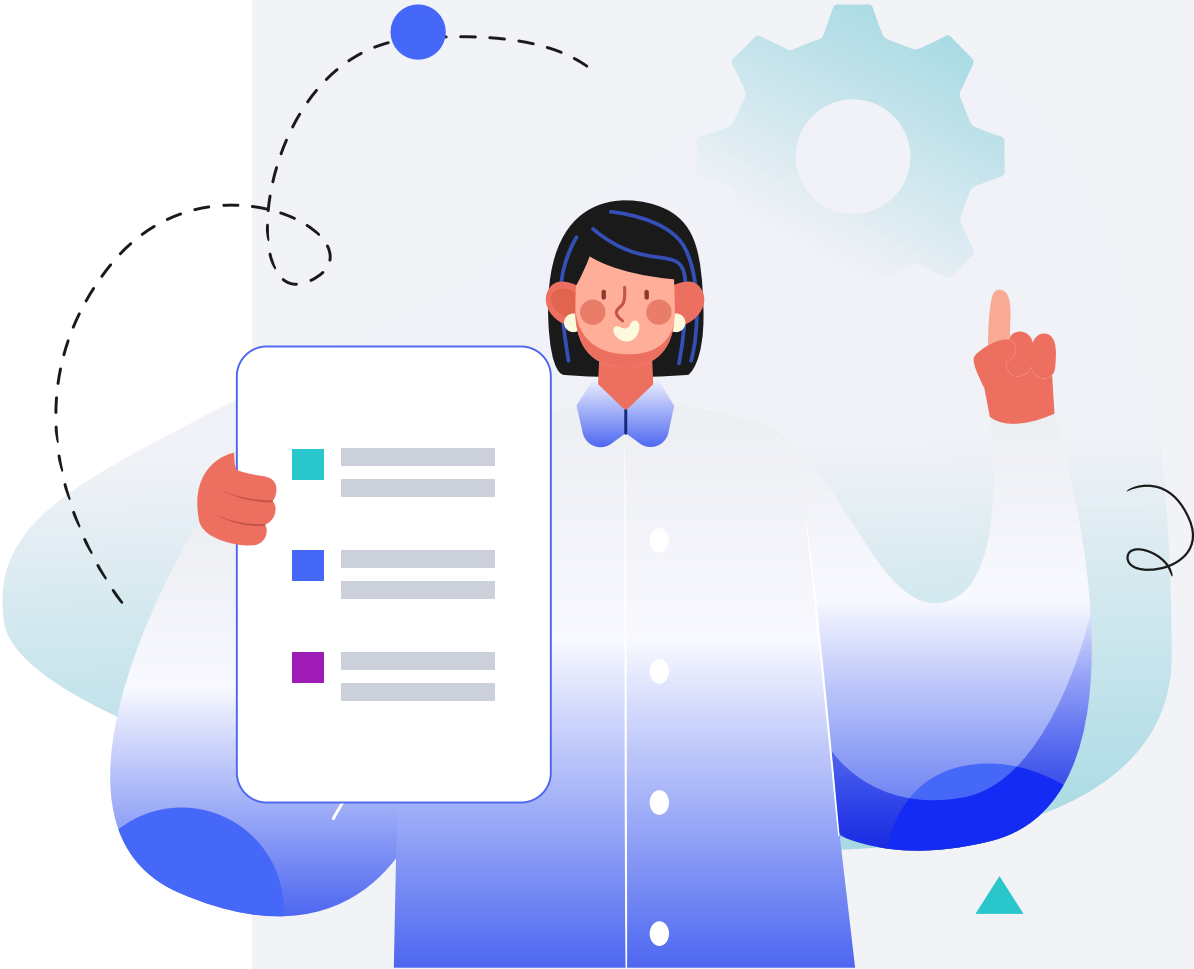
Male

HEIGHT

5ft 5" 165cm

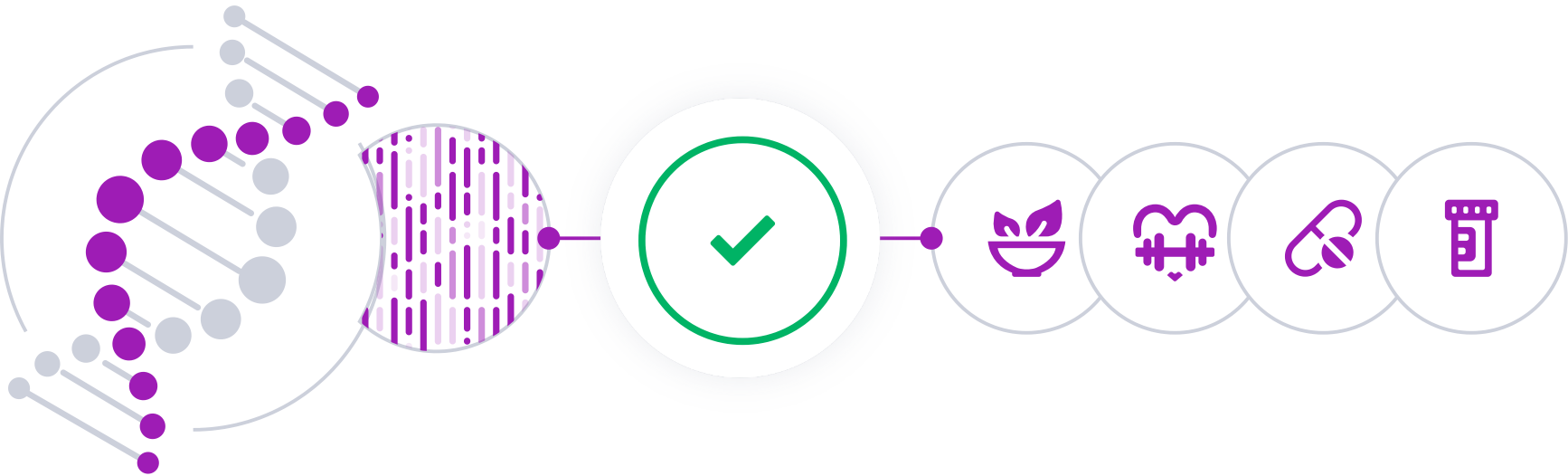
WEIGHT

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.

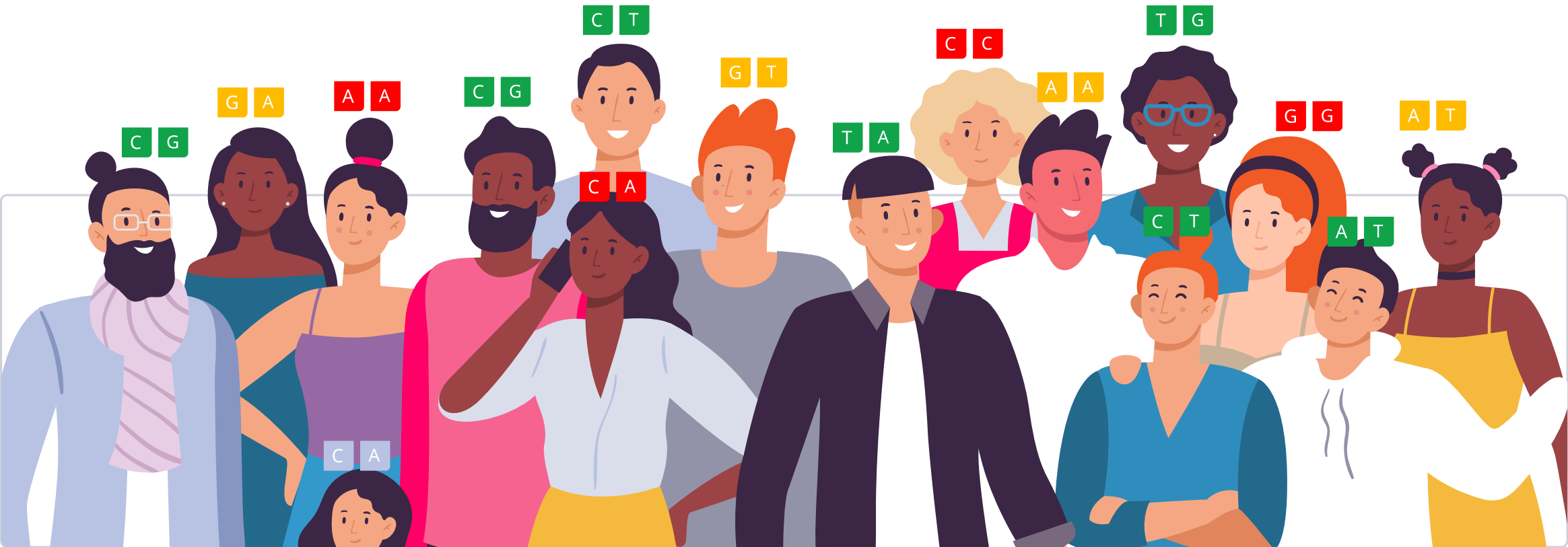


Similarly, our Trait Reports look at how your DNA influences your traits.



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

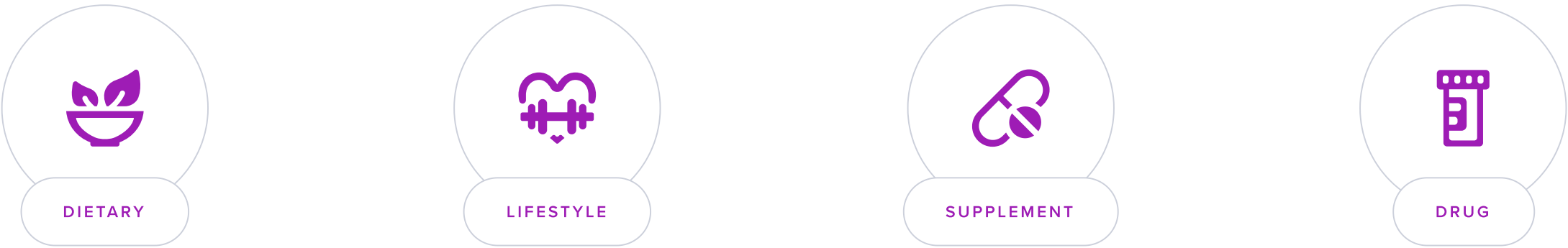
You have 2 risk alleles

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

Executive function refers to a **set of cognitive processes that drive goal-oriented behavior**. These involve the abilities to think flexibly, make decisions and solve problems [\[R\]](#), [\[R\]](#).

Executive function enables us to stay focused, achieve goals, adapt to changed circumstances, meet new challenges, and manage our interactions with others. It helps us succeed in school, at work and in relationships [\[R\]](#).

Key components of executive function are [\[R\]](#), [\[R\]](#):

- **Inhibitory control:** being able to control our attention, behavior, thoughts, and emotions. Inhibitory control helps us stay focused while ignoring distractions.
- **Working memory:** holding information temporarily in our mind while we are using it for tasks like reasoning and learning. Working memory helps us use information from the past to plan action in the future.
- **Flexible thinking:** being able to switch between tasks or perspectives. Also known as cognitive flexibility. Flexible thinking helps us think outside the box to adapt to new situations.

Executive function develops over childhood and adolescence, and tends to peak in early adulthood [\[R\]](#), [\[R\]](#), [\[R\]](#).

Impaired executive function has been linked to various conditions, including addiction, ADHD, depression and OCD [\[R\]](#), [\[R\]](#), [\[R\]](#).

Factors Affecting Executive Function

 PERSONALIZED TO GENES

Based on the variants we looked at, you are predisposed to typical executive function. However, cognitive abilities like planning, decision-making, and self-control are significantly shaped by education, practice, stress levels, sleep, and mental health.

Executive function refers to a **set of cognitive processes that drive goal-oriented behavior**. These include the abilities to think flexibly, focus, plan and solve problems [\[R, R\]](#).

Up to 80-100% of differences in people’s executive functions may be **due to genetics!** The genes that are involved in executive function often affect **brain function and brain chemical messengers**, such as dopamine, serotonin, and acetylcholine [\[R, R, R, R\]](#).

Other factors that influence executive function include [\[R, R, R, R, R, R\]](#):

- Aging
- Lack of sleep
- Lack of physical activity
- High-stress environments
- Poor nutrition
- Addiction
- Disease or disorders such as: Alzheimer's, Parkinson’s, ADHD, autism spectrum disorder, anxiety and depression

Things you can do to improve your executive function include [\[R, R, R, R, R, R, R\]](#):

- Getting enough high quality sleep
- Staying physically active
- Eating a healthy nutritious diet
- Practicing mindfulness to improve focus.



Predisposed to typical executive function based on 6,779,636 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
PLEKHG1	rs140578927	GG
HUNK	rs76885705	AA
GSDMB	rs112779146	CC
ELFN2	rs144501203	GG
BARHL2	rs116496126	AA
ADRA1A	rs117710302	TT
TASP1	rs146628683	CC
METTL11B	rs2990655	GG
BIN1	rs3845674	GG
DPPA2	rs1163379	CC
/	rs10912172	CC
EGFLAM	rs4562066	CT
ARL4A	rs2357052	AT
LRRTM4	rs34996456	GA
ST8SIA1	rs11046348	GC
ADARB2	rs148353837	GG
CRYBB2	rs79191028	CC
IKZF1	rs186807222	GG
BHLHE40	rs73095926	GG
NELFCD	rs16982556	CC
C9ORF116	rs62573681	CC
RIMS1	rs72932157	TT
NUAK1	rs10507203	GG
MYO5C	rs12915773	CC
PDE6H	rs73300930	TT
RAPGEF1	rs11243356	CC
IGFBP3	rs11763946	AA
PODXL	rs1421361	CC

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

- Engaging your brain with games of strategy, puzzles or learning something new.

