

Diabetic Neuropathy

Disease Report

REPORT CATEGORIES —



PAIN



NERVE HEALTH



BLOOD SUGAR
CONTROL

Sample Client

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DISCLAIMER

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

Personal information

NAME

Sample Client

SEX AT BIRTH

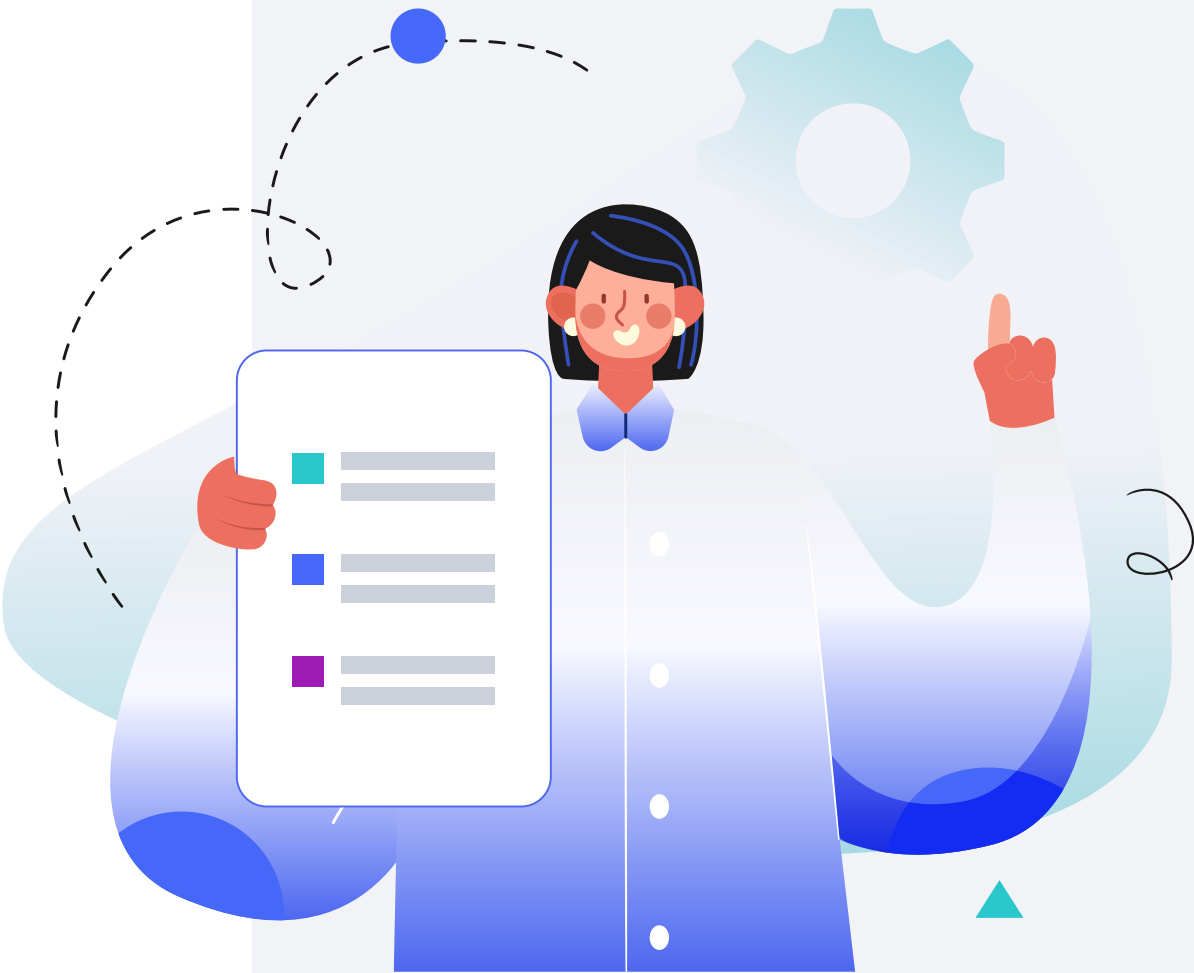
Male

HEIGHT

5ft 5" 165cm

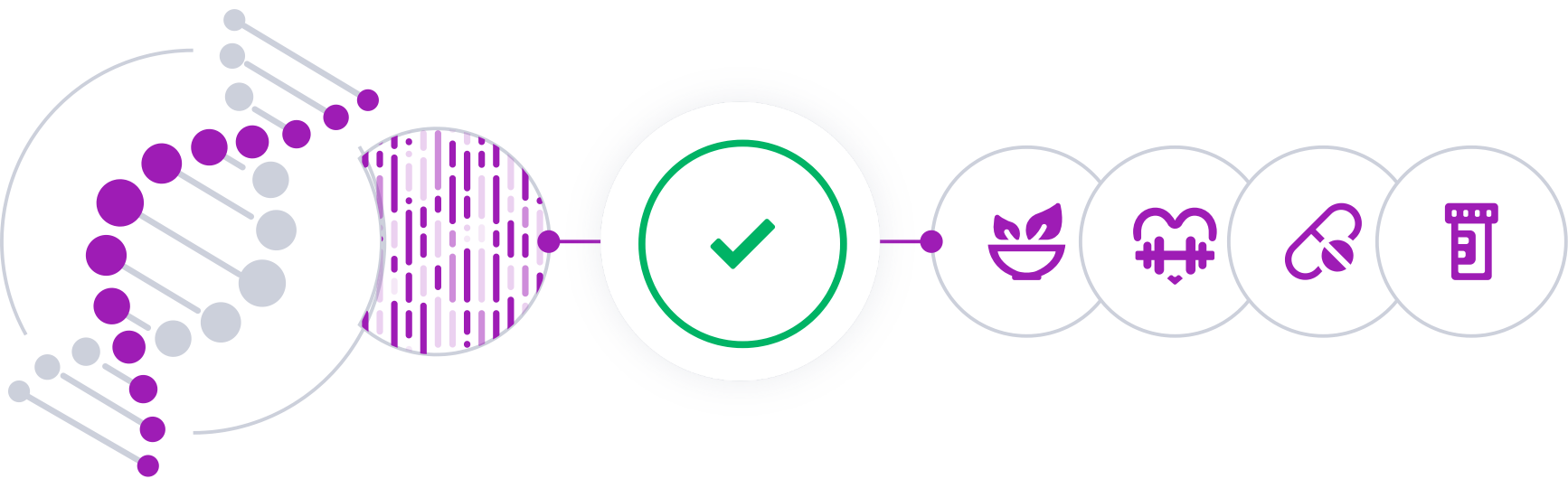
WEIGHT

137lb 62kg



How this works

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

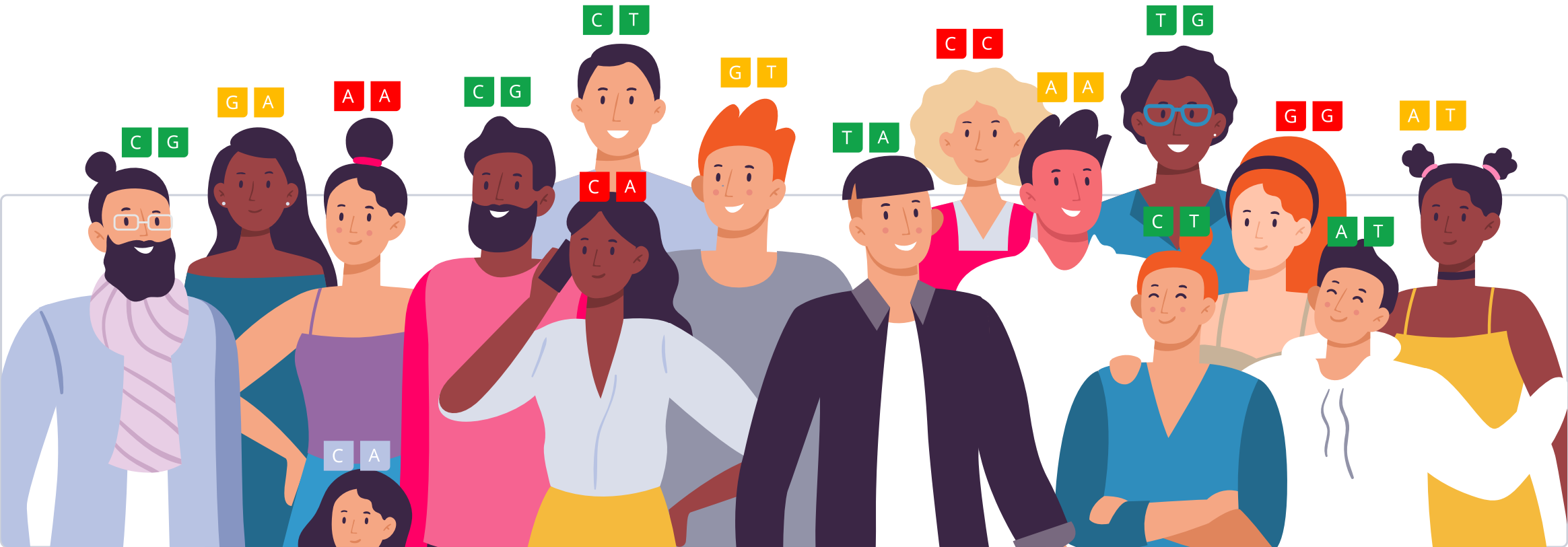


Similarly, our Trait Reports look at how your DNA influences your traits.



