

Landmark Study Shows Sardines Help Keep Diabetes Away

Analysis by [Dr. Joseph Mercola](#)

✓ Fact Checked

STORY AT-A-GLANCE

- › Researchers found people with prediabetes who ate two cans of sardines a week significantly lowered their risk of developing Type 2 diabetes; they lowered their insulin resistance and blood pressure and increased adiponectin
- › Sardines are a fatty cold-water fish that are high in omega-3 fatty acids. Seek out cold water fatty fish low in toxins and contaminants such as herring, sardines, anchovies and wild-caught Alaskan salmon
- › Omega-3 fats have a protective effect on your lungs and mitochondria, and may reduce inflammation, optimize muscle growth and improve metabolic syndrome
- › The best way to know your level of omega-3 is through an omega-3 index test. Maintaining an optimal level of 8% or more can reduce your risk of heart disease and all-cause mortality

Type 2 diabetes is a metabolic condition that is affected by several factors, including the foods you eat and the amount of exercise you get. There are several significant consequences of Type 2 diabetes, including neuropathy, loss of sight, [kidney disease](#) and heart disease.¹ Recent data² show people who eat sardines may lower their risk of Type 2 diabetes.

Risk factors for Type 2 diabetes³ include being overweight, having a family member with Type 2 diabetes, being physically inactive and having been diagnosed with gestational diabetes (diabetes during pregnancy).

People with metabolic syndrome also have a higher risk of being diagnosed with diabetes. You may be diagnosed with metabolic syndrome if you have three of the five health conditions associated with the syndrome.⁴ These include high blood sugar, high blood pressure, high triglycerides, low levels of high-density lipoproteins (HDL) or a large waist circumference.

Prediabetes is a condition in which your blood sugar level is too high, but not high enough for Type 2 diabetes.⁵ Nearly 88 million adults in the U.S. have prediabetes, and a vast majority of those do not know they have it. Prediabetes also increases your risk of heart disease and stroke.

According to the National Institute of Diabetes and Digestive and Kidney Diseases,⁶ there are an estimated 34.2 million people in the U.S. with diabetes. This is 10.5% of the population. Nearly 7.3 million of those do not know they have diabetes. You may help reduce your potential risk of developing this condition by making dietary and exercise changes.

Two Sardines a Day May Keep Diabetes at Bay

One simple dietary change that may have a positive impact on your risk for diabetes may be adding sardines to your daily regimen. According to a 2021 study published in *Clinical Nutrition*,⁷ eating sardines consistently may have a protective effect against developing **Type 2 diabetes**.

The researchers enrolled 152 people who had a diagnosis of prediabetes and were at least 65 years old.⁸ In this study, they defined **pre-diabetes** as glucose levels between 100 and 124 milligrams per deciliter (mg/dL). The whole group was placed on a nutritional program to help reduce the risk of developing Type 2 diabetes.

They were then randomized into a control group and an intervention group, members of which consumed approximately two cans of sardines in olive oil each week. The participants were given instructions to eat the entire sardine without removing the bones and were given a list of recipes.

At the end of the year-long intervention, the researchers compared the risk of developing diabetes from the beginning of the study and the end of the study. In the control group, 27% were at high risk of developing Type 2 diabetes at the start of the study, which dropped to 22% at the end of one year with nutritional changes.⁹

However, in the sardine group, 37% were at high risk of developing Type 2 diabetes before the intervention began. At the end of one year, this dropped to 8%. The researchers also found there were other measurable parameters that improved in the group that consumed sardines each week.

These included a reduction in insulin resistance, a rise in HDL cholesterol and an increase in adiponectin, a hormone that accelerates the breakdown of glucose. They also measured a decrease in blood pressure and triglycerides.¹⁰

The study's lead researcher believes sardines should be recommended as a food as opposed to separating the nutritional benefits from the fatty fish, which are rich in omega-3 fatty acids, calcium, vitamin D and taurine. She said:¹¹

"Not only are sardines reasonably priced and easy to find, but they are safe and help to prevent the onset of Type 2 diabetes. It is easy to recommend this food during medical check-ups, and it is widely accepted by the population.