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	Sleep for 7+ Hours	2	Cognitive Training15 minutes
3	Social Activity1 hour	4	Avoid Illicit Drugs
5	Relaxation Techniques30 minutes	6	Exercise At Least One Hour a Day1 hour
7	Aerobic Exercise (Cardio)1 hour	8	Transcutaneous Auricular Vagal Nerve Stimulation1 hour
9	Biofeedback	10	Walking30 minutes
11	Tabletop Games30 minutes	12	Goal Management Training1 hour
13	Avoid Ecstasy	14	N-Back Training20 minutes
15	Transcranial Direct Current Stimulation (tDCS)30 minutes	16	Mindfulness Meditation30 minutes
17	Repetitive Transcranial Magnetic Stimulation	18	Dual Task Training10 minutes
19	Avoid Aluminum Exposure	20	Qigong1 hour
21	Tai Chi1 hour	22	Nerve Stimulation30 minutes
23	Mediterranean Diet	24	Meditation30 minutes
25	Avoid Air Pollution	26	Take Naps20 minutes
27	Yoga30 minutes	28	Strength Training1 hour
29	Avoid Cannabis	30	Pycnogenol100 mg

31	Drink at Least 8 Glasses of Water a Day		32	Antioxidant Supplements	
33	Alpha-GPC Choline	300 mg	34	Avena Sativa	100 mg
35	Practice Exercise Snacks	1 minutesute	36	Blueberries	
37	Omega-3 (Fish Oil)	2000 mg	38	Turmeric	
39	Mindfulness-Based Cognitive Therapy (MBCT)	2 hours	40	Regular Sleep Schedule	
41	American Ginseng	200 mg	42	Pyrroloquinoline Quinone (PQQ)	20 mg
43	L-Theanine	100 mg	44	Dietary Polyphenols	
45	L-Tyrosine	500 mg	46	MCT Oil	
47	Mindfulness	30 minutes	48	Bacognize (Bacopa monnieri)	300 mg
49	Maintain Optimal Vitamin D Levels	1000 iu	50	Avoid Arsenic Exposure	
51	Behavioral Sleep Extension		52	Rhodiola and Ginkgo	200 mg
53	Curcumin Longvida	1 g	54	Pilates	30 minutes
55	Enzogenol	200 mg	56	Mindfulness Yoga	
57	Focused Attention Meditation	20 minutes	58	Mulberry	
59	Sulforaphane	30 mg	60	L-Theanine and Caffeine	100 mg
61	Mindfulness-Based Stress Reduction (MBSR)	2 hours	62	Hatha Yoga	1 hour
63	Acceptance and Commitment Therapy (ACT)		64	Tart Cherries	
65	Sage Extract	300 mg	66	Fucoxanthin And Guarana	
67	Histidine	500 mg	68	Orange Juice	
69	Phosphatidylserine	300 mg	70	Rhodiola	500 mg

71	Low-Glutamate Diet		72	Coffee Cherry Extract	100 mg
73	Desert Olive Tree Pearls		74	Citicoline (CDP Choline)	250 mg
75	Neurofeedback	1 hour	76	Pet Therapy	30 minutes
77	Ginkgo	120 mg	78	Avoid PFAS Exposure	
79	Tennis		80	Progressive Muscle Relaxation	10 minutes
81	Green Coffee Extract	400 mg	82	BFR and Walking	15 minutes
83	Curcumin	500 mg	84	B Vitamins	
85	Ashwagandha	120 mg	86	Avocado	
87	Dietary Omega-3 Fatty Acids		88	Spirulina	500 mg
89	Choline Supplements	425 mg	90	Blood Flow Restriction Training	15 minutes
91	Airway Muscle Training	30 minutes	92	Fucoxanthin	3 mg
93	Agmatine	1 g			

1

Sleep for 7+ Hours

IMPACT

4 / 5

EVIDENCE

5 / 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

Sleep deprivation (for 24-48h) may reduce cognition including [\[R, R, R, R, R, R, R\]](#):

- **Executive function**
- Attention
- Long-term memory
- Alertness

Both very long (9 h or more) and very short (5h or less) sleep may also reduce executive function [\[R\]](#).

In line with this, **executive function** and working memory may drop due to [\[R, R, R, R, R, R, R\]](#):

- Insomnia
- Sleep apnea

Standard therapy for sleep apnea may reduce its negative effects [\[R, R, R, R\]](#).

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

Short naps, even during night shifts, may also improve executive function. However, not all studies found this benefit [\[R, R, R\]](#).

2

Cognitive Training

IMPACT

4 / 5

EVIDENCE

4 / 5

How to implement

Engage in exercises that challenge your brain for at least 15 minutes per day, five days a week. This can include puzzles, memory games, learning a new language, or playing a musical instrument.

TYPICAL STARTING DOSE

15 minutes

Description

Cognitive training involves structured exercises and activities designed to improve specific cognitive functions, such as memory, attention, and problem-solving skills. It can be beneficial for individuals looking to enhance cognitive abilities or address cognitive challenges associated with conditions like Alzheimer's disease or attention deficit hyperactivity disorder (ADHD).

Cognitive training programs guide you through challenging tasks. They aim to support some cognitive functions, including [\[R\]](#):

- Memory
- Attention
- Problem-solving skills

Some scientists like to think of the brain as a muscle. They say people should “use it or lose it.” In line with this, cognitive training can be considered “brain exercise.” It is often provided through computer programs [\[R\]](#), [\[R\]](#).

How it helps

Cognitive training may offer both immediate and long-term benefits for executive function and working memory [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

Prevention and reduction of **age-related cognitive decline** may be especially helpful. Useful training strategies include:

- Goal management training [\[R\]](#)
- Dual-task training [\[R\]](#)
- Tabletop games [\[R\]](#)

Using a computer or smartphone to train (at least 3x/week, for at least 8 weeks) may also help. However, more high-quality studies are needed to confirm these benefits [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

Cognitive training may also improve executive function and working memory in people recovering from a **stroke, breast cancer, or depression** [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

Combining cognitive training and exercise may be particularly helpful in [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Older adults with cognitive decline
- People recovering from a stroke

Cognitive training may help by stimulating the brain. It may improve brain health and functioning in the long term, similar to exercising a muscle [\[R\]](#), [\[R\]](#), [\[R\]](#).

3



Social Activity

IMPACT

4 / 5

EVIDENCE

3 / 5

How to implement

Participate in group activities or gatherings with friends, family, or community members at least twice a week. This could include joining clubs, attending local events, or scheduling regular outings with friends. Aim for these social engagements to last at least an hour each time to foster meaningful connections and conversations.

TYPICAL STARTING DOSE

1 hour

Description

Engaging in social activities, such as spending time with friends and family or participating in group events, can have numerous mental and emotional health benefits. It helps reduce feelings of loneliness, enhances mood, and promotes a sense of belonging and well-being.

Social activities involve physical and mental activities with others that you enjoy and find meaningful. There are plenty of ways to stay socially active and maintain social well-being as you age.

Research has shown that a socially active lifestyle [\[R\]](#):

- Makes you less likely to develop certain chronic conditions.
- May promote a longer lifespan.
- Can improve mood and mental health.
- Can improve memory and other aspects of cognition.

How it helps

Being more socially active is associated with better executive function later in life [\[R\]](#), [\[R\]](#).

In line with this, tabletop games may improve executive function in healthy older adults. They may help by combining cognitive training and interaction with others [\[R\]](#).

4



Avoid Illicit Drugs

IMPACT

4 / 5

EVIDENCE

3 / 5

How to implement

Refrain from using any illegal substances, including but not limited to, narcotics, stimulants, hallucinogens, and cannabis where it's not legalized. This means not purchasing, possessing, or consuming these substances in any form or amount. Commit to this practice indefinitely for long-term health benefits.

Description

Avoiding the use of illicit drugs is essential for preserving physical and mental health, as these substances can lead to addiction, mental health disorders, and other physical health issues. Abstaining from their use supports a safer and healthier lifestyle.

Illicit drugs are highly addictive, illegal drugs. Examples include **marijuana, cocaine, meth, and MDMA (ecstasy)**. The term can also refer to a non-medical use of drugs that are legally available (e.g., medical marijuana in some countries and states) [\[R\]](#).

Illicit drug use can have a **devastating impact on all aspects of your health and wellbeing**. It can lead to [\[R\]](#):

- Dependence and addiction
- Injury and accidents
- Health and sleep problems
- Problems in family and social life

How it helps

Recreational use of [ecstasy](#) is associated with worse executive function including [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Working memory
- Attention shifting

Long-term regular use of cannabis (≥2 years, ≥4 days/week) may also worsen executive function [\[R\]](#).

 PERSONALIZED TO YOUR GENES

Cannabis may have a stronger impact on executive function in people with your **COMT** gene variant [\[R\]](#).

YOUR GENETIC VARIANTS			
GENE	SNP	GENOTYPE	EVIDENCE
COMT	rs4680	AG	

5



Relaxation Techniques

IMPACT

4 / 5

EVIDENCE

3 / 5

How to implement

Incorporate relaxation techniques such as deep breathing exercises, meditation, or yoga into your daily routine. Spend at least 15-30 minutes each day practicing one of these techniques, preferably in a quiet, comfortable space without interruptions.

TYPICAL STARTING DOSE

30 minutes

Description

Relaxation techniques encompass various methods like deep breathing, yoga, meditation, and progressive muscle relaxation, aimed at reducing stress and promoting mental and physical relaxation. Practicing these techniques regularly can help manage stress, improve mental clarity, and enhance overall emotional well-being.

We all get stressed from time to time.

[Stress](#) can help you deal with a challenge or avoid danger. However, **it’s not healthy to be stressed for a long time** [\[R, R\]](#).

Relaxation techniques such as [yoga](#) and [meditation](#) can relieve stress in different ways. Most of them focus on breathing and help you get rid of negative thoughts and emotions [\[R\]](#).

People use relaxation techniques to improve conditions like [\[R, R, R\]](#):

- Anxiety
- Depression
- Chronic pain

Progressive muscle relaxation is another relaxation technique. In this technique, you focus on tensing and relaxing different parts of your body. It is common to start with the toes and slowly work your way up to the neck and head [\[R, R\]](#).

Autogenic training is a relaxation technique that a person may carry out on their own. It uses exercises that take the mind’s attention to bodily sensations such as warmth and heaviness [\[R, R\]](#).

How it helps

Stress may worsen working memory, impulse control, and cognitive flexibility. Stressful situations, especially early in life, include [\[R, R, R\]](#):

- Insufficient or absent parental care
- Threat to one's physical well-being

Stress may affect executive function by increasing [\[R\]](#):

- Inflammation
- [Cortisol](#) levels

Relaxation techniques like **yoga and meditation** may relieve stress and improve executive function [\[R, R, R, R, R, R, R\]](#).



PERSONALIZED TO YOUR GENES

Stress may have a stronger impact on executive function in people with your *COMT* gene variant [R, R, R, R].
Stress may have a stronger impact on executive function in people with your *DRD2* gene variant [R, R].

YOUR GENETIC VARIANTS

GENE	SNP	GENOTYPE	EVIDENCE
COMT	rs4680	AG	
GENE	SNP	GENOTYPE	EVIDENCE
DRD2	rs6277	GG	

6



Exercise At Least One Hour a Day

IMPACT

3 / 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

Regular exercise (at least 30 min/day, 3-4x /week for at least 4 weeks) may improve executive function in children, adolescents, and adults [\[R, R, R, R, R, R, R, R\]](#).

Regular exercise may offer greater benefits in those who are overweight and when combined with cognitive training. **Those with ADHD and autism may also benefit** [\[R, R, R, R, R, R, R\]](#).

However, not all studies found these benefits in people with cognitive impairment [\[R, R, R, R, R\]](#).

Combination with **cognitive training** may boost exercise benefits [\[R, R, R, R\]](#).

Exercise may also improve executive function and working memory in people recovering from a stroke and those with [\[R, R, R, R, R\]](#):

- Depression
- Neurological disorders

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

- Improving brain blood flow
- Reducing inflammation

7

Aerobic Exercise (Cardio)

IMPACT3 / 5

EVIDENCE4 / 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

Regular cardio exercise (3-4x/week for at least 4 weeks) may improve [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- **Executive function**
- Working memory
- Task switching
- Impulse control

People with mild cognitive impairment may also benefit from cardio activities like dancing. Cardio exercise may offer similar benefits to mind-body exercises or cognitive training in older people [\[R\]](#), [\[R\]](#), [\[R\]](#).

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

- Improving brain blood flow
- Reducing inflammation

8



Transcutaneous Auricular Vagal Nerve Stimulation

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Attach the auricular vagal nerve stimulation device to your ear, specifically targeting the concha part for 15 to 60 minutes per day. This can be done while relaxing or performing sedentary activities. It's recommended to follow this routine consistently for at least a few weeks to evaluate its effects on your condition.

TYPICAL STARTING DOSE

1 hour

Description

Transcutaneous Auricular Vagal Nerve Stimulation (taVNS) involves stimulating the vagus nerve through the outer ear. It is explored for its potential to reduce stress, anxiety, and inflammation and improve mood and overall well-being.

How it helps

Transcutaneous auricular vagal nerve stimulation (taVNS) may improve executive function. Stimulation at the tragus is more effective than stimulation at the cymba concha [\[R\]](#)

9



Biofeedback

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Attend biofeedback sessions once or twice a week for about 8 to 10 weeks. During these sessions, a therapist will guide you through exercises to control different body functions, such as heart rate or muscle tension, using monitors that provide feedback on your physiological state. Practice the techniques learned during sessions at home daily to improve symptoms and manage your condition.

Description

Biofeedback is a type of therapy that teaches people how to control certain body functions, such as heart rate, blood pressure, and muscle tension. It can be used to treat a variety of conditions, including stress, anxiety, and chronic pain.

Biofeedback is a kind of “**brain training**” in which sensors are attached to your body. They detect information like your heart rate, temperature, and breathing rate. By seeing this information, you may be better able to control these functions [\[R\]](#), [\[R\]](#).