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

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



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

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

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



Genotype color info:

AA

You don't have any risk alleles

AA

You have 1 risk allele

AA

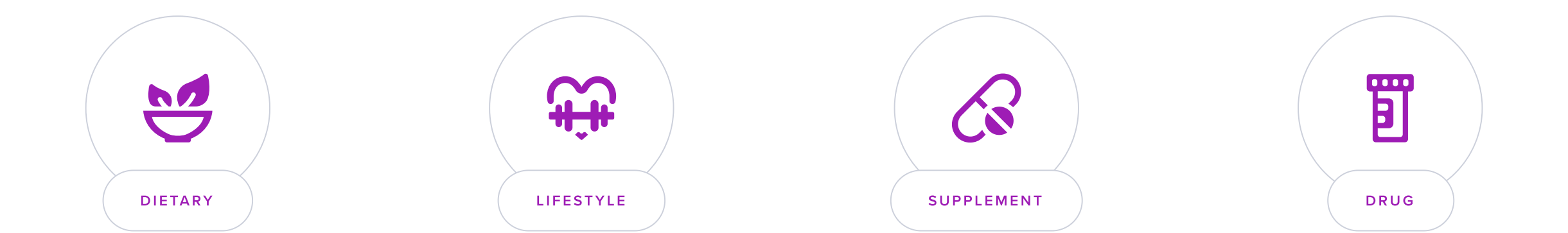
You have 2 risk alleles

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

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

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

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



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

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



Impact

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

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

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

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

Recommendation Evidence

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

Genotype-specific Evidence

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

Some things to keep in mind:

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

Introduction

Diabetic neuropathy is a **type of nerve damage that can occur if an individual has diabetes**. High blood sugar (glucose) can injure nerves throughout the body, usually nerves in the legs and feet.

Common manifestations of diabetic neuropathy include:

- Numbness, tingling, or pain in the toes, feet, legs, hands, arms, and fingers.
- Wasting of the muscles of the feet or hands.
- Indigestion, nausea, or vomiting.
- Diarrhea or constipation.
- Weakness.
- Dizziness or faintness due to a drop in blood pressure.
- Sexual dysfunction.

For some, these symptoms are mild; for others, diabetic neuropathy can be painful and debilitating.

Risk Factors and Genetics

Prolonged exposure to high blood sugar levels is the primary cause of diabetic neuropathy. However, other factors that might increase the risk or severity of diabetic neuropathy include:

- Smoking
- Alcohol abuse
- Obesity
- High blood pressure
- Kidney disease
- **Genetics**

Specific genetic variations might render some individuals more vulnerable to the neurotoxic effects of high blood sugar. Hence, while some people with diabetes may never develop neuropathy, others might face complications even with good glucose control.



MORE LIKELY

More likely to have diabetic neuropathy based on 1,658 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
GYPA	rs1132787	CC
TTC19	rs522521	CC

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

Your Recommendations

Your recommendations are prioritized according to the likelihood of it having an impact for you based on your genetics, along with the amount of scientific evidence supporting the recommendation.

You’ll likely find common healthy recommendations at the top of the list because they are often the most impactful and most researched.

DOSAGE		DOSAGE	
1	Topical Capsaicin	2	Transcutaneous Electrical Nerve Stimulation (TENS) 30 minutes
3	Alpha-Lipoic Acid 600 mg	4	Low-Level Laser Therapy (LLLT) 30 seconds
5	Vitamin B12 100 mcg	6	Backward Walking 10 minutes
7	Tocotrienols 100 mg	8	Coenzyme Q10 (CoQ10) 100 mg
9	L-Serine 500 mg	10	Progressive Muscle Relaxation 10 minutes
11	Evening Primrose Oil	12	Gamma-Linolenic Acid (GLA) 200 mg
13	Lavender Essential Oil 2 drops	14	Uridine 150 mg
15	Palmitoylethanolamide (PEA)	16	Allithiamine 50 mg
17	Lavender Oil Aromatherapy 2 drops	18	Stability Training 30 minutes
19	Aromatherapy 30 minutes	20	Vitamin B12 And Folate
21	B Vitamins	22	Acetyl-L-Carnitine 500 mg
23	Benfotiamine 300 mg	24	Dietary Omega-3 Fatty Acids
25	Walking 30 minutes	26	Aerobic Exercise (Cardio) 1 hour
27	Strength Training 1 hour		

1



Topical Capsaicin

IMPACT4 / 5

EVIDENCE3 / 5

How to implement

Apply a capsaicin cream or gel to the affected area 3 to 4 times daily. Make sure the skin is clean and intact before application. Avoid contact with eyes, mouth, and other sensitive areas. Use consistently for several weeks to see improvement.

Description

Capsaicin is a compound found in chili peppers and is used topically in creams and patches for its potential to alleviate pain related to conditions like arthritis, neuropathy, and muscle soreness.

[Capsaicin](#) is the compound that makes chili peppers spicy [\[R\]](#).

People use topical capsaicin to relieve pain and oral capsaicin to aid weight loss [\[R\]](#), [\[R\]](#).