As we get older, restrictive diets (in terms of calories for food groups) can help to prevent the onset of diabetes ... the results lead us to believe that we could obtain an equally significant preventive effect in the younger population."

Sardines Are High in Omega-3 Fat

Sardines are a fatty fish, high in omega-3 fatty acids. After the data analysis, researchers stated they plan to study how sardines may affect the gut microbiome.¹² Eating a diet high in omega-3 fats has demonstrated a protective effect on other health markers as well.

The rise in chronic inflammatory diseases in the past decades is likely associated with the introduction and current ubiquitous use of vegetable oils and processed foods high in **omega-6 fatty acids**.¹³ Although omega-3 and omega-6 fatty acids are essential for good health, a correct balance is required to be your healthiest.¹⁴

Many people consume far too many omega-6 fatty acids found in everything from french fries to frozen meals and salad dressings. Ideally, you want to maintain a ratio of 4-to-1 of omega-6 and omega-3 fats or less.¹⁵ Yet, this can be nearly impossible if you are regularly eating processed foods or restaurant fare.

In my view, one of the most hazardous fats in the human diet is omega-6 **linoleic acid** (LA). Processed vegetable oils are a primary source of LA, but animal foods such as chicken from concentrated animal feeding operations and **farmed salmon** also have a high amount thanks to the food they are fed, which is high in LA-rich grains.

As I discuss in "**Why You Need More Omega-3**," there is evidence to suggest that an excessive amount of LA plays a role in many chronic diseases. Omega-3 fats are found in both plants and marine animals. However, they are different types of omega-3 and they are not interchangeable.¹⁶

Plant-based omega-3 fats are found in walnuts, leafy green vegetables, flaxseed and chia seeds.¹⁷ They contain short-chain alpha linoleic acid (ALA) and do not have the long chain docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA) found in marine animal-based omega-3.

Although ALA is a precursor to EPA and DHA, it requires an enzyme to convert. In most people, the conversion rate is exceptionally small, typically less than 1%.¹⁸ While the small amount of ALA you may eat is converted into the long-chain omega-3 fats your body requires, the process is highly inefficient and cannot supply nearly as much as consuming marine-based omega-3 fats high in DHA and EPA.

It is also important to carefully select your fish since only cold-water fatty fish have high levels of omega-3. Some examples include wild-caught Alaskan salmon, **sardines**, anchovies, mackerel and herring. It's best to avoid farmed fish altogether for three reasons: first, because there's an exaggerated potential for contamination;¹⁹ second,

most farms feed the fish genetically engineered corn and soy;²⁰ and third, the omega-6 fats fed to these fish are about 90% dangerous LA fat.

In other words, consuming these fish does not correct a high omega-6 to omega-3 ratio. In fact it contributes to it, since farmed salmon have only half the omega-3 of wild salmon^{21,22} and more than 5.5 times the amount of omega-6.^{23,24}

Omega-3 Protects Your Lungs and Mitochondria

In addition to a protective effect against diabetes, omega-3 fatty acids help to protect your lungs and **mitochondria**. Researchers followed first responders after the September 11, 2001, attack on the Twin Towers in New York²⁵ during which firefighters and paramedics were exposed to 10 million tons of caustic material released as the towers were reduced to rubble.²⁶

Researchers from New York University School of Medicine undertook an analysis to determine if there were indications that some first responders may have had a greater risk than others of respiratory problems that occurred after exposure.

They measured metabolites,²⁷ which are a natural byproduct of the breakdown of fat, protein and carbohydrates, and found there were 30 specific metabolites in first responders who had a lower incidence of obstructive airway disease. They also found those with lower levels of the metabolites had a higher risk of developing pulmonary disease.