Biofeedback is used to help with [\[R\]](#), [\[R\]](#):

- Gut problems
- Chronic pain
- Migraines
- Insomnia
- Attention

[Neurofeedback](#) is a form of biofeedback that measures brain activity in real time [\[R\]](#).

How it helps

A meta-analysis of 11 studies concluded that theta neurofeedback training improves working memory and episodic memory [\[R\]](#).

Biofeedback may help by increasing one's awareness of physiological responses, enabling control over them.

10



Walking

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

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

TYPICAL STARTING DOSE

30 minutes

Description

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

How it helps

Walking may improve set-shifting and inhibition in sedentary older persons without cognitive impairment but may have no effect on those with cognitive impairment [\[R\]](#).

11



Tabletop Games

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Incorporate playing tabletop games into your routine for at least 30 minutes, three times a week. Choose games that encourage strategic thinking and social interaction for maximum benefit.

TYPICAL STARTING DOSE

30 minutes

Description

Tabletop games are board games, card games, or role-playing games played on a tabletop surface. They provide opportunities for social interaction, cognitive stimulation, and entertainment, contributing to mental and social well-being.

How it helps

Tabletop games, which combine cognitive training and interpersonal interactions, may improve executive function in cognitively healthy older adults [\[R\]](#).

12



Goal Management Training

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Goal Management Training involves dedicating 1-2 hours weekly to structured sessions that teach methods for setting, monitoring, achieving, and evaluating personal goals. These sessions can be guided by a therapist or followed through self-guided manuals or online resources, and typically span over 7 to 8 weeks.

TYPICAL STARTING DOSE

1 hour

Description

Goal Management Training is a cognitive rehabilitation technique designed to improve executive functions and help individuals with cognitive impairments, such as brain injuries or neurodegenerative disorders, regain their ability to set and achieve goals.

How it helps

Goal management training improves executive function according to the analysis of 21 studies [\[R, R\]](#).

13



Avoid Ecstasy

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Refrain from using any form of ecstasy, including pills, powder, or crystals, at all times to prevent its harmful effects on your health.

Description

Avoiding ecstasy (MDMA) can help prevent potential short-term and long-term health risks associated with this illicit drug, such as neurotoxicity, mental health issues, and addiction.

How it helps

Recreational use of ecstasy may be associated with worse performance in executive function domains such as [\[R, R, R\]](#):

- Working memory
- Visuospatial tasks
- Updating
- Attention shifting
- Access to long-term memory

14



N-Back Training

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

To implement n-back training, practice this cognitive exercise for 20 minutes daily over a period of at least 4 weeks. Use a computer program or mobile app designed specifically for n-back tasks, choosing a difficulty level that challenges you without causing frustration.

TYPICAL STARTING DOSE
20 minutes

Description

N-back training is a cognitive training exercise that involves memory and attention tasks, which may help enhance working memory, cognitive skills, and mental sharpness when practiced regularly.

How it helps

Two meta-analyses (the largest one with 33 studies) concluded that N-back training improves working memory, fluid intelligence, and cognitive control. N-back training improved working memory in both healthy individuals and those with traumatic brain injury in a non-placebo-controlled trial of 35 participants. Moreover, N-back training (10 sessions) was more effective than non-adaptive 1-back training at improving working memory in a non-placebo-controlled trial of 60 high worriers. However, N-back training for 8 weeks failed to improve working memory or cognition in a non-placebo-controlled trial of 55 middle-aged participants [[R](#), [R](#), [R](#), [R](#)].

N-back training may help by enhancing your ability to control attention and manage multiple tasks.

15



Transcranial Direct Current Stimulation (tDCS)

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Use a tDCS device for 20 to 30 minutes per session, targeting specific brain areas depending on the desired outcome. Sessions can be daily or a few times a week, under the guidance of a medical professional or trained specialist to ensure safety and effectiveness.

TYPICAL STARTING DOSE
30 minutes

Description

Transcranial Direct Current Stimulation (tDCS) is a non-invasive brain stimulation technique that uses a low electrical current to modulate neural activity. It has been investigated for its potential in cognitive enhancement, mood regulation, and pain management.

How it helps

tDCS (anode with 2 mA current density) over the left dorsolateral prefrontal cortex (DLPFC) may improve executive function [[R](#), [R](#)].

16



Mindfulness Meditation

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Practice mindfulness meditation for 10-20 minutes daily. Find a quiet, comfortable place to sit or lie down, then focus on your breath, observing thoughts and sensations without judgment. Consistency is key, so try to incorporate it into your daily routine, perhaps in the morning or before bed.

TYPICAL STARTING DOSE

30 minutes

Description

Mindfulness meditation involves focused attention on the breath or a specific point of focus to cultivate mindfulness and reduce stress. Regular meditation practice is associated with improved mental clarity, emotional regulation, and overall well-being.

How it helps

Mindfulness meditation may improve cognitive function, especially executive function and working memory. Group mindfulness meditation has small but effects on executive function and it subdomains inhibition, working memory, and verbal fluency [\[R, R\]](#).

Mindfulness meditation programs may help by increasing connectivity between brain regions associated with executive function [\[R\]](#).

17



Repetitive Transcranial Magnetic Stimulation

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Attend sessions at a certified medical facility, where a healthcare professional will use a coil placed near your head to generate brief magnetic pulses. Typically, sessions occur 5 days a week for 4-6 weeks.

Description

Repetitive transcranial magnetic stimulation (rTMS) is a noninvasive procedure that stimulates the brain to improve symptoms of [\[R\]](#), [\[R\]](#):

- Depression
- Muscle disease
- Parkinson's disease

rTMS delivers several magnetic pulses through an electromagnetic coil placed on the scalp. The pulses stimulate the region of the brain involved in mood and depression [\[R\]](#), [\[R\]](#).

This technique is used in people who don’t respond to standard care. rTMS is generally painless and safe when performed by trained professionals [\[R\]](#), [\[R\]](#).

How it helps

High-frequency repetitive Transcranial Magnetic Stimulation (HF-rTMS, 80-100% intensity) over the left dorsolateral prefrontal cortex (DLPFC) may improve executive function [\[R\]](#), [\[R\]](#).

rTMS at the DLPFC may also improve working memory in people with schizophrenia and Parkinson’s disease [\[R\]](#), [\[R\]](#).

The combination of rTMS and cognitive training may offer greater benefits in improving executive function and working memory than either alone in people with post-stroke cognitive impairment [\[R\]](#).

18



Dual Task Training

IMPACT3 / 5

EVIDENCE3 / 5

How to implement

Incorporate dual-task training into your routine by performing physical exercises (such as walking or balancing) while simultaneously engaging in a cognitive task (like counting backwards, solving math problems, or reciting a speech). Start with sessions of 10-15 minutes, 3 times a week, gradually increasing difficulty and duration as you become more comfortable with the tasks.

TYPICAL STARTING DOSE
10 minutes

Description

Dual task training involves simultaneously performing two cognitive or physical tasks to enhance coordination and cognitive function. It is often used as a rehabilitation technique for improving mobility and cognitive skills in conditions like Parkinson's disease.

How it helps

Dual-task training may improve executive function according to a meta-analysis of 21 studies and 2,221 people [\[R\]](#).

A study on the effects of dual-task training with blood flow restriction (20 min/session, 3 sessions/week for 8 weeks) on cognitive functions, muscle quality, and circulatory biomarkers in elderly women found that including BFR in training resulted in greater physiological and psychological responses. This suggests a potential improvement in cognitive functions when BFR is incorporated into exercise routines for older adults [\[R\]](#).

19



Avoid Aluminum Exposure

IMPACT

3 / 5

EVIDENCE

2 / 5

How to implement

Use aluminum-free deodorants and avoid cooking or storing food in aluminum foil or aluminum cookware. Instead, opt for glass, stainless steel, or ceramic options for cooking and storing food. Check labels on over-the-counter medications, such as antacids, for aluminum compounds and choose aluminum-free alternatives. Aim to do this consistently for the long term to effectively minimize your aluminum exposure.

Description

Aluminum is a common metal used in manufacturing and food containers. Humans accidentally consume trace amounts of it on a daily basis. High levels can be found in the environment, certain workplaces (e.g., transportation industries), deodorants, and contaminated foods. Exposure to high levels of aluminum can potentially lead to aluminum toxicity.

Aluminum is a lightweight metal. It is **the most abundant metal in the Earth's crust** and is naturally found in the environment. It is usually used for food preservation, cans, cookware, and cars [\[R\]](#).

Aluminum-containing products are major sources of aluminum exposure including [\[R\]](#):

- Antacids (heartburn drugs)
- Food additives
- Cosmetics (e.g., antiperspirants, makeup foundations, toothpaste)

Excessive aluminum exposure may increase [oxidative stress](#) and contribute to various health issues, such as [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Neurological disorders
- Cognitive problems
- Bone disorders
- Breast cancer

How it helps

Exposure to aluminum is associated with worse working memory. Aluminum may increase oxidative stress and harm brain cells [\[R\]](#).

20



Qigong

IMPACT

2 / 5

EVIDENCE

4 / 5

How to implement

Practice Qigong exercises for 30 to 60 minutes daily, ideally in the morning to invigorate your body for the day ahead or in the evening to alleviate stress. Choose a quiet, comfortable space where you can move freely without distractions. Incorporating this routine consistently can lead to better physical and mental well-being over time.

TYPICAL STARTING DOSE

1 hour

Description

Qigong is a mind-body practice originating from traditional Chinese medicine. It involves gentle movements, meditation, and controlled breathing to promote relaxation, reduce stress, and improve physical and mental well-being.

Qigong is a traditional Chinese practice that combines movement, breath control, and meditation. It aims to cultivate and balance the body's vital energy, known as "qi" or "chi."

People often practice qigong for stress reduction, improving posture, increasing flexibility, and promoting overall wellness.

Baduanjin qigong is a type of medical qigong focused on health improvement, unlike religious or martial types.

How it helps

Practicing mind-body exercises may improve executive function, attention, and short-term memory. People with mild cognitive impairment may also benefit. One example is **Baduanjin qigong** practiced for at least 16 weeks [\[R, R, R, R\]](#).

Mind-body exercises may help by [\[R, R\]](#):

- Stimulating brain regions linked to executive function
- Improving brain blood flow
- Increasing [BDNF](#) levels

21



Tai Chi

IMPACT

2 / 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

Practicing mind-body exercises may improve executive function, attention, and short-term memory. People with mild cognitive impairment may also benefit. The most common example is tai chi (30-60 min, 3x/week at least for 12 weeks) [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

Tai chi may help by [\[R\]](#), [\[R\]](#):

- Stimulating brain regions linked to executive function
- Improving brain blood flow
- Increasing [BDNF](#) levels

22



Nerve Stimulation

IMPACT

2 / 5

EVIDENCE

4 / 5

How to implement

Nerve stimulation can be implemented by daily sessions of 15-30 minutes using a device specifically designed for this purpose. These devices often use electrical currents to stimulate nerves through the skin, which can be adjusted in intensity according to comfort. It's important to consult a healthcare provider for guidance on the specific type of nerve stimulation that may be most beneficial for your condition.

TYPICAL STARTING DOSE

30 minutes

Description

Nerve stimulation techniques involve the use of electrical impulses, like transcutaneous electrical nerve stimulation (TENS) or other methods to activate nerves, potentially providing relief from chronic pain, improving muscle function, and aiding in physical therapy.

Health professionals can stimulate your nerves using different strategies [\[R\]](#).

Many strategies use magnetic fields or electric currents. Examples include [\[R\]](#), [\[R\]](#), [\[R\]](#):

- [Transcutaneous electrical nerve stimulation](#) (TENS)
- Transcranial direct current stimulation (tDCS)
- Transcranial magnetic stimulation (TMS)
- Transcutaneous auricular vagus nerve stimulation (taVNS)

Nerve stimulation may improve [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Cognition
- Mood
- Pain
- Seizures
- Tinnitus

How it helps

Nerve stimulation may slightly improve executive function. People with Alzheimer’s disease and other neurological disorders may also benefit. Studied modalities include [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Repetitive transcranial magnetic stimulation (rTMS)
- Transcranial direct current stimulation (tDCS)
- Transcutaneous auricular vagus nerve stimulation (taVNS)

Combining rTMS and cognitive training may offer greater benefits [\[R\]](#).

Please note: Nerve stimulation may not be safe for people that have metal implanted devices, have epilepsy, or are pregnant. Some types of nerve stimulation should also be avoided by people with bleeding disorders or heart disease. Consult your doctor before using nerve stimulation devices of any kind [\[R\]](#), [\[R\]](#).

23



Mediterranean Diet

IMPACT

2 / 5

EVIDENCE

3 / 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 is associated with better executive function. This diet may also help slow down cognitive decline as we age [\[R, R\]](#).

The Mediterranean diet may help by [\[R, R\]](#):

- Fighting [oxidative stress](#)
- Reducing inflammation
- Improving brain blood flow

24



Meditation

IMPACT

2 / 5

EVIDENCE

3 / 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

Stress may impair executive function [\[R\]](#), [\[R\]](#), [\[R\]](#).

Mindfulness meditation may improve cognitive function, especially [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- **Executive function**
- Long- and short-term memory
- Impulse control
- Verbal fluency

It may help by stimulating brain regions linked to executive function [\[R\]](#).

25



Avoid Air Pollution

IMPACT2 / 5

EVIDENCE3 / 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

High exposure to the following air pollutants is associated with worse executive function [\[R\]](#):

- Particulate matter (PM2.5 and PM10 particles)
- Nitrogen oxides (NOx)

Tips for lowering exposure to air pollution include [\[R\]](#), [\[R\]](#):

- Monitoring air pollution levels regularly
- Avoiding outdoor exercise when pollution levels are high
- Cleaning and maintaining air filtration systems
- Not burning wood or trash
- Using protective respiratory equipment at work, if needed

26



Take Naps

IMPACT2 / 5

EVIDENCE3 / 5

How to implement

Take short naps of about 20-30 minutes in the early afternoon, preferably between 1 pm and 3 pm, to avoid interfering with nighttime sleep.