In the short term, capsaicin causes pain. However, **if you’re exposed to a lot of capsaicin over a long period of time, it can reduce your pain sensitivity** [\[R\]](#), [\[R\]](#).

***Please note:** Capsaicin may irritate the skin. Consult your doctor if the irritation is severe or lasts longer than 4 weeks. If capsaicin gets in your eyes, flush them with water immediately and consult your doctor [\[R\]](#), [\[R\]](#), [\[R\]](#).*

How it helps

A topical 8% capsaicin patch has been proven to reduce neuropathic pain, including in patients with painful diabetic neuropathy, as effectively as oral treatments. The effects may start a few days after starting the treatment and last for about 5 months [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

2



Transcutaneous Electrical Nerve Stimulation (TENS)

IMPACT3 / 5

EVIDENCE3 / 5

How to implement

Apply TENS unit electrode pads around the area in pain; begin with the device set to a low setting and gradually increase intensity to a comfortable level. Use the device for 15-30 minutes per session for pain relief, and it can be used multiple times a day as needed.

TYPICAL STARTING DOSE

30 minutes

Description

TENS is a therapy that uses low-level electrical currents to relieve pain by stimulating the nerves. It's commonly used as a non-invasive method to manage various types of pain, such as musculoskeletal pain or chronic pain conditions.

How it helps

TENS may improve pain at 4- to 6-week follow-up and neuropathic symptoms at 12-week follow-up in people with diabetic neuropathy [\[R\]](#), [\[R\]](#).

3



Alpha-Lipoic Acid

IMPACT

2 / 5

EVIDENCE

3 / 5

How to implement

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

TYPICAL STARTING DOSE

600 mg

Description

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

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

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

How it helps

A study compared the efficacy of lipoic acid combined with epalrestat versus lipoic acid alone in treating diabetic peripheral neuropathy. It concluded that the combination therapy was more effective than lipoic acid alone, improving nerve conduction velocity [\[R\]](#).

A systematic review and meta-analysis of randomized controlled trials to evaluate the analgesic effect of alpha-lipoic acid in various pain disorders found it especially effective in treating diabetic polyneuropathy [\[R\]](#).

A study compared the efficacy of lipoic acid and methylcobalamin combination therapy versus methylcobalamin alone for diabetic peripheral neuropathy. The combination therapy was significantly more effective, especially in improving nerve conduction velocity, and was generally safe [\[R\]](#).

A study evaluated the effects of valsartan combined with alpha-lipoic acid on renal function in diabetic nephropathy patients. It concluded that this combination therapy significantly reduced urinary albumin levels and oxidative stress, enhancing renal function [\[R\]](#).

4



Low-Level Laser Therapy (LLLT)

IMPACT2 / 5

EVIDENCE2 / 5

How to implement

Use a low-level laser therapy device, as directed by its manual or a healthcare professional, on the affected area. Generally, treatment involves applying the laser for a specified duration, often between 30 seconds to several minutes, per treatment area. Sessions can be conducted 2-3 times per week for a period of 4-12 weeks, depending on the condition being treated and the device used.

TYPICAL STARTING DOSE

30 seconds

Description

Low-level laser therapy (LLLT), also known as photobiomodulation, is a type of light therapy that uses low-intensity lasers to promote healing. It has been shown to be effective in treating a variety of conditions, including pain, inflammation, and wound healing.

How it helps

Research in people with diabetic peripheral neuropathy showed that LLLT (photobiomodulation) therapy may [\[R\]](#), [\[R\]](#):

- Reduce neuropathic pain
- Improve nerve function
- Decrease foot ulcer risk

Light therapy may ease chronic pain by [\[R\]](#):

5



Vitamin B12

IMPACT1 / 5

EVIDENCE2 / 5

How to implement

Take a 50 mcg vitamin B12 supplement daily, preferably with a meal to enhance absorption.

TYPICAL STARTING DOSE

100 mcg

Description

Vitamin B12 is a water-soluble vitamin primarily found in animal-based foods like meat, fish, and dairy products. It plays a crucial role in maintaining healthy nerve cells, DNA synthesis, and red blood cell formation. Vitamin B12 deficiency can lead to anemia, neurological issues, and fatigue.

[Vitamin B12](#) is important for [\[R\]](#), [\[R\]](#):

- Building DNA
- Nervous system function
- Energy production

You can get vitamin B12 from [\[R\]](#):

- Animal products (meat, fish, eggs, and dairy)
- Fortified foods
- Supplements

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

How it helps

46 observational and 7 interventional studies were reviewed. PN correlated with low B12 levels, elevated methylmalonic acid, and homocysteine. B12 treatment showed non-significant symptom improvement, while B1 treatment was significant [\[R\]](#).

Two meta-analyses of 16 studies and 18 studies in type 2 diabetes found lower folate and vitamin B12 levels in those with diabetic peripheral neuropathy (DPN) in the Chinese population, not in Caucasian or mixed populations [\[R\]](#).