One group of metabolites associated with a lower risk of lung injury were lipids.²⁸ The researchers found that EPA in particular acts as a precursor for reducing inflammatory response and immune response to any injury and may have helped reduce the damage in first responders triggered by exposure to toxins.²⁹

Another study in children living in Baltimore City³⁰ also found evidence those who ate more foods with omega-3 had a lower asthmatic response to particulate matter pollution than children with lower levels of omega-3s. Conversely, children with higher

levels of omega-6 had a higher percentage of neutrophils in response to pollution, which is a white blood cell marker of inflammation.

Your omega-3 levels may also affect mitochondrial function.³¹ Some of the more profound effects of mitochondrial disease are evident in the brain and muscle, including the heart. Your mitochondria are important in energy production and calcium signaling, as well as apoptosis and autophagy.

One animal study demonstrated there was a positive effect on mitochondrial function and neuroprotection with the administration of omega-3 fats.³² Another lab study showed omega-3 fat exposure to cells induced metabolic rate, thus increasing mitochondrial content in comparison to control cells.³³

One of the signs of advancing age is remodeling of the cell membranes in the heart.³⁴ An impact from this remodeling is mitochondrial function, which plays a role in sustaining energy production. Changes in the mitochondrial membrane are exacerbated by the presence of omega-6, but increasing omega-3 fat can help affect aging and facilitate mitochondrial energy production.

Your Omega-3 Index May Predict Mortality

A deficiency in EPA and DHA can leave you vulnerable to chronic disease. Optimizing your omega-3 levels is a foundational component to good health. However, there is no good way to know your omega-3 level without getting an [Omega-3 Index test](#).

Your target Omega-3 Index is 8%.³⁵ This is the typical level of people living in Japan where you'll find the lowest rate of sudden heart death in the world. The highest risk is in people whose Index is 4% or lower. At this point there is no evidence to suggest the measurement is different for men, women or for different ages.

One study,³⁶ published in January 2021, evaluated 100 individuals' Omega-3 Index and compared them against their COVID-19 outcomes. The primary outcome measurement was death. When the overall data were analyzed, the researchers found only one death in the group with the highest quartile of Omega-3 Index.

The research data also confirmed past results that demonstrated the average person in the U.S. has an Omega-3 Index near 5%,³⁷ which is well below the measurement that has demonstrated protective effects on overall mortality.³⁸ The data from this group showed an average index of 5.09% and a median of 4.75%.³⁹

One study⁴⁰ published in 2018 confirmed omega-3 fat can reduce your risk of cardiovascular disease, coronary heart disease and all-cause mortality. The researchers measured Omega-3 Index in 2,500 participants and found those in the highest quintile had a total mortality 34% lower than those in the lowest quintile.

The Many Benefits of Omega-3 Fats

In addition to protecting your heart, lungs and mitochondria, omega-3 fats have more health benefits, including:

Reducing inflammation — This can be helpful for those with [rheumatoid arthritis](#) by reducing stiffness and pain.⁴¹ Women who suffer from menstrual pain may also experience milder pain.^{42,43}

Optimizing muscle growth and bone strength — Omega-3 fats help your body build healthy muscle mass, including in people suffering from cancer who may experience cachexia.⁴⁴ They can also help improve your bone strength by improving the utilization of calcium in your body. This may lead to a reduction in the development of osteoporosis.⁴⁵

Improving metabolic syndrome⁴⁶ and insulin resistance.⁴⁷

Improving mental health and behavior — Evidence shows benefits for children with attention deficit hyperactivity disorder (ADHD), including reduced aggression, hyperactivity,⁴⁸ impulsivity,⁴⁹ oppositional behavior⁵⁰ and restlessness.⁵¹

Omega-3 is associated with lowered risk for other neurological/cognitive dysfunction as well, including memory loss, brain aging, learning disorders and

ADHD,⁵² autism and dyslexia.⁵³

Protecting your vision – DHA is a major structural element in your eyes and brain.⁵⁴
Low levels of DHA may increase your risk for age-related macular degeneration.⁵⁵

Reducing your risk of kidney disease⁵⁶ and colon cancer.⁵⁷

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