TYPICAL STARTING DOSE

20 minutes

Description

Taking short naps, typically lasting 20-30 minutes, can improve alertness, mood, and cognitive performance. Napping can be a beneficial practice for combating fatigue and enhancing daytime productivity.

How it helps

Short daytime naps may improve cognitive performance, including executive function. However, not all studies found these benefits [\[R\]](#), [\[R\]](#).

Napping during night shifts may also improve executive function [\[R\]](#).

27



Yoga

IMPACT2 / 5

EVIDENCE3 / 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

Stress may impair executive function [\[R\]](#), [\[R\]](#), [\[R\]](#).

Practicing yoga for at least 4 weeks may improve executive function and working memory in adults and older people [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

Combining yoga (45 min, 2x/day) with working memory training (45 min/day) may offer greater benefits [\[R\]](#).

28

Strength Training

IMPACT

2 / 5

EVIDENCE

3 / 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

Moderate to vigorous strength training (at least 45 min/day, at least 2x/week) may improve executive function. Adults and older people with mild cognitive decline may also benefit [R, R, R, R].

Strength training may help by improving [R]:

- Brain blood flow
- [BDNF](#) levels

29



Avoid Cannabis

IMPACT2 / 5

EVIDENCE3 / 5

How to implement

Stop any form of cannabis use, including smoking, vaping, edibles, and topical applications. If you currently use cannabis, it's recommended to cease usage immediately and seek support or counseling if necessary for cessation.

Description

Avoiding cannabis is advised in situations where its use is prohibited by law or poses health risks, particularly for individuals with a history of substance abuse or mental health conditions. Responsible use and adherence to local regulations are essential to minimize potential negative consequences.

[Cannabis](#) (marijuana) is a plant used for its medicinal and recreational properties. It contains substances called *cannabinoids*, such as [CBD](#) and THC [\[R\]](#).

Cannabis misuse can have long-term consequences, such as [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Lung damage
- Mental health problems
- Cognitive impairment

How it helps

Long-term cannabis use has small but significant effects on executive function according to a meta-analysis of 30 studies. Those with certain COMT gene variants may be more affected [\[R\]](#), [\[R\]](#), [\[R\]](#).

30



Pycnogenol

IMPACT

2 / 5

EVIDENCE

2 / 5

How to implement

Take 100 mg of pycnogenol supplement daily. This can be taken in a single dose or divided into two doses of 50 mg each, one in the morning and one in the evening.

TYPICAL STARTING DOSE

100 mg

Description

Pycnogenol (pine bark extract) is derived from the bark of the maritime pine (Pinus pinaster). It has been used in traditional n European folk medicine for centuries, and more recently as a supplement. The extract contains a group of bioactive compounds known as proanthocyanidins, which may be beneficial in supporting cardiovascular health, promoting skin health, and aiding in the management of various conditions related to inflammation and oxidative stress.

Pycnogenol comes from the bark of pine trees that grow in the Mediterranean [\[R, R\]](#).

It may improve [\[R, R, R, R, R, R\]](#):

- Athletic performance
- Seasonal allergies
- Cognitive function
- Joint health
- Varicose veins

How it helps

Pycnogenol (100-150 mg/day for 2-12 months) may improve executive function and working memory. It may help by fighting [oxidative stress](#) [\[R, R, R, R\]](#).

31



Drink at Least 8 Glasses of Water a Day

IMPACT

2 / 5

EVIDENCE

2 / 5

How to implement

Consume a total of at least 64 ounces (or approximately 1.9 liters) of water over the course of the day. This can be divided into 8 glasses, each containing 8 ounces of water. Aim to drink evenly throughout the day to avoid dehydration.

Description

Water is an essential nutrient for nearly every process in your body, helping to mainting brain and gut function, maintain a health weight, as well as energy and performance levels, among others.

Water is essential for life. It supports nearly every process in your body [R].

Water helps maintain [R]:

- Energy and performance levels
- Brain function
- Gut function
- Healthy weight

Most experts recommend drinking **around 8 glasses (64 oz. or 2 L) of water daily**. You might need more or less than this, depending on how active you are, where you live, or what your overall health is like [R].

How it helps

Dehydration may slightly reduce executive function and attention by altering the levels of brain chemicals [R].

Stay hydrated. Most experts recommend drinking **around 8 glasses (64 oz. or 2 L) of water daily**. You might need more or less than this, depending on how active you are, where you live, or what your overall health is like [R].

32



Antioxidant Supplements

IMPACT

2 / 5

EVIDENCE

2 / 5

How to implement

Take an antioxidant supplement daily with a meal to enhance absorption. The specific dose may vary depending on the type of antioxidant (e.g., vitamin C, vitamin E, selenium), but a common multivitamin or antioxidant blend can be used as directed on the product label. Consult with a healthcare provider for personalized advice and dosage.

Description

Antioxidant supplements are dietary supplements that provide concentrated doses of antioxidants, such as vitamins C and E or coenzyme Q10, to help combat oxidative stress and reduce the risk of chronic diseases.

Our cells sometimes produce molecules called **reactive oxygen species (ROS)** [\[R\]](#).

High levels of ROS can cause [oxidative stress](#) and damage our cells. Oxidative stress plays a role in many health conditions, including [\[R\]](#):

- High blood sugar
- Type 2 diabetes
- Heart disease

Antioxidants are substances that help combat ROS [\[R\]](#).

Some common antioxidants include [vitamin C](#) and [vitamin E](#). You can get most antioxidants from fresh fruits and vegetables. **Antioxidants are also available as supplements** [\[R\]](#), [\[R\]](#).

How it helps

A study found that daily supplementation with antioxidant vitamins and minerals at nutritional doses could enhance cognitive performance, particularly verbal memory and executive functioning, under certain conditions such as low baseline vitamin C levels or nonsmoking status [\[R\]](#).

Another study reported that a combination of antioxidants from supplements (for 3 years) may improve cognitive function in the elderly, especially in both carriers and non-carriers of the APOE4 allele, suggesting that multiple antioxidants might have synergistic effects [\[R\]](#).

Short-term administration of an antioxidant mix containing bacopa, lycopene, astaxanthin, and vitamin B12 improved executive function in older adults, measured by improved scores on cognitive tests such as the Trail Making Test [\[R\]](#).

33



Alpha-GPC Choline

IMPACT2 / 5

EVIDENCE2 / 5

How to implement

Take 300-600 mg of Alpha-GPC choline supplement daily, preferably in the morning or early afternoon to avoid interference with sleep. It can be taken with or without food. Continue this supplementation for at least 4-6 weeks to assess its effectiveness.

TYPICAL STARTING DOSE

300 mg

Description

Alpha-GPC (L-alpha glycerylphosphorylcholine) is a natural compound that can be found in small amounts in various foods, including soy, and is also produced in the body. It is a choline-containing compound that may support cognitive function and memory.

How it helps

In people recovering from strokes or transient ischemic attacks, alpha-GPC treatment improved scores on various cognitive scales, indicating a positive effect on cognitive recovery [R].

A study found that alpha-GPC may increase motivation among healthy volunteers, suggesting its potential to enhance aspects of executive function related to motivation and possibly attention [R].

Alpha-GPC administration may help by rapidly increasing free plasma choline, which is critical for the production of acetylcholine, an important neurotransmitter for cognitive function [R].

34



Avena Sativa

IMPACT

2 / 5

EVIDENCE

2 / 5

How to implement

Take 100-300 mg of avena sativa extract daily, preferably with a meal to help with absorption. This supplementation is recommended for at least a few weeks to observe benefits.

TYPICAL STARTING DOSE

100 mg

Description

Avena sativa, commonly known as oats, is a cereal grain rich in fiber and nutrients. It is often consumed as a dietary staple and is associated with potential health benefits, including heart health and digestive support.

How it helps

A single dose (800-2500 g) of green *Avena sativa* extract acutely improved working memory span in 3 placebo-controlled trials of 101 participants [\[R\]](#), [\[R\]](#), [\[R\]](#).

In a placebo-controlled trial of 132 healthy volunteers, supplementation with *Avena sativa* extract (430-1290 mg/day) for 29 days improved performance at working memory and multitasking tests. However, green *Avena sativa* extract (1500 mg/day taken for 12 weeks) failed to sustain cognitive benefits in the long term in a placebo-controlled trial of 37 older adults [\[R\]](#), [\[R\]](#).

35



Practice Exercise Snacks

IMPACT2 / 5

EVIDENCE2 / 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

A study examining the effects of short bouts of exercise found that both continuous and intermittent moderate-intensity exercise improved executive function in children aged 8-10 years. The improvements in tasks like the Stroop task were observed immediately after exercise and sustained for up to 30 minutes post-exercise [\[R\]](#).

Another study showed that acute bouts of exercise, including low and moderate resistance exercise, improved executive function in older adults, with the benefits being more pronounced shortly after exercising. The improvements were noted in working memory and cognitive flexibility [\[R\]](#).

Additionally, a single bout of aerobic exercise was found to enhance specific aspects of executive function, like planning and problem-solving, in young adults. This improvement was attributed to exercise-induced increases in cerebral blood flow, supporting enhanced cognitive function [\[R\]](#).

36



Blueberries

IMPACT

2 / 5

EVIDENCE

2 / 5

How to implement

Incorporate a half to one cup of fresh or frozen blueberries into your daily diet. You can add them to your breakfast cereal, smoothies, or enjoy them as a snack on their own.

Description

Blueberries are a nutritious fruit packed with antioxidants, vitamins, and fiber. They are known for their potential to support brain health, reduce the risk of chronic diseases, and promote overall well-being.

[Blueberries](#) are enjoyed all around the world for their sweet taste and nutritional benefits. They may support [\[R\]](#):

- Heart health
- Cognitive function
- Normal blood sugar levels

How it helps

Blueberries may improve executive function by improving brain blood flow. Studied preparations include [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Freeze-dried blueberries (24 g/day)
- Concentrate (30 mL/day)
- Powder (500-100 mg/day)

Antioxidant-rich extracts and juices from berry blends containing blueberries may offer similar benefits [\[R\]](#), [\[R\]](#), [\[R\]](#).

37



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

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

Omega-3 supplementation (for 12 weeks) was associated with improved parent-rated executive functions in youth with mood disorders, showing improvements over placebo in measures like global executive composite scores, which include behavioral regulation and metacognition indices [\[R\]](#).

A study demonstrated that long-chain omega-3 fatty acids (2.2 g/day for 26 weeks) improve brain function and structure in older adults, with enhancements in executive functions. The study also observed beneficial effects on white matter integrity and gray matter volume in various brain regions, as well as improvements in vascular markers such as carotid intima-media thickness [\[R\]](#).

A study in malnourished Mexican children aged 8-12 years found that omega-3 supplementation (for 12 weeks) improved several neuropsychological functions including processing speed, visual-motor coordination, perceptual integration, attention, and executive function [\[R\]](#).

38



Turmeric

IMPACT

2 / 5

EVIDENCE

2 / 5

How to implement

Incorporate 500-1000 mg of turmeric into your daily diet, either by adding ground turmeric spice to your food, such as in curries, soups, and smoothies, or by taking a dietary turmeric supplement. This should be done daily for at least 8 weeks to observe potential health benefits.

Description

Turmeric is a bright yellow spice derived from the root of the *Curcuma longa* plant. It contains curcumin, a potent antioxidant and anti-inflammatory compound. Turmeric is used for various health conditions, including reducing inflammation, alleviating joint pain, and supporting digestive health.

How it helps

A study on the effects of curcumin, a key component of turmeric, found it could improve working memory and reduce fatigue and stress reactivity in healthy older adults [\[R\]](#).

Another study investigated turmeric's influence on cognitive functions in Alzheimer's disease, noting improvements in behavioral symptoms with turmeric treatment. Although this study focuses on a specific disease state, the findings hint at the broad neuroprotective and cognitive benefits of turmeric [\[R\]](#).

39



Mindfulness-Based Cognitive Therapy (MBCT)

IMPACT

2 / 5

EVIDENCE

2 / 5

How to implement

Participate in an 8-week course of Mindfulness-Based Cognitive Therapy (MBCT), which typically includes weekly group sessions (each lasting about 2 hours), daily homework practices (about 1 hour per day), and one all-day session after the fifth week. Sessions are led by trained instructors and focus on mindfulness meditation practices and cognitive behavioral exercises.

TYPICAL STARTING DOSE

2 hours

Description

Mindfulness-Based Cognitive Therapy (MBCT) is a therapeutic approach that combines mindfulness practices with cognitive-behavioral techniques to help individuals manage and prevent recurring episodes of depression and anxiety.

How it helps

A study on high-suicide-risk people found that MBCT improved executive attention, indicating enhanced cognitive flexibility and attentional control. This was measured through improvements in performance on the Stroop task, which assesses the ability to inhibit cognitive interference. The study also reported increased mindfulness and decreased rumination among people [\[R\]](#).

Another study involving people with bipolar disorder undergoing MBCT reported self-reported improvements in executive functioning, such as memory and the ability to initiate and complete tasks. These improvements were noted to persist after the treatment had ended, suggesting long-term benefits [\[R\]](#).

40



Regular Sleep Schedule

IMPACT

2 / 5

EVIDENCE

2 / 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 study demonstrated that when sleep schedules are regularized, people report improvements in alertness and reduced daytime sleepiness. This regularity is associated with improved sleep efficiency and may contribute to better cognitive performance, including executive functioning [\[R\]](#).

Another study found that irregular sleep schedules may negatively impact executive function, but regularizing sleep patterns may mitigate these effects. The findings suggest that not just total sleep time but also the regularity of sleep influences cognitive processes [\[R\]](#).

41



American Ginseng

IMPACT

2 / 5

EVIDENCE

2 / 5

How to implement

Take 200-400 mg of American ginseng extract daily, preferably with a meal to enhance absorption. This regimen can be followed continuously for up to 12 weeks, after which a break or reassessment of the need to continue should be considered.