Seven randomized controlled trials assessed vitamin B12's effectiveness on somatic and autonomic symptoms, vibration perception, and electrophysiological measures. Both B12 complex and methylcobalamin showed benefits in pain and paresthesia relief, with inconsistent effects on other measures. Symptomatic improvement outweighed electrophysiological changes [\[R\]](#).

Fifteen studies on diabetic and herpetic neuropathy found most studies had a high risk of bias (73%). Mecobalamin alone and in combination were more effective than controls for clinical therapeutic efficacy. Mecobalamin combination treatment improved nerve conduction velocity, but neither mecobalamin alone nor in combination affected pain or neuropathic symptoms [\[R\]](#).

6



Backward Walking

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Engage in backward walking for 10-15 minutes daily, preferably in a safe, obstacle-free environment to minimize the risk of falls. This can be done in a straight line or in a loop. Ensure to start slowly to maintain balance and gradually increase your pace as you become more comfortable with the movement.

TYPICAL STARTING DOSE

10 minutes

Description

Backward walking, also known as retro walking, can provide unique benefits for balance, coordination, and muscle engagement compared to forward walking. It's used as a form of exercise to improve motor skills and lower-body strength.

How it helps

In a non-placebo-controlled trial of 60 patients with diabetic peripheral neuropathy, combining backward walking and supplementation with alpha-lipoic acid reduced peak plantar pressure better than alpha-lipoic acid alone [\[R\]](#).

7



Tocotrienols

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Take tocotrienols as a dietary supplement in doses ranging from 100 to 200 mg, 1-2 times a day, ideally with meals to enhance absorption. This intake can be continuous, but it's recommended to review its effects with a healthcare provider periodically, typically every 6 to 12 months.

TYPICAL STARTING DOSE

100 mg

Description

Tocotrienols are a form of vitamin E that helps to protect your cells. They fight harmful substances in your body called free radicals, which can damage our cells and lead to illness. By helping your body in this way, tocotrienols contribute to overall health, boosting immunity, and slowing down aging processes.

How it helps

n 2 placebo-controlled trials of 168 patients with diabetic neuropathy, supplementation with tocotrienol-rich vitamin E (Tocovid SuprabioTM, 200 mg, 2x/day for 12 months) improved conduction velocity of both median (by 1.25-1.60 m/s), sural sensory (by 1.6-2.10 m/s), and tibial nerves (by 0.75 m/s) [\[R\]](#), [\[R\]](#).

Tocotrienol-rich vitamin E improved nerve conduction velocity in diabetic peripheral neuropathy patients over 12 months, with significant improvements in median and sural nerves, and sustained the effects up to 6 months. No significant changes in other markers were noted [\[R\]](#).

Tocotrienol-rich Vitamin E (Tocovid) showed significant improvements in nerve conduction velocities and serum nerve growth factor levels in diabetic patients, suggesting its potential as a therapeutic agent for diabetic peripheral neuropathy [\[R\]](#).

8



Coenzyme Q10 (CoQ10)

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

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

TYPICAL STARTING DOSE

100 mg

Description

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

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

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

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

- Organ meats
- Fatty fish
- Whole grains

How it helps

In a double-blind, placebo-controlled trial with 49 patients having type 2 diabetes, 12 weeks of daily ubiquinone (400 mg) significantly improved neuropathy symptoms, nerve function, and reduced oxidative stress (LPO) without adverse effects [R](#).

9



L-Serine

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take l-serine supplements orally, starting with a dose of 500 mg per day. If well tolerated and based on the desired effect, the dose can be gradually increased, but it should not exceed 2,000 mg per day without medical advice. It's best taken with meals to enhance absorption.

TYPICAL STARTING DOSE

500 mg

Description

L-serine is an amino acid essential for the production of proteins and other important molecules in the body. It plays a role in supporting brain health, immune function, and overall well-being.

How it helps

L-serine deficiency is linked to diabetic neuropathy, affecting limbs and internal organs. Altered sphingolipid synthesis, particularly elevated neurotoxic DSLs, plays a role in neuropathy and pancreatic β -cell cytotoxicity, impacting glucose homeostasis and diabetes. Studies suggest L-serine supplementation lowers DSL levels, improving glucose regulation and neuropathy symptoms in diabetes. [\[R, R, R, R, R, R, R, R\]](#)

10



Progressive Muscle Relaxation

IMPACT

1 / 5

EVIDENCE

1 / 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

In a non-placebo-controlled trial of 77 patients with type 2 diabete and diabetic neuropathy, practicing progressive muscle relaxation (20 min/day) for 12 weeks reduced pain as effectively as mindfulness meditation [\[R\]](#).

11



Evening Primrose Oil

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 500mg to 1000mg of evening primrose oil, in capsule form, once daily with a meal to ensure optimal absorption. This regimen is typically recommended for several months to evaluate its effectiveness for the specific condition being addressed.

Description

Evening primrose is a plant known for its seeds, which are a source of gamma-linolenic acid (GLA), an essential fatty acid. Some studies suggest that evening primrose oil, derived from these seeds, may help alleviate symptoms of conditions like premenstrual syndrome (PMS) and eczema, as well as support overall skin health.

Evening primrose (*Oenothera biennis*) is a flowering plant. Its name comes from the fact that its flowers close during the day and open when the sun sets [R].

[Evening primrose oil](#) comes from the plant’s seeds. It is rich in omega-6 fatty acids like [GLA](#). People use this oil to help with high triglycerides [R, R].

How it helps

GLA supplementation showed significant improvements in 13 out of 16 assessed parameters for mild diabetic neuropathy compared to placebo, particularly effective in well-controlled diabetic patients [R].

Gamma-linolenic acid significantly improved symptoms and nerve function in patients with distal diabetic polyneuropathy over 6 months, suggesting its potential in treatment and prevention [R].

12



Gamma-Linolenic Acid (GLA)

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Take 200-300 mg of gamma-linolenic acid (GLA) daily as a supplement, usually available as capsules, for a period of 6 months to assess its effects on your condition. It is best absorbed when taken with food.

TYPICAL STARTING DOSE

200 mg

Description

GLA is an omega-6 fatty acid found in certain plant oils, such as evening primrose oil and borage oil. It may have anti-inflammatory properties and can potentially benefit skin health, hormonal balance, and overall well-being.

Your body naturally makes **gamma-linolenic acid (GLA)** to help control inflammation. It’s a polyunsaturated fatty acid (PUFA) found in plants like [\[R\]](#), [\[R\]](#):

- [Borage](#)
- Blackcurrant
- Evening primrose

People mainly use GLA for [\[R\]](#):

- Skin conditions
- Dry eyes
- Hair and nail care

How it helps

A study with 111 mild diabetic neuropathy patients found that a daily dose of 480 mg GLA had a favorable impact on various neuropathy parameters compared to a placebo over one year, especially in well-controlled diabetes patients [\[R\]](#).

13



Lavender Essential Oil

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Add 2-3 drops of lavender essential oil to a diffuser filled with water and use it for aromatherapy. Alternatively, you can mix a few drops with a carrier oil like coconut oil and apply it topically to your temples or wrists before bedtime. Use daily for best results.

TYPICAL STARTING DOSE

2 drops

Description

Lavender essential oil is known for its calming and soothing properties. It is often used in aromatherapy to reduce stress and anxiety, promote relaxation, and improve sleep quality.

[Lavender](#) is a decorative flower and a calming herb [\[R\]](#). People use it to:

- Reduce anxiety [\[R\]](#)
- Improve sleep quality [\[R\]](#), [\[R\]](#)
- Relieve pain [\[R\]](#), [\[R\]](#)

Lavender is available as an **oral supplement** or as an **essential oil for aromatherapy** [\[R\]](#).

How it helps

In a randomized trial with 75 diabetic neuropathic patients, aromatherapy massage using lavender oil significantly reduced pain scores compared to placebo and control groups. Quality of life also improved after four weeks). Aromatherapy with lavender oil is recommended as a complementary method to reduce neuropathic pain and enhance patients' quality of life without side effects, according to the study's conclusion. Nurses can consider its use for patients [\[R\]](#).

14



Uridine

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take uridine as a supplement in the form of uridine monophosphate (UMP) capsules. The usual dosage is 150-250 mg, taken orally once or twice daily, preferably with food to enhance absorption. This supplement regimen can be continued indefinitely, but it's recommended to evaluate its effects periodically, every 3-6 months, with your healthcare provider.

TYPICAL STARTING DOSE
150 mg

Description

Uridine is a nucleotide that plays a role in RNA synthesis and is found in various foods. It is used as a dietary supplement to support cognitive function, enhance memory, and promote overall brain health.

How it helps

In a placebo-controlled trial of 40 diabetic patients with peripheral neuropathy, supplementation with uridine significantly improved nerve function starting from day 120, with sustained effects observed during follow-up [R].

15



Palmitoylethanolamide (PEA)

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

For managing pain and inflammation, take 300mg to 1,200mg of palmitoylethanolamide (PEA) in divided doses throughout the day, preferably with meals to enhance absorption. This regimen should be followed for at least 6 weeks to evaluate its effectiveness.

Description

Palmitoylethanolamide (PEA) is a naturally occurring fatty acid amide. It is a compound found in various tissues of animals, including humans. PEA has been a supplement for the past couple of decades, and is utilized for its potential anti-inflammatory and pain-relieving properties.

[Palmitoylethanolamide](#) (PEA) is a compound naturally made by the body to help combat inflammation [\[R\]](#).

It’s also made by plants and other animals. Good sources of PEA include [\[R\]](#):

- Soy lecithin
- Soybeans
- Egg yolk
- Peanuts

How it helps

In a placebo-controlled trial of 70 patients with diabetic neuropathy, supplementation with PEA (600 mg/day for 8 weeks) reduced diabetic peripheral neuropathic pain and inflammation, and improved mood and sleep [\[R\]](#).