TYPICAL STARTING DOSE

200 mg

Description

American ginseng is a perennial herb native to North America, particularly regions of the United States and Canada. It is valued for its potential health benefits, including immune system support, stress reduction, and enhanced cognitive function, with the primary active compounds being ginsenosides.

[Ginseng](#) is a plant people use to improve [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Sexual function
- Immunity
- Fatigue
- Attention

There are many different types of ginseng. The most common ones are [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Korean red ginseng, also called Asian ginseng (*Panax ginseng*)
- [American ginseng](#) (*Panax quinquefolius*)
- Chinese notoginseng, also called Sanchi (*Panax notoginseng*)

How it helps

In 3 placebo-controlled trials of 145 healthy participants, supplementation with American ginseng extract (100-400 mg) improved working memory, attention, choice reaction time, mental fatigue, and calmness [\[R\]](#), [\[R\]](#), [\[R\]](#).

A multi-ingredient supplement with American ginseng, bacopa, and whole coffee fruit extract improved working memory and prefrontal cortex activation during a working memory task in a placebo-controlled trial of 40 healthy adults [\[R\]](#).

American ginseng extract taken for 4 weeks also improved working memory in a placebo-controlled trial of 64 patients with schizophrenia [\[R\]](#).

American ginseng has substances called ginsenosides that work to provide anti-inflammatory and antioxidant effects. This can enhance brain functions like memory, focus, and mood, potentially improving memory performance.

42



Pyrroloquinoline Quinone (PQQ)

IMPACT2 / 5

EVIDENCE2 / 5

How to implement

Take 20 to 40 mg of Pyrroloquinoline Quinone (PQQ) daily as an oral supplement, ideally with meals to enhance absorption. This dosage can be maintained indefinitely as part of your daily supplement routine.

TYPICAL STARTING DOSE

20 mg

Description

PQQ is a micronutrient found in foods like spinach, green tea, and kiwifruit. It acts as a cofactor for enzymes involved in energy metabolism and may support mitochondrial health, which is essential for overall cellular function and vitality.

Pyrroloquinoline quinone (PQQ), also known as methoxatin, is a compound that helps enzymes work better. PQQ is also involved in the production of new mitochondrias. By doing so, PQQ helps improve [\[R\]](#), [\[R\]](#):

- Energy levels
- Antioxidant protection
- Growth
- Reproduction

How it helps

In 2 placebo-controlled trials of 120 participants, supplementation with PQQ (20-21.5 mg/day) for 12 weeks improved cognitive flexibility and other cognitive aspects. PQQ may improve cognition by increasing activity in the right PFC, as seen in a placebo-controlled trial of 20 healthy subjects aged 50-70 [\[R\]](#), [\[R\]](#), [\[R\]](#).

PQQ is thought to stimulate the growth and development of mitochondria in brain cells, leading to improved cognition. In addition, PQQ works as an antioxidant that could protect the brain from harmful oxidative stress.

43



L-Theanine

IMPACT

2 / 5

EVIDENCE

2 / 5

How to implement

Take 100-400 mg of L-theanine supplement daily. It can be consumed at any time of the day, with or without food.

TYPICAL STARTING DOSE

100 mg

Description

L-theanine is an amino acid found in tea leaves, known for its calming and relaxation-promoting effects. It is often used to reduce stress and anxiety and may contribute to improved focus and cognitive performance.

[L-theanine](#) is an amino acid found in black and [green tea](#) [\[R\]](#).

People take L-theanine as a supplement to [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Improve cognition
- Boost immunity
- Relieve anxiety and stress

How it helps

A single dose of L-theanine (100 mg) may improve working memory [\[R\]](#).

Longer supplementation with L-theanine (200-250 mg/day for 4-8 weeks) may improve executive function and verbal fluency [\[R\]](#), [\[R\]](#), [\[R\]](#).

L-theanine may help by improving sleep quality [\[R\]](#):

L-theanine may also improve executive function when combined with other components like caffeine, L-tyrosine, and alpha-linolenic acid [\[R\]](#), [\[R\]](#).

44



Dietary Polyphenols

IMPACT2 / 5

EVIDENCE2 / 5

How to implement

Incorporate foods rich in dietary polyphenols into your daily diet. This can include consuming a variety of fruits like berries, apples, and grapes; vegetables such as onions and broccoli; nuts and seeds; as well as beverages like green tea and coffee. Aim for at least five servings of fruits and vegetables per day to achieve a beneficial intake of polyphenols.

Description

Polyphenols are antioxidants found in foods like fruits, vegetables, and tea, which may offer various health benefits, including reduced inflammation and improved heart health.

Polyphenols are plant components with antioxidant properties. They help reduce [oxidative stress](#) [R].

High levels of oxidative stress can damage our cells. Oxidative stress plays a role in many health conditions, including [R]:

- High blood sugar
- Type 2 diabetes
- Heart disease

You can get most polyphenols and other antioxidants from fresh fruits and vegetables [R, R].

How it helps

A study on postpartum women found that dietary intake of polyphenols enhanced executive/attentional functions, as well as memory. Women consuming higher levels of polyphenols demonstrated better performance in tasks requiring executive control and attention. Additionally, the study noted improvements in the milk lipid profile, which is crucial for infant neurodevelopment [R].

Research involving middle-aged adults indicated that polyphenol intake was associated with better language and verbal memory but did not show an impact on executive functioning specifically. However, some specific classes of polyphenols, such as catechins and flavonols, were positively associated with better episodic memory performance [R].

45



L-Tyrosine

IMPACT

2 / 5

EVIDENCE

2 / 5

How to implement

Take 500-2000 mg of L-Tyrosine supplement daily, preferably 30 minutes before meals or snacks. This can be taken in one dose or divided into two doses throughout the day. Continue this supplementation daily for a duration of at least a few weeks to assess its effects on your body.

TYPICAL STARTING DOSE

500 mg

Description

L-tyrosine is an amino acid used by the body to produce important neurotransmitters and hormones. It may help improve cognitive function, stress response, and overall mood regulation.

[Tyrosine](#) is a **non-essential amino acid**. This means that our bodies can make it from other amino acids like [phenylalanine](#). We can also get tyrosine from **protein-rich foods**, such as [\[R, R\]](#):

- Red meat and poultry
- Dairy, especially cheese
- Legumes (e.g., soybeans and beans)
- Fish
- Nuts
- Eggs

Tyrosine can also be taken as a supplement. People often use it to maintain mental performance during demanding and stressful tasks [\[R, R, R\]](#).

How it helps

L-tyrosine may improve executive function when given in single high doses, also known as **L-tyrosine loading**.

L-tyrosine (**single dose** of 0.5-2 g) may improve cognitive flexibility and impulse control. It may also prevent working memory reduction in people exposed to stressful situations, such as [\[R, R, R\]](#):

- Low temperatures [\[R, R, R\]](#)
- Multitasking and distractions [\[R\]](#)

However, L-tyrosine loading worsened working memory in one study [\[R\]](#).

Please note: Long-term safety of L-tyrosine supplementation in daily doses above **150 mg/kg** is unclear. That is about **1 g/day** for a 70-kg person.

46



MCT Oil

IMPACT

2 / 5

EVIDENCE

2 / 5

How to implement

Incorporate 1 to 2 tablespoons of MCT oil into your daily diet by adding it to coffee, smoothies, or salad dressings. Start with a lower dose to assess tolerance before gradually increasing to the full dosage. Use daily for ongoing benefits.

Description

MCT oil is a type of dietary fat known for its rapid absorption and potential to provide quick energy. It is often used in ketogenic diets and may support weight management and cognitive function.

How it helps

MCT Oil provides a quick source of energy that can be used by the brain, potentially improving cognitive function and memory. However, it's not a proven treatment for Executive Function disorders.

10 studies met the inclusion criteria. Meta-analysis showed cognitive improvements in general, but not in memory, language, and attention domains after oral MCT administration, compared to placebo. The effect of MCT was greater among APOEε4 (-) subjects than APOEε4 (+) subjects [R].

In a study involving 20 healthy elderly participants, ingestion of medium-chain triglycerides (MCTs) improved cognitive performance, particularly in those with reduced grey matter in the prefrontal cortex. Functional MRI showed reduced brain activity, suggesting the use of ketone bodies as an additional energy source during cognitive tasks [R].

 PERSONALIZED TO YOUR GENES

People with your **APOE** gene variant (ε3) may experience greater cognitive benefits from MCT oil supplementation [R].

YOUR GENETIC VARIANTS			
GENE	SNP	GENOTYPE	EVIDENCE
APOE	rs429358	TT	

47



Mindfulness

IMPACT

1 / 5

EVIDENCE

3 / 5

How to implement

Set aside 5-10 minutes each day to practice mindfulness meditation. Find a quiet place, assume a comfortable seated position, close your eyes, focus on your breathing, and observe your thoughts and sensations without judgment.

TYPICAL STARTING DOSE

30 minutes

Description

Mindfulness involves paying focused and non-judgmental attention to the present moment. It can reduce stress, improve emotional regulation, and enhance overall mental clarity and well-being.

Mindfulness is the practice of being aware of the present moment. When practicing mindfulness, a person acknowledges their thoughts, feelings, and sensations without any judgment [R].

Mindfulness and other types of [meditation](#) may improve [R]:

- Weight and anxiety
- Low mood
- Sleep disturbances
- Pain
- High blood pressure

How it helps

Mindfulness, through regular meditation, helps to improve executive functions by enhancing cognitive flexibility and attentional control. This can improve one's ability to manage tasks, make decisions, and respond adaptively in various situations.

In a meta-analysis of 45 studies, the cognitive effects of MBPs (Mindfulness-Based Programs) favored MBPs over comparators, with a small effect size of 0.15. When considering specific cognitive domains, MBPs showed significant benefits for executive function (effect size: 0.15) and working memory (effect size: 0.23). Notably, these effects were more pronounced in non-clinical samples and among adults aged over 60 [R].

A total of 34 studies were included. The outcomes were categorized into four cognitive domains: attentional functioning, memory, executive functioning, and higher-order function. A small effect was found across all cognitive domains. Separated analyses for each cognitive domain revealed an effect only in higher-order cognitive functions [R].

Mindfulness interventions positively impacted cognition (weighted Hedges' g = 0.36) by enhancing attention (g = 0.22), long-term memory (g = 0.32), and visuospatial processing (g = 0.22). These effects were consistent across cognitive status, with no publication bias. Healthy older adults had larger effect sizes than those with Mild Cognitive Impairment (MCI). [R].

The MBI had a null global effect. The attention and memory results showed a null effect size and a small effect size was found for executive function. The methodological quality of the studies, however, was poor, so the results need to be interpreted with caution [R].

48



Bacognize (Bacopa monnieri)

IMPACT1 / 5

EVIDENCE2 / 5

How to implement

Take bacopa as a supplement in a dose of 300-450 mg per day, ideally with food to enhance absorption. It should be taken daily for at least 4-6 weeks to begin noticing benefits in cognitive function and stress reduction.

TYPICAL STARTING DOSE

300 mg

Description

Bacopa, also known as Brahmi, is an herb traditionally used in Ayurvedic medicine to support cognitive function and memory. It is believed to have neuroprotective properties and is used in herbal supplements for mental well-being.

[Bacopa](#) (*Bacopa monnieri*) grows as a weed in the rice fields of East Asia and the US [\[R\]](#).

Bacopa is used in Ayurveda (Indian traditional medicine) to support cognition [\[R\]](#).

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

How it helps

Bacopa extract (300-600 mg/day for 12 weeks) may improve working memory by [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Fighting [oxidative stress](#)
- Improving brain [acetylcholine](#) levels

However, one study didn't find this benefit [\[R\]](#).

49

Maintain Optimal Vitamin D Levels

IMPACT1 / 5

EVIDENCE2 / 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

Vitamin D supplementation may enhance some cognitive functions, especially executive functions like decision-making and reaction time, in older adults. Higher doses of vitamin D (2000 IU/day compared to 600 IU/day) may improve performance in learning and memory tasks among overweight/obese postmenopausal women, although very high doses might slow reaction time [\[R\]](#).

Another study showed that vitamin D supplementation improved the performance of executive function tasks in adolescents, especially during the winter months when vitamin D deficiency is more prevalent [\[R\]](#).

However, some studies suggest that the benefits of vitamin D supplementation on cognitive functions might not be across all demographics. For example, a study examining the effects of vitamin D on cognitive and emotional functioning in young adults did not find improvements, indicating that vitamin D supplementation might not universally enhance cognitive functions [\[R\]](#).

Genetically lower vitamin D levels may be associated with reduced executive function [\[R\]](#).

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* [\[R\]](#).

50



Avoid Arsenic Exposure

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Use a water filter certified to remove arsenic if you rely on well water, opt for arsenic-tested rice or rice products, and avoid using contaminated pesticides or herbicides in gardening or farming. Test your home for arsenic if you live in an area known for high levels of arsenic in soil or water. Limit consumption of foods known to accumulate arsenic such as rice and rice-based products, especially if you are pregnant, nursing, or preparing meals for young children.

Description

Avoiding arsenic exposure is essential for preventing potential health risks associated with arsenic contamination in drinking water and foods. Chronic exposure to arsenic has been linked to various health issues, including cancer and cardiovascular problems.

Arsenic is a [heavy metal](#) naturally found in the environment. It is used for mining, fracking, and industrial applications, such as the production of pesticides and wood preservatives, and the use of fossil fuels [\[R\]](#).

The main sources of exposure to arsenic are contaminated [\[R\]](#), [\[R\]](#), [\[R\]](#):

- **Drinking water**
- **Rice** and fish
- Air

Long-term exposure to high amounts of arsenic may be linked to health problems, including [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Skin disorders
- Heart disease
- High blood pressure
- Stroke
- Diabetes
- Cancer

Please note: *Soaking, washing until clear, and cooking rice with a high (1:6) water-to-rice ratio may help reduce rice’s arsenic content* [\[R\]](#), [\[R\]](#), [\[R\]](#).