16



Allithiamine

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take an allithiamine supplement daily with a meal. The dosage typically ranges from 50 to 300 mg per day, depending on specific health goals and guidance from a healthcare provider. It's important to follow the product-specific instructions or a healthcare professional's advice on dosage and duration.

TYPICAL STARTING DOSE

50 mg

Description

Allithiamine is a form of thiamine (vitamin B1) that is found in garlic. It has been shown to have antioxidant, anti-inflammatory, and antimicrobial properties.

How it helps

In a [placebo-controlled trial of 40 patients with diabetic polyneuropathy](#), receiving allithiamine (400 mg/day) for 3 weeks **reduced pain** [\[R\]](#).

The combination of allithiamine (120-320 mg/day) and the vitamins B6 and B12 taken for 12 weeks **improved nerve conduction velocity in the peroneal nerve and showed a trend toward improvement of the vibration perception threshold** in a [placebo-controlled trial of 24 diabetic patients with diabetic polyneuropathy](#) [\[R\]](#).

17



Lavender Oil Aromatherapy

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Place 2-3 drops of lavender essential oil in a diffuser filled with water. Use the diffuser in your bedroom or workspace for 30-60 minutes, especially before bedtime or during periods of stress.

TYPICAL STARTING DOSE

2 drops

Description

Lavender oil aromatherapy involves inhaling the soothing scent of lavender essential oil. It is used to promote relaxation, reduce anxiety, and improve overall mental well-being.

How it helps

In a randomized trial with 75 diabetic neuropathic patients, aromatherapy massage using lavender oil significantly reduced pain scores compared to placebo and control groups. Quality of life also improved after four weeks). Aromatherapy with lavender oil is recommended as a complementary method to reduce neuropathic pain and enhance patients' quality of life without side effects, according to the study's conclusion. Nurses can consider its use for patients [\[R\]](#).

18



Stability Training

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Integrate stability exercises into your workout routine 2-3 times per week. These exercises include activities such as using a stability ball, performing balance exercises on a balance board, or doing body-weight exercises that focus on balance and core strength, such as planks and single-leg stands. Spend approximately 20-30 minutes per session focusing on these exercises.

TYPICAL STARTING DOSE

30 minutes

Description

Stability training is a form of exercise that focuses on enhancing core strength and balance through targeted movements and exercises, often incorporating equipment like stability balls, balance boards, or resistance bands. It helps improve overall stability and posture while reducing the risk of falls and injury.

How it helps

A study included 10 diabetic patients with neuropathy and 10 nondisabled aged-matched subjects. After balance training, the diabetic group improved stability, reducing the gap with the control group [\[R\]](#).

19



Aromatherapy

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Select essential oils like lavender, peppermint, or eucalyptus. Use a diffuser to disperse the scent into your room for 30-60 minutes at a time, up to 3 times a day. Alternatively, apply a few drops diluted in a carrier oil directly to your skin, such as on your temples or wrists, twice a day.

TYPICAL STARTING DOSE

30 minutes

Description

Aromatherapy is a holistic practice that uses the scents and aromas of essential oils to promote physical, mental, and emotional well-being. It is often used for relaxation, stress reduction, and to address various health concerns through inhalation or topical application of essential oils.

Aromatherapy uses concentrated plant extracts known as **essential oils**. They can be inhaled using a diffuser (a device that releases small amounts of oil into the air) or applied to the skin using a roller [\[R\]](#).

[Lavender](#) is a decorative flower and a calming herb and its essential oil is commonly used in aromatherapy. People use it to [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Reduce anxiety [\[R\]](#)
- Improve sleep quality [\[R\]](#), [\[R\]](#)
- Relieve pain [\[R\]](#), [\[R\]](#)

Essential oils can be harmful if not used properly. Tips for using them safely include [\[R\]](#), [\[R\]](#):

- Diluting them properly using a plant-based carrier oil (such as olive oil or almond oil)
- Using diffusers in a well-ventilated area for a maximum of 1 hour
- If using on the skin, testing a small area first and waiting a day before using more
- Keeping essential oils away from candles or other heat sources

How it helps

In 2 non-placebo-controlled trials of 121 patients with diabetic neuropathy, receiving aromatherapy massage with lavender essential oil or a blend of rosemary, geranium, lavender, eucalyptus, and chamomile oil for 1 month reduced pain and improved quality of life [\[R\]](#), [\[R\]](#).

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Vitamin B12 And Folate

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Take a combined supplement of vitamin B12 and folate daily. For adults, the typical dose is 2.4 mcg of B12 and 400 mcg of folate. This supplement should be taken with water and a meal to enhance absorption.

Description

Vitamin B12 and folate (vitamin B9) work together to support DNA synthesis and red blood cell formation. Both are essential for preventing megaloblastic anemia and are commonly found in a variety of foods, including leafy greens, legumes, and fortified cereals.