How it helps

Low-level arsenic exposure was found to reduce executive function among children. The study measured executive function using several neuropsychological tests and found negative associations with arsenic exposure levels in urine [\[R\]](#).

A comprehensive study involving 1,014 people aged 6 to 23 years in India also reported impairments in executive function associated with low-level arsenic exposure. This study included assessments of behavior, neuropsychology, and brain neuroimaging, showing correlations between arsenic exposure and both structural and functional brain anomalies [\[R\]](#).



PERSONALIZED TO YOUR GENES

Exposure to arsenic may worsen executive function more in people with your [AS3MT](#) gene variant [\[R\]](#).

YOUR GENETIC VARIANTS			
GENE	SNP	GENOTYPE	EVIDENCE
AS3MT	rs10748835	GA	

51



Behavioral Sleep Extension

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

To implement behavioral sleep extension, aim to increase your total sleep time by going to bed 15 to 30 minutes earlier than your usual bedtime, or by allowing yourself to sleep later in the morning. Gradually increase this time as needed to reach a target of 7 to 9 hours of sleep per night, consistently, including on weekends. Adjust your daily schedule to accommodate this change, making sleep a priority.

Description

Behavioral sleep extension involves adopting healthier sleep habits to extend the duration and improve the quality of sleep. It can lead to improved cognitive function, mood, and overall well-being by addressing sleep deficiency.

How it helps

Behavioral Sleep Extension, extending the time spent sleeping or in bed, can enhance Executive Function by improving focus and cognitive flexibility. More sleep allows the brain to be more efficient in problem-solving, memory, attention, which are all parts of executive function.

In a non-placebo-controlled trial of 50 tactical athletes, undergoing four sleep extension nights improved executive function. Sleep extension also improved executive function in a non-placebo-controlled trial of 121 short-sleeping obese participants [\[R\]](#), [\[R\]](#).

52



Rhodiola and Ginkgo

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Take 200-600 mg of Rhodiola in the morning, ideally 30 minutes before breakfast, to combat fatigue and improve focus. Add 120-240 mg of Ginkgo Biloba extract, divided into two or three doses throughout the day, preferably with meals to enhance cognitive function and circulation.

TYPICAL STARTING DOSE

200 mg

Description

Rhodiola (*Rhodiola rosea*) is a plant that grows in the mountains of eastern Europe and Asia [R].

Rhodiola is an *adaptogen*, meaning that it may help you adapt to stress. According to early research, this herb may help with [R, R, R, R]:

- Fatigue
- Burnout
- Low mood

Ginkgo (*Ginkgo biloba*) is an ancient tree used in traditional Chinese medicine [R, R].

According to limited evidence, ginkgo leaf extract may help with [R, R, R, R]:

- Anxiety
- Dementia
- Eye problems
- Blood vessel problems
- Vitiligo

How it helps

In a placebo-controlled trial of 112 healthy volunteers, both ginkgo and rhodiola supplementation improved working memory accuracy. Their combination further improved this cognitive aspect [R].

53



Curcumin Longvida

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Take 400-1000 mg of Longvida curcumin once daily, preferably with a meal to enhance absorption. It's recommended to continue this supplement intake daily for at least 8-12 weeks to evaluate its benefits.

TYPICAL STARTING DOSE

1 g

Description

Curcumin Longvida is a specialized formulation of curcumin designed for improved bioavailability and brain health support. It has been studied for its potential cognitive benefits and ability to cross the blood-brain barrier.

How it helps

Supplementing with curcumin Longvida (400 mg/day) improved executive function in two trials on older participants. However, a higher dose of Longvida (2000 mg/day) did not improve motor and cognitive functions in healthy individuals [\[R\]](#), [\[R\]](#), [\[R\]](#).

Curcumin Longvida may help by reducing inflammation and oxidative stress in the brain. It also promotes the growth of new brain cells, potentially improving brain function.

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 [\[R\]](#), [\[R\]](#), [\[R\]](#).

54



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 110 older women, undergoing a 12-week Pilates program improved cognitive function, including executive function. Both Pilates and aerobic exercise were similarly effective at improving executive control in the short term in a non-placebo-controlled trial of 52 physically inactive volunteers [R, R].

Pilates requires planning, precision, and control, which are key aspects of executive function.

55



Enzogenol

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Take 200-240 mg of Enzogenol daily, preferably with meals to enhance absorption. This supplement course can be continued consistently for ongoing support of cognitive health and antioxidant protection, but it's advisable to reassess your supplement needs and effects every 3-6 months.

TYPICAL STARTING DOSE
200 mg

Description

Enzogenol is a natural antioxidant derived from pine bark that may help protect cells from oxidative damage and support overall health. It is believed to have potential benefits for cardiovascular health and cognitive function.

Enzogenol is an extract of the pine bark (*Pinus radiata*) rich in antioxidants called proanthocyanidins [R].

People use enzogenol to [R]:

- Reduce inflammation
- Improve cognitive function
- Improve skin health

How it helps

Based on a single study, enzogenol (960 mg/day for 5 weeks) may improve working memory by [R]:

- Fighting [oxidative stress](#)
- Improving brain blood flow

56



Mindfulness Yoga

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Practice mindfulness yoga for at least 20-30 minutes per day, most days of the week. Choose a quiet, comfortable space where you can focus on your breath and movements without distractions. Consistency is key, so aim to incorporate this practice into your daily routine for ongoing benefits.

Description

Mindfulness yoga combines physical postures with mindfulness techniques, offering benefits such as improved flexibility, relaxation, and stress reduction. It promotes holistic well-being by integrating the mind-body connection.

How it helps

In a non-placebo-controlled trial of 42 children with cerebral palsy, participating in a mindfulness yoga program for up to 6 months improved executive function, attention, and wellbeing [\[R\]](#), [\[R\]](#), [\[R\]](#).

Mindfulness yoga may help calm the mind, increase focus, and reduce stress. This practice enhances cognitive abilities such as decision-making, emotional control, and flexibility of thinking.

57



Focused Attention Meditation

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Sit in a quiet and comfortable place for 10-20 minutes daily, focusing your attention on a single object, thought, or breathing without letting your mind wander. If distractions occur, gently redirect your focus back to the chosen object or activity.

TYPICAL STARTING DOSE

20 minutes

Description

Focused attention meditation is a mindfulness practice that involves concentrating on a specific object, thought, or sensation. It can enhance concentration, reduce stress, and improve overall mental well-being when practiced regularly.

How it helps

In a non-placebo-controlled trial of 30 healthy volunteers, practicing focused attention meditation increased working memory capacity. Both focused attention and open monitoring meditation improved executive attention in a non-placebo-controlled trial of 76 healthy volunteers [\[R\]](#), [\[R\]](#).

Focused attention meditation may help by training your brain to maintain focus and concentration. It strengthens brain areas responsible for executive functions like problem-solving, planning, and action regulation.

58



Mulberry

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take a mulberry supplement at a dosage of 500mg to 1,000mg per day, preferably with meals to enhance absorption. This should be continued daily for at least 3 months to observe potential health benefits.

Description

Mulberries are the fruit of the mulberry tree, often used in traditional medicine and cuisine. It is a source of vitamins and antioxidants, potentially offering health benefits such as blood sugar control and immune support.

How it helps

In a placebo-controlled trial of 312 healthy adults, drinking mulberry milk (180-360 mL/day) for 6 weeks enhanced working memory [R].

59



Sulforaphane

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take a sulforaphane supplement, typically available in capsule form, with a dosage ranging from 30 to 60 milligrams per day. It is generally taken once daily, with or without food, according to the product's label instructions or a healthcare provider's advice. Continue this regimen daily for as long as you seek its benefits, but consult a healthcare provider for long-term use guidance.

TYPICAL STARTING DOSE

30 mg

Description

Sulforaphane is a natural compound found in cruciferous vegetables like broccoli and cauliflower. It is known for its potent antioxidant and anti-inflammatory properties, potentially offering protective effects against chronic diseases and promoting overall health.

How it helps

In a placebo-controlled trial of 144 older adults, supplementation with sulforaphane (30 mg/day) for 12 weeks **improved processing speed and working memory** [R].

60



L-Theanine and Caffeine

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Combine 100 mg of L-theanine with 50 mg of caffeine, taken ideally in the morning or early afternoon to avoid impacting sleep. This combination can be taken daily, but it’s important to adjust based on personal tolerance and to avoid taking too late in the day.

TYPICAL STARTING DOSE

100 mg

Description

L-theanine is an amino acid found in tea leaves, known for its calming and relaxation-promoting effects. It is often used to reduce stress and anxiety and may contribute to improved focus and cognitive performance. Caffeine is a natural stimulant found in coffee, tea, and other beverages. It can temporarily increase alertness and energy levels, making it a popular choice for combating fatigue and enhancing cognitive function.

[L-theanine](#) is an amino acid found in black and [green tea](#) [\[R\]](#).

People take L-theanine as a supplement to [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Improve cognition
- Boost immunity
- Relieve anxiety and stress

[Caffeine](#) is the main ingredient responsible for the energy- and mood-boosting effects of coffee [\[R\]](#), [\[R\]](#).

Moderate doses of caffeine may also [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Improve heart health
- Improve mood
- Help reduce blood sugar

How it helps

The combination of L-theanine (250 mg) and caffeine (150 mg) improved working memory and other aspects of cognitive performance in a study of 24 people [\[R\]](#).

61



Mindfulness-Based Stress Reduction (MBSR)

IMPACT1 / 5

EVIDENCE1 / 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

A study on older adults indicated that MBSR improved executive function. The study also noted changes in brain activity and mindfulness levels, suggesting that MBSR may help enhance cognitive flexibility and attentional control in this demographic [\[R\]](#).

However, another study found that while MBSR improved mood and self-esteem in medical and premedical students, it did not change their cognitive or executive functions compared to control groups. This suggests that the effects of MBSR may be more pronounced in psychological well-being rather than direct cognitive enhancements in young people [\[R\]](#).

62



Hatha Yoga

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Practice Hatha Yoga for 60 minutes at least twice a week. Choose a quiet, comfortable space and consider guided sessions for beginners or those unfamiliar with the poses. Consistency over a period of months to years is beneficial for appreciating its full effects.

TYPICAL STARTING DOSE

1 hour

Description

Hatha yoga is a gentle and accessible form of yoga that combines physical postures, breathing exercises, and meditation. Practicing hatha yoga regularly can promote flexibility, stress reduction, and overall physical and mental well-being.

How it helps

Hatha Yoga involves a wide range of physical postures and breathing exercises that helps in increasing your concentration and focus. These exercises can improve executive functions like decision-making, problem-solving, and multitasking by enhancing the brain's cognitive functions.

In a study with 118 participants (average age 62), those in an 8-week Hatha yoga group showed improved attention and information processing abilities compared to a stretching control group, suggesting the benefits of yoga practice [\[R\]](#).

63



Acceptance and Commitment Therapy (ACT)

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Participate in Acceptance and Commitment Therapy (ACT) sessions with a licensed therapist weekly for a minimum of 8 to 12 weeks. During this period, engage in daily ACT exercises at home as recommended by your therapist, such as mindfulness practices and writing exercises that help you connect with your values and accept your thoughts without judgment.

Description

ACT is a type of psychotherapy that focuses on accepting one's thoughts and feelings while committing to actions that align with personal values. It is used to improve mental well-being and treat conditions like anxiety and depression.

How it helps

In people with severe substance use disorders, ACT showed trends towards improvements in psychological flexibility and several aspects of executive functions such as inhibitory control and emotional control [\[R\]](#).

64



Tart Cherries

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Consume about 200 grams (7 ounces) of tart cherries or drink 240 ml (8 ounces) of tart cherry juice daily. This can be done at any time of the day but consuming it in the evening might improve sleep quality. It is recommended to continue daily consumption for at least 4 weeks to observe benefits such as reduced muscle pain, improved sleep, and potential reduction in inflammation.

Description

Tart cherries, often available in the form of juice or supplements, has vitamin C, as well as anthocyanins and melatonin, known for their potential to reduce inflammation and improve sleep quality. They are rich in antioxidants and may aid in recovery from exercise-induced muscle soreness.

Cherries are stone fruits with numerous species. Tart or “sour” cherries (*Prunus cerasus*) are native to parts of Europe and Asia [\[R\]](#), [\[R\]](#).

They are close to regular, sweet cherries (*Prunus avium*) but more acidic. Hence, people do not eat them fresh but dried or in syrups, salads, pies, or liqueurs.

People consume tart cherries to help with [\[R\]](#):

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

How it helps

Tart cherries contain anthocyanins which have potent antioxidant and anti-inflammatory effects that can enhance brain health. However, there isn't specific evidence indicating that these cherries directly improve executive functions like decision making or attention.

In a [placebo-controlled trial of 37 older adults](#), consuming tart cherry juice (2 cups/day) for 12 weeks **improved memory, learning, visual sustained attention, and spatial working memory** [\[R\]](#).

65



Sage Extract

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Take sage extract in supplement form, ideally in doses ranging from 300 to 600 mg daily, divided into 2 or 3 doses throughout the day. It is recommended to follow this regimen for at least 1 to 2 months to evaluate its effects on cognitive function and mood improvements.

TYPICAL STARTING DOSE

300 mg

Description

Common sage (*Salvia officinalis*) is an herb from the mint family. It is native to the Mediterranean region. The main compounds in sage extract include essential oils like thujone and cineole, which contribute to its flavor and potential benefit for sore throats and digestive issues [R].

People commonly use sage as a spice and a traditional remedy for [R, R]:

- Sore throat
- Mood
- Blood sugar and cholesterol control
- Heavy sweating

How it helps

In a placebo-controlled trial of 36 healthy participants, supplementation with sage essential oil (50 µL) improved performance at secondary memory and attention tasks, reduced mental fatigue, and increased alertness [R].

In a placebo-controlled trial of 20 older volunteers, supplementation with 4 active doses of sage extract (167, 333, 666, and 1332 mg) with 7-day washout periods enhanced secondary memory. The 333-mg dose was most effective [R].

In a placebo-controlled trial of 94 healthy volunteers, supplementation with sage extract (600 mg *Salvia officinalis* polyphenols and *Salvia lavandulaefolia* terpenoids) for 29 days improved working memory and accuracy [R].

The combination of sage, rosemary, and melissa taken for 2 weeks improved delayed word recall in participants younger than 63 years old in a placebo-controlled trial of 44 healthy volunteers [R].

Sage extract can enhance cognitive abilities, specifically executive functions, by improving memory and concentration.

Please note: *rosmarinic acid from sage may inhibit the production of the thyroid hormone T4 (thyroxine). Individuals with thyroid disorders, particularly hypothyroidism or low T4 levels, should exercise caution when using sage extract and always consult with a healthcare provider before taking this supplement [R].*

66



Fucoxanthin And Guarana

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take a supplement containing fucoxanthin in combination with guarana once daily, ideally with a meal to enhance absorption. The specific dose of fucoxanthin is usually around 2.4-8mg, and guarana around 50-200mg, but follow the product's label for exact dosing. Continuous use for at least 12 weeks is recommended for best results.

Description

Fucoxanthin is a natural pigment found in certain types of seaweed and algae. It is believed to have potential health benefits, including supporting weight management and promoting antioxidant activity. Guarana is a plant native to the Amazon basin known for its caffeine content. It is used in some dietary supplements and energy drinks for its potential to enhance alertness and cognitive function.

How it helps

In a study of 61 experienced gamers, supplementation with a *Phaeodactylum tricornutum* extract with 1% fucoxanthin and 500 mg guarana for 30 days improved reaction time, reasoning, learning, executive control, attention shifting (cognitive flexibility), and impulsiveness [\[R\]](#).

67



Histidine

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Take 500-1000 mg of histidine supplement per day, ideally with a meal. It is best to start with a lower dose, such as 500 mg, to assess tolerance and then adjust as needed up to 1000 mg. Consistent daily intake for at least 4 to 8 weeks may be necessary to notice benefits.

TYPICAL STARTING DOSE

500 mg

Description

Histidine is an essential amino acid that plays a role in protein synthesis and the formation of histamine. It is important for overall health and is found in various protein-rich foods.

A histidine supplement of up to 14 mg/kg/d can be taken to meet the needs not achieved through diet.

You can also increase your dietary histidine intake. Histidine is found in protein-rich foods such as meat, chicken, fish, beans, oats, and wheat. It's especially high in the Japanese food ingredient dashi or dried bonito, often used for soup stock [R].

How it helps

Histidine supplementation can help improve Executive Function by boosting brain health and function. This essential amino acid supports neurotransmission, learning, and memory which are critical components of executive functioning.

In a placebo-controlled trial of 20 subjects with high fatigue and sleep disruption scores, supplementation with L-histidine for 2 weeks reduced mental fatigue, shortened reaction time for the working memory task, and increased clear thinking and attentiveness [R].

68



Orange Juice

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Consume 8-ounces (about 240 milliliters) of orange juice daily, preferably in the morning with breakfast. This routine can be followed every day as part of a balanced diet for an indefinite period.

Description

Orange juice is a citrus beverage made from the juice of oranges. It is a rich source of vitamin C and other essential nutrients, contributing to immune support, skin health, and overall well-being.

How it helps

Orange juice is rich in Vitamin C and flavonoids, which improve brain health by protecting neurons and boosting memory function. However, it doesn't directly treat Executive Function disorders but could contribute to overall brain health and efficiency.

In a study with males aged 30-65, consuming 240ml of FR orange juice (272mg) improved executive function and psychomotor speed compared to a placebo, with increased subjective alertness [\[R\]](#).

69



Phosphatidylserine

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 100 mg of phosphatidylserine three times daily with meals. Continue this regimen for up to 6 months to evaluate its effectiveness.

TYPICAL STARTING DOSE
300 mg

Description

Phosphatidylserine is a naturally occurring phospholipid found in cell membranes, primarily in animal-based sources such as meat and fish. It is commonly used as a dietary supplement to potentially support cognitive function and memory, as well as age-related cognitive decline and improving focus and mental clarity.

[Phosphatidylserine](#) is a major component of all cell membranes. It’s found in high amounts in the brain, and it helps support brain function.

People use phosphatidylserine as a supplement to improve mental focus, memory, and mood.

How it helps

One study found that soybean-derived phosphatidylserine improved memory recognition, recall, executive functions, and mental flexibility in elderly people with subjective memory complaints [\[R\]](#).

Phosphatidylserine may help by improving cortical activity after induced stress, which may be linked to a more relaxed state [\[R\]](#).

70



Rhodiola

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 500 mg of rhodiola supplement daily, preferably in the morning to avoid potential interference with sleep.

TYPICAL STARTING DOSE

500 mg

Description

Rhodiola is a plant native to the arctic regions of Europe and Asia, where it's traditionally used to enhance stamina, combat stress and fatigue, and improve mental performance and resilience in harsh environments. Its main compounds include rosavins and salidroside.

[Rhodiola](#) (*Rhodiola rosea*) is a plant that grows in the mountains of eastern Europe and Asia [\[R\]](#).

Rhodiola is an *adaptogen*, meaning that it may help you adapt to stress. According to early research, this herb may help with [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Fatigue
- Burnout
- Low mood

How it helps

In a placebo-controlled trial of 112 healthy volunteers, supplementation with rhodiola improved working memory accuracy. Rhodiola was more effective when combined with ginkgo [\[R\]](#).

71



Low-Glutamate Diet

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

To follow a low-glutamate diet, avoid foods high in glutamate such as processed meats (e.g., sausages, ham), certain cheeses (e.g., Parmesan), soy products, and foods containing MSG. Opt for fresh fruits, vegetables, whole grains, and lean proteins. Implement this diet daily over an extended period for potential benefits.

Description

A low-glutamate diet may benefit individuals with sensitivities or certain neurological conditions by reducing the intake of glutamate-rich foods, potentially improving symptoms and overall well-being.

How it helps

In a placebo-controlled trial of 40 veterans with Gulf War Illness, following a low-glutamate diet for 1 month improved overall cognitive function and all cognitive domains (processing speed, executive function, reaction time, etc) except memory [R].

A low-glutamate diet may help by reducing excess stimulation of the neurons.

72



Coffee Cherry Extract

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 100-300 mg of coffee cherry extract supplement daily, preferably in the morning to avoid any potential interference with sleep. This can be consumed with or without food, and should be integrated into your daily routine for ongoing support of brain health.

TYPICAL STARTING DOSE

100 mg

Description

Coffee cherry extract, derived from the fruit surrounding coffee beans, contains antioxidants like chlorogenic acids. It has been studied for its potential to support cognitive function and overall antioxidant protection.

How it helps

In a placebo-controlled trial of 46 healthy volunteers, consuming 1100 mg coffee berry extract increased accuracy at rapid visual information processing (when taken alone) and executive function (when combined with 275 mg apple extract) [R].

Coffee cherry extract is rich in brain-enhancing compounds like antioxidants that support the health of neurons, improve neuroplasticity, and promote new neuron creation.

73



Desert Olive Tree Pearls

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take one capsule of desert olive tree pearls daily with water, preferably with a meal, for at least 8 weeks to potentially see benefits.

Description

Desert olive tree pearls, derived from the fruit of the desert olive tree, are rich in antioxidants and healthy fats. They are used in traditional medicine for potential health benefits, including anti-inflammatory properties and support for skin health.

How it helps

Desert olive tree pearls are rich in antioxidants such as hydroxytyrosol, which may help by reducing oxidative damage and inflammation in the brain.

In a placebo-controlled trial of 72 middle-aged and older adults, supplementation with desert olive tree pearls (3 g, 2x/day for 12 weeks), which contain 162 times more hydroxytyrosol than olive oil, improved psychomotor speed, reaction time, cognitive flexibility, processing speed, and executive function [R].

The study investigated the effects of desert olive tree pearls (DOTPs), rich in hydroxytyrosol, on cognitive function in middle-aged and older adults. Participants received 3g of DOTPs or placebo twice daily for 12 weeks. DOTP intake showed significant improvement in complex attention compared to placebo, with significant time effects observed in various cognitive domains including psychomotor speed, reaction time, cognitive flexibility, processing speed, and executive function [R].

74



Citicoline (CDP Choline)

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 250 to 1000 mg of citicoline (CDP choline) daily, in the morning with or without food. For best results, continue this supplement regimen daily for at least 6 weeks to 3 months.

TYPICAL STARTING DOSE

250 mg

Description

Citicoline is a compound that may have cognitive-enhancing properties and is sometimes used as a dietary supplement to support brain function and memory. It's believed to promote neural health and cognitive performance.

CDP-choline is a molecule naturally produced by the body. It is important for cell structure and function. It also contributes to the production of the chemical messenger [acetylcholine](#) [R, R].

The supplement form of CDP-choline is called [citicoline](#). It may support brain and eye health. It may also help with drug addictions [R, R].

How it helps

Citicoline (500-1,000 mg as a single dose) may improve executive function and working memory in people with low cognitive performance. However, it may not help medium performers and may even slightly impair cognition in high performers [R].

Long-term citicoline supplementation (1000 mg/day for 1 year) may improve executive function in people recovering from a stroke [R].

Citicoline may help by supporting brain health [R].

75



Neurofeedback

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Attend neurofeedback sessions with a trained therapist, usually once or twice a week, for a minimum of 20 sessions. Each session typically lasts 30 to 60 minutes where sensors are placed on your scalp to monitor brainwave activity, and feedback is given in real-time to help you learn to control or alter your brain functions.

TYPICAL STARTING DOSE

1 hour

Description

Neurofeedback is a therapeutic technique that helps individuals regulate brain activity, potentially improving focus, reducing anxiety, and enhancing cognitive function by providing real-time feedback on brainwave patterns.

How it helps

Neurofeedback trains your brain to enhance control over its executive functions such as decision-making and planned behavior. By reinforcing optimal brainwave patterns, it can improve your cognitive flexibility and working memory.

A study aimed to assess the efficacy of neurofeedback in enhancing executive functioning in the elderly. Seniors underwent beta up-training sessions targeting the frontal lobes. Results showed significant improvement in attentional control, as measured by reaction times in Stroop and Simon tasks post-training, suggesting neurofeedback's potential in mitigating age-related executive deficits [\[R\]](#).

However, other studies did not show any improvement in cognitive performance [\[R\]](#), [\[R\]](#).

76



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 24 healthy children, receiving horse-assisted therapy for 12 weeks improved executive function [R](#).

77



Ginkgo

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 120 mg of Ginkgo supplement daily, preferably with meals to aid absorption. This dosage is typically split into two 60 mg doses taken in the morning and evening for best results.

TYPICAL STARTING DOSE

120 mg

Description

[Ginkgo](#) (*Ginkgo biloba*) is an ancient tree used in traditional Chinese medicine [\[R\]](#), [\[R\]](#).

According to limited evidence, ginkgo leaf extract may help with [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Anxiety
- Dementia
- Eye problems
- Blood vessel problems
- Vitiligo

How it helps

In a placebo-controlled trial of 112 healthy volunteers, both ginkgo and rhodiola supplementation improved working memory accuracy. Their combination further improved this cognitive aspect [\[R\]](#).

78



Avoid PFAS Exposure

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

To avoid PFAS exposure, choose products that are labeled PFAS-free, especially when selecting cookware, cosmetics, and clothing. Reduce the consumption of packaged and fast foods since the packaging often contains PFAS. Use a water filter that is certified to remove PFAS compounds for your drinking and cooking water.

Description

Avoiding per- and polyfluoroalkyl substances (PFAS) exposure means avoiding products and environments contaminated with these chemicals, which can help prevent potential health issues like hormonal disruption and adverse effects on liver and immune function.

How it helps

A study of 1593 children associated *in utero* exposure to PFOSA with poorer attention, while POFA was associated with poorer executive function [\[R\]](#).

PFAS can disrupt hormonal balances affecting brain function and development.

79



Tennis

IMPACT

1 / 5

EVIDENCE

1 / 5

Description

Tennis is a great way to get exercise, improve your cardiovascular health, and burn calories. It can also help you build strength, improve your coordination, and relieve stress.

How it helps

In a non-placebo-controlled trial of 81 children, playing tennis and practicing isolated tennis skills improved executive function [\[R\]](#).

80



Progressive Muscle Relaxation

IMPACT1 / 5

EVIDENCE1 / 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

Progressive Muscle Relaxation (PMR) could help improve your stress management, which in turn could boost your executive functions like decision making and self-regulation, because your brain functions best when it isn't overwhelmed with stress. It trains your body to respond differently to stress by invoking a relaxation response, reducing the damaging effects of chronic stress, hence, potentially improving your executive function. In a non-placebo-controlled trial of 52 kindergarten children, practicing progressive muscle relaxation (two 30-minute sessions/week) for 12 weeks enhanced attention and executive functioning [R](#)].

81



Green Coffee Extract

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take a 400 mg dose of green coffee extract supplement daily. This can be consumed in the morning or as directed on the supplement’s packaging.

TYPICAL STARTING DOSE
400 mg

Description

Green coffee extract is believed to support weight management due to its high content of chlorogenic acids, which may help regulate blood sugar levels and promote fat metabolism.

Green coffee is made from unroasted coffee beans. It’s rich in an anti-inflammatory and antioxidant compound called [chlorogenic acid](#) [R, R].

Green coffee may help lower [R]:

- Blood pressure
- Weight
- Blood sugar levels

How it helps

In a placebo-controlled trial of 38 healthy volunteers, supplementation with chlorogenic acids for 16 weeks improved executive function [R].

Green coffee extract contains caffeine and antioxidants that may improve brain function.