How it helps

Vitamin B12 and folate deficiencies are linked to nerve damage. These vitamins help maintain healthy nerve cells and may help reduce symptoms of diabetic neuropathy.

21



B Vitamins

IMPACT

0 / 5

EVIDENCE

0 / 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

B Vitamins, especially B12 and B6, are essential for nerve health and have been found to reduce symptoms of neuropathy by supporting nerve function and repair.

22



Acetyl-L-Carnitine

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Take 500-1,000 mg of Acetyl-L-Carnitine per day, split into 2 or 3 doses, with or without food. Joe prefers taking 500 mg in the morning. It can be taken indefinitely for chronic conditions or for a period of several months for acute concerns.

TYPICAL STARTING DOSE
500 mg

Description

[Carnitine](#) is a protein building block (amino acid). It comes in many forms, such as acetyl-L-carnitine. Acetyl-L-carnitine may help with nerve damage and mood problems.

[Carnitine](#) is a protein building block (amino acid). It comes in many forms, such as acetyl-L-carnitine [\[R\]](#), [\[R\]](#), [\[R\]](#).

[Acetyl-L-carnitine](#) may help with [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Nerve damage
- Mood problems
- Cognitive decline

Doctors are also studying its potential effect on drug addiction [\[R\]](#).

How it helps

Acetyl-L-Carnitine has been shown to reduce pain and improve nerve function in people with diabetic neuropathy by supporting energy production in nerve cells and protecting them from damage.

23



Benfotiamine

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Take 300-600 mg of benfotiamine per day, in divided doses with meals to improve absorption. This regimen should be followed daily, potentially long-term, especially for conditions like diabetic neuropathy or for general B1 vitamin supplementation.

TYPICAL STARTING DOSE

300 mg

Description

Benfotiamine is a special form of vitamin B1. It's highly beneficial for the body as it helps convert the food we eat into energy. It also contributes to the overall health of our nerve cells protecting us from nerve-related diseases.

How it helps

Benfotiamine, a fat-soluble form of vitamin B1, helps reduce advanced glycation end products (AGEs), which are harmful compounds that form when proteins or fats combine with sugar in the bloodstream, thereby reducing nerve damage in diabetic neuropathy.

24



Dietary Omega-3 Fatty Acids

IMPACT

0 / 5

EVIDENCE

0 / 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

Dietary Omega-3 Fatty Acids reduce inflammation and nerve pain by enhancing nerve health and supporting the repair of nerve tissues affected by diabetic neuropathy.

25

Walking

IMPACT

0 / 5

EVIDENCE

0 / 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 can improve circulation and overall cardiovascular health. Better blood flow can reduce the severity of neuropathy symptoms and improve overall quality of life.

26

Aerobic Exercise (Cardio)

IMPACT

0 / 5

EVIDENCE

0 / 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

Aerobic exercise improves blood flow, which can help reduce nerve pain and control blood sugar levels, both critical factors in managing diabetic neuropathy.

27



Strength Training

IMPACT

0 / 5

EVIDENCE

0 / 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

Strength training can improve muscle strength and function. This can alleviate some symptoms of diabetic neuropathy by enhancing blood circulation and reducing pain.

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.

	HbA1c	30 mmol/mol		29 Dec 2025
	Zinc	17.12 umol/L		9 Nov 2025
	Glucose, Fasting	97 mg/dL		9 Nov 2025
	Vitamin B12	687 pg/mL		9 Nov 2025
	Homocysteine	12.84 umol/L		9 Nov 2025
	Albumin/Creatinine Ratio, Random Urine	37 mg/g crt		9 Nov 2025
	hs-CRP	1.6 mg/L		9 Nov 2025
	Vitamin B6	55 ng/mL		13 Jan 2026

Your Lifestyle Assessments

Ever heard of the term Nature vs. Nurture?

The thing is, both DNA and environment play a role in determining your health risks. The following assessments shows how much of an impact your lifestyle, environment and medical history are having on your health risks.



LIFESTYLE

You have a **reduced risk** of diabetic neuropathy based on the answers you provided.

Your Lifestyle Risk

LowDecreasedAverageIncreasedHigh

Factors impacting your risk:

What is your age?	Increasing Risk	!
41		
Have you recurrently been diagnosed with high cholesterol?	Increasing Risk	!
Yes		
Have you ever been diagnosed with diabetes?	Decreasing Risk	✓
No		
Do you smoke tobacco?	Decreasing Risk	✓
No, never		
Have you recurrently been diagnosed with high triglycerides?	Decreasing Risk	✓
No		
Did you complete 12 or more years of education?	Decreasing Risk	✓
Yes		
Have you ever been diagnosed with high blood pressure (hypertension)?	Decreasing Risk	✓
No		
Have you had obstructive sleep apnea symptoms in the last year?	Decreasing Risk	✓
No		