Please note: *Green coffee bean extract contains caffeine. Keep this in mind if you're trying to limit your caffeine intake. If you're pregnant, limit caffeine to 200 mg per day* [R].

Please note: *chlorogenic acid from green coffee beans may inhibit the production of the thyroid hormone T4 (thyroxine). Individuals with thyroid disorders, particularly hypothyroidism or low T4 levels, should exercise caution when using coffee bean extract and always consult with a healthcare provider before taking this supplement* [R].

Please note: *polyphenols and tannins from coffee may bind to iron and form insoluble complexes, which reduces iron absorption in the gut. If you have anemia, consult your healthcare provider before using coffee or coffee supplements.*

82



BFR and Walking

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Perform Blood Flow Restriction (BFR) walking by attaching BFR bands to the upper portion of both legs, just below the hips, and inflate them to a pressure that is 40-80% of your limb occlusion pressure. Walk for 15-30 minutes a day, at least 3-4 times a week. It's recommended to start with lower pressures and shorter durations to gauge your body's response before gradually increasing.

TYPICAL STARTING DOSE

15 minutes

Description

Blood flow restriction (BFR) training is a specialized fitness and rehabilitation technique that involves applying pressure to restrict blood flow to specific muscles during exercise. This is typically achieved using cuffs or wraps placed on the limbs and then inflated to a controlled pressure. By temporarily reducing blood flow while allowing arterial inflow, BFR training creates a unique physiological response. It induces metabolic stress and muscle fatigue, leading to muscle growth and strength gains, even with lighter weights.

BFR is widely used in rehabilitation settings to aid in the recovery of injured individuals, helping them rebuild muscle strength without overloading compromised areas. It also has applications in improving muscular endurance and may have potential cardiovascular benefits, such as lowering blood pressure and enhancing vascular function. However, it should be performed under the guidance of a trained professional, as it's not suitable for everyone and has specific safety considerations.

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

How it helps

In a non-placebo-controlled trial of 24 healthy volunteers, BFR alone did not affect executive function but did improve it when combined with mild exercise such as walking [\[R\]](#).

83



Curcumin

IMPACT

1 / 5

EVIDENCE

1 / 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, a potent anti-inflammatory and antioxidant, may boost brain-derived neurotropic factor, linked to improved brain function and a decreased risk of brain diseases. Thus, it can potentially enhance executive functions like cognitive flexibility, reasoning, and problem-solving.

Supplementing with curcumin Longvida (400 mg/day) improved executive function in two trials on older participants. However, a higher dose of Longvida (2000 mg/day) did not improve motor and cognitive functions in healthy individuals [\[R\]](#), [\[R\]](#), [\[R\]](#).

Curcumin Longvida may help by reducing inflammation and oxidative stress in the brain. It also promotes the growth of new brain cells, potentially improving brain function.

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 [\[R\]](#), [\[R\]](#), [\[R\]](#).

84



B Vitamins

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

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

Description

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

- DNA formation
- Metabolism
- Energy production

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

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

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

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

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

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

How it helps

Short-term supplementation with B vitamins showed a slight effect on memory performance but did not affect mood in women of various ages. The study indicated that while B vitamins might influence certain cognitive functions, the effects could be modest and not universally beneficial across all cognitive domains [\[R\]](#).

High-dose B-group vitamin supplementation may increase levels of certain B vitamins (like B6 and B12) and reduce homocysteine levels. It may also improve metabolic markers in the brain, which suggests a potential for reducing oxidative stress and improving brain function [\[R\]](#).

However, a study on older people with mild B-12 deficiency found that supplementation with oral vitamin B-12 alone or in combination with folic acid did not improve cognitive function. This highlights that while correcting mild vitamin B-12 deficiency is important for overall health, it may not directly enhance executive functions or other areas of cognition [\[R\]](#).

85



Ashwagandha

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Take 250-600 mg of ashwagandha supplement daily. It can be consumed with water or a meal, depending on your preference or as advised by a healthcare provider.

TYPICAL STARTING DOSE

120 mg

Description

[Ashwagandha](#) (*Withania somnifera*) is an herb used in traditional Indian medicine. This herb is known as an *adaptogen* because it helps people adapt to stress.

This herb is known as an *adaptogen* because it helps people adapt to stress [\[R\]](#), [\[R\]](#).

How it helps

In a placebo-controlled trial of 50 participants, supplementation with ashwagandha (300 mg, 2x/day) for 8 weeks improved immediate and general memory, executive function, attention, and processing speed [\[R\]](#).

Ashwagandha (500 mg/day for 8 weeks) also improved auditory-verbal working memory in a placebo-controlled trial of 53 patients with bipolar disorder [\[R\]](#).

Ashwagandha may help by enhancing brain function and reducing stress.

86



Avocado

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Incorporate half to one whole avocado into your daily diet. You can add it to salads, sandwiches, or use it as a healthy fat substitute for spreads or dressings.

Description

Avocado is a nutrient-dense fruit known for its creamy texture and healthy monounsaturated fats. It is packed with vitamins, minerals, and dietary fiber, and may support heart health, skin health, and overall nutrition.

[Avocado](#) is a fruit first cultivated in Mexico in 500 BCE [\[R\]](#), [\[R\]](#).

You can eat it raw in salads, sandwiches, and dips. Avocado oil has recently become popular, but it’s much less nutritious than the whole fruit.

Avocado is rich in antioxidants, vitamins, minerals, and fiber. It may support [\[R\]](#):

- Heart health
- Healthy weight
- Healthy aging

How it helps

Avocados are rich in healthy fatty acids, fiber, and antioxidants that support brain health, potentially improving cognitive functions including memory and concentration. However, avocado alone cannot "treat" executive functions but can support overall brain health when included in a balanced diet.

In a [non-placebo-controlled trial of 40 healthy volunteers](#), consuming 1 avocado/day for 6 months **improved sustained attention, memory, and working memory** [\[R\]](#).

Consuming avocados for 12 weeks **improved attentional inhibition** in a [non-placebo-controlled trial of 84 overweight and obese participants](#) [\[R\]](#).

87



Dietary Omega-3 Fatty Acids

IMPACT

1 / 5

EVIDENCE

1 / 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

A study found that a high dietary intake of omega-3 fatty acids may reduce the deleterious effects of low physical activity [\[R\]](#).

88



Spirulina

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 1-8 g of spirulina supplements daily, preferably with a meal to enhance absorption.

TYPICAL STARTING DOSE

500 mg

Description

Spirulina is a blue-green algae. It is rich in nutrients like protein, vitamins, and minerals, particularly vitamin B12 and iron, and is a source of antioxidants, chlorophyll, and phycocyanin. It can be found in powdered or tablet form as a supplement, and is often used to boost energy, support the immune system, and enhance overall nutrition. Additionally, spirulina.

[Spirulina](#) is a supplement made from blue-green algae that grows in fresh and marine water [\[R, R\]](#).

Dried spirulina is up to 70% protein. It’s also rich in vitamins, antioxidants, and healthy fats. This makes it a great source of nutrition for both people and livestock [\[R, R, R\]](#).

People use spirulina supplements to reduce [\[R, R\]](#):

- Cholesterol
- Blood pressure
- Blood sugar

How it helps

Spirulina is rich in antioxidants and other beneficial compounds, that could enhance your brain's health and thereby potentially improving executive functioning like memory, flexibility, and focus. However, more in-depth, controlled studies in humans are needed to confirm this hypothesis.

In a [placebo-controlled trial of 80 older adults with mild cognitive impairment](#), supplementation with spirulina (1 g/day) for 12 weeks **improved visual learning, visual working memory, and vocabulary** [\[R\]](#).

89



Choline Supplements

IMPACT

0 / 5

EVIDENCE

2 / 5

How to implement

Take choline supplements at a dosage of 425 mg to 550 mg daily, depending on age and gender, with a glass of water. It is best to consume choline supplements with a meal for optimal absorption. Continue this regimen daily as part of your dietary supplement routine.

TYPICAL STARTING DOSE

425 mg

Description

Choline is an essential nutrient that plays a crucial role in various bodily functions, including brain health, liver function, and metabolism. Incorporating choline-rich foods into your diet supports cognitive function and overall nutritional well-being.

[Choline](#) is a nutrient required for optimal health. Although the body makes some, we need to get choline from our diets to avoid deficiency [\[R\]](#).

It plays key roles in supporting [\[R\]](#), [\[R\]](#):

- DNA production
- Cell structure and function
- Brain, nerve, and heart health

Eggs and beef liver are the best sources of choline. If you can’t meet your daily requirements with food, consider taking a choline supplement such as [\[R\]](#):

- [Phosphatidylcholine](#) (PC)
- [Citicoline](#) (CDP-choline)
- [Alpha-GPC](#)
- [Lecithin](#)

They all supply choline, but each one has unique health perks you may prefer. Check out our posts on different choline-containing supplements to find out which one suits you best.

How it helps

A study, also focusing on children with fetal alcohol spectrum disorders, suggested that choline supplementation might have some age-specific benefits, improving immediate recall performance in younger children, but overall effects on broader cognitive or executive functions were not conclusively positive [\[R\]](#).

However, another study focusing on choline supplementation in school-aged children with fetal alcohol spectrum disorders found that choline did not improve cognitive performance, including aspects of executive function, memory, and attention, compared to a placebo group [\[R\]](#).

In healthy adults, studies have found no acute effects of choline supplementation on memory or executive function. A study specifically examining the impact of choline bitartrate on cognitive performance in young adults did not find any improvement in working memory or declarative memory tasks [\[R\]](#).

90



Blood Flow Restriction Training

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Wrap a blood flow restriction (BFR) band or cuff around the upper portion of your limbs (arms or legs) at a pressure that feels tight but not painful, aiming for a perceived tightness of 7 out of 10. Engage in low-intensity resistance training, such as lifting weights that are 20% to 30% of your one-rep max, or perform bodyweight exercises. Do this for 15-30 minutes, 2-3 times a week. Always release the bands after each exercise set to restore normal circulation.

TYPICAL STARTING DOSE

15 minutes

Description

Blood flow restriction (BFR) training is a specialized fitness and rehabilitation technique that involves applying pressure to restrict blood flow to specific muscles during exercise. This is typically achieved using cuffs or wraps placed on the limbs and then inflated to a controlled pressure. By temporarily reducing blood flow while allowing arterial inflow, BFR training creates a unique physiological response. It induces metabolic stress and muscle fatigue, leading to muscle growth and strength gains, even with lighter weights.

BFR is widely used in rehabilitation settings to aid in the recovery of injured individuals, helping them rebuild muscle strength without overloading compromised areas. It also has applications in improving muscular endurance and may have potential cardiovascular benefits, such as lowering blood pressure and enhancing vascular function. However, it should be performed under the guidance of a trained professional, as it's not suitable for everyone and has specific safety considerations.

How it helps

In a study of 24 healthy volunteers, BFR alone did not affect executive function but did improve it when combined with mild exercise such as walking [\[R\]](#).

A study on the effects of dual-task training with blood flow restriction (20 min/session, 3 sessions/week for 8 weeks) on cognitive functions, muscle quality, and circulatory biomarkers in elderly women found that including BFR in training resulted in greater physiological and psychological responses. This suggests a potential improvement in cognitive functions when BFR is incorporated into exercise routines for older adults [\[R\]](#).

91



Airway Muscle Training

IMPACT

0 / 5

EVIDENCE

0 / 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

In an uncontrolled trial of 10 healthy volunteers, voluntary isocapnic hyperventilatory training of the respiratory muscles improved processing speed and working memory during exercise at altitude [\[R\]](#).

92



Fucoxanthin

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Take fucoxanthin as a dietary supplement in a dosage of 2.4 to 8 mg per day, with a meal that contains fat for better absorption. It can be taken in a single dose or divided into two doses throughout the day. Continue for at least 5 to 16 weeks to observe benefits.

TYPICAL STARTING DOSE

3 mg

Description

Fucoxanthin is a natural pigment found in certain types of seaweed and algae. It is believed to have potential health benefits, including supporting weight management and promoting antioxidant activity.

How it helps

In a study of 61 experienced gamers, supplementation with a *Phaeodactylum tricornutum* extract with 1% fucoxanthin and 500 mg guarana for 30 days improved reaction time, reasoning, learning, executive control, attention shifting (cognitive flexibility), and impulsiveness [\[R\]](#).

93



Agmatine

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Take agmatine as a dietary supplement in a dose of 1.6 to 6.4 milligrams per kilogram of body weight, daily. It can be consumed with or without food. For best results, continue taking it on a daily basis for at least two weeks to assess its effect on your body.

TYPICAL STARTING DOSE

1 g

Description

Agmatine is a naturally occurring compound found in the human body and in certain foods. It is sometimes used as a dietary supplement and is believed to have potential benefits for pain relief, mood regulation, and cognitive function.

How it helps

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

Agmatine may improve cognition by modulating several neurotransmitter systems, including potentially influencing acetylcholine release, crucial for learning and memory.

It also interacts with alpha2-adrenoceptors, which can affect cognitive processes like attention and executive function. Agmatine's neuroprotective properties, including reducing oxidative stress and neuroinflammation, further support cognitive health.

Additionally, by modulating NMDA receptors, it may enhance synaptic plasticity, essential for memory formation and learning.

[Insulin resistance](#) can lead to the accumulation of plaque and neurofibrillary tangles in the brain, which are the hallmarks of Alzheimer’s disease. Agmatine prevented cognitive decline by rescuing insulin signaling and preventing the accumulation of plaques and neurofibrillary tangles in the brains of rats [\[R\]](#), [\[R\]](#).

Agmatine is increased during spatial learning tasks and is stored in high levels in the hippocampus (a region of the brain associated with memory). Its role as a neurotransmitter is associated with memory formation [\[R\]](#), [\[R\]](#), [\[R\]](#).

Agmatine improved spatial memory consolidation, or the initial recording and storing of memory, but did not affect the retrieval of memories in rats [\[R\]](#).

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.