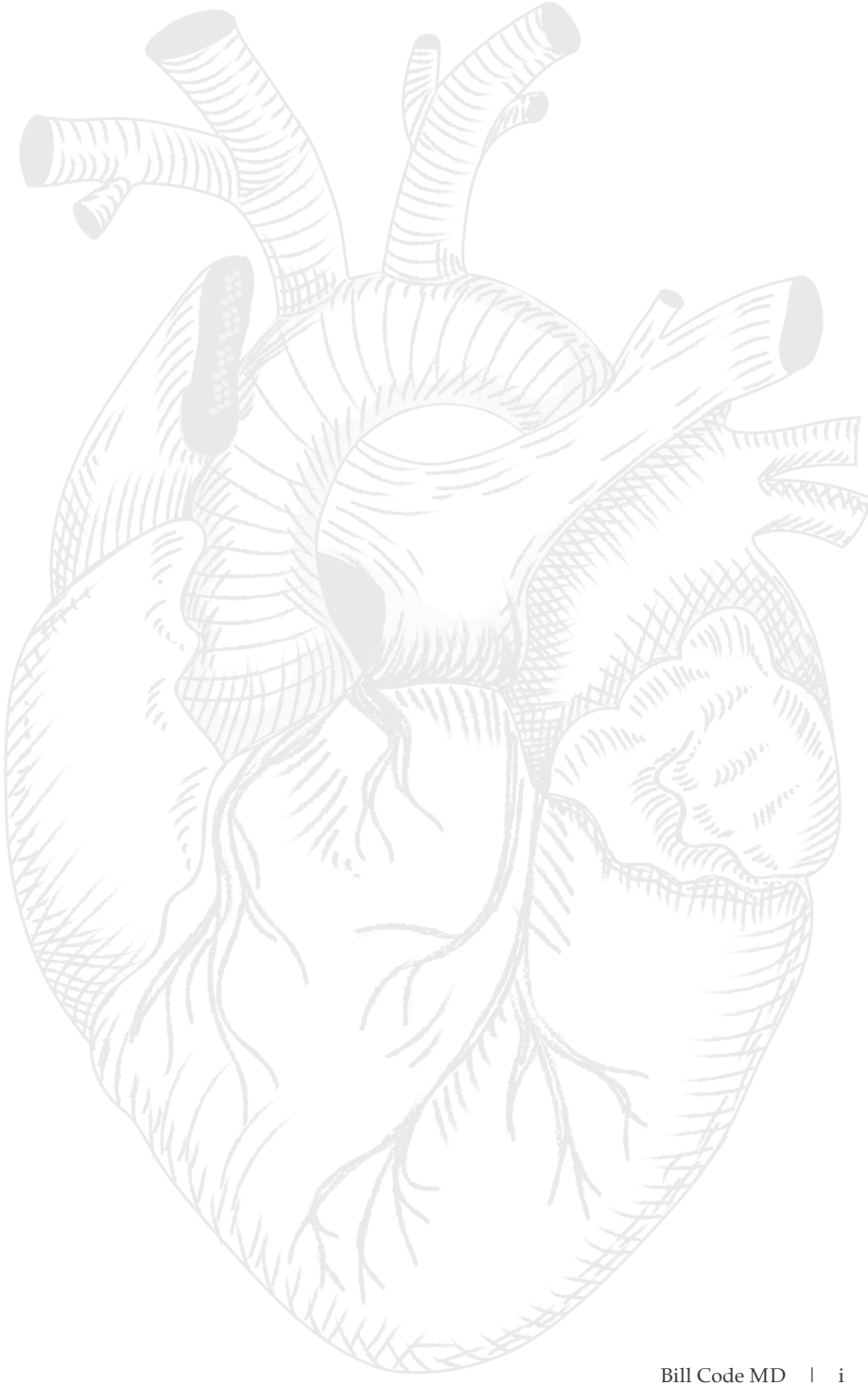

# Solving the Heart Puzzle

An MD's Journey Through Oxygen, Omega-3s, and the Science of Healing

— Bill Code MD —

This book contains advice and information relating to healthcare. It is not intended to replace medical advice and should be used to supplement rather than replace regular care by your doctor. It is recommended that you seek your physician's advice before embarking on any medical program for treatment. All efforts have been made to assure the accuracy of the information contained in this book as of the date of publication. The publisher and the author disclaim liability for any medical outcomes that may occur as a result of applying the methods suggested in this book.

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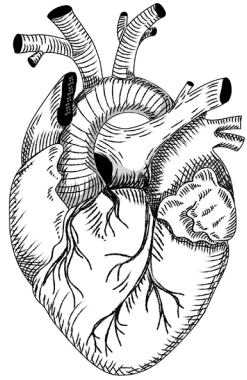


CHAPTER 2

# Omega-6s and Omega-3s

In 30 years of my personal MS journey, I have recognized that healthy oils are a large part of my recovery process. My first book on health recovery "*Who is in Control of Your Multiple Sclerosis?*" focused on Omega-3 and Omega-6 fatty acids. However, in my second book, I noted particularly that unhealthy fats were very key. In that era of the latter 1990's the trans fats were being particularly demonized and rightly so. Now, excess Omega-6 is a crisis as our food intake of these has almost tripled in the last 20 years. This throws into incredible disarray the key and all-important Omega-6 to Omega-3 fatty acid ratio. This is perhaps the most important number that we should establish and learn for our general wellbeing. A close second is the Omega-3 Index (O3I).

This Omega-6 to Omega-3 ratio was reported in the journal "Lipids" in August of 2025. This was a gigantic study looking at the Omega-6 to Omega-3 ratios throughout the world. They studied 590,000 individuals of almost all ages including as young as 14 and people into their 80s.

In this chapter I will address how we can readily determine our own personal health optimization toward a balanced Omega-6 : Omega-3 ratio. I will reveal how this can enhance both our cell and our mitochondrial function dramatically.

## Why Reduce Omega-6s?

The recent focus is reducing the Omega-6 oils. A thorough paper in the World Journal of Cardiology published by Joseph Mercola et al in early 2025 described the benefits of reducing your Omega-6 fatty acids to 5 grams a day. This could dramatically reduce heart disease. I confess that this is admirable. However, I also recognize that many people will not look carefully at their Omega-6 oils intake. Consequently, most folks are unlikely to change their diet.

Of course, you should recognize that Omega-6s have continued to be boosted in our food supply by almost all food manufacturers. Why has this happened? Simply put, the Omega-6s are much cheaper as they are sourced from seed oils such as corn, soybean and safflower oil. If we can continue to train people to read labels and avoid some food choices, we can make a difference. However, for many people, snack foods are the number one problem. To minimize Omega-6 intake, you will need to eat almost no processed foods, ultra processed foods or deep-fried foods, particularly if it's deep fried in seed oils like corn oil, soybean and safflower oil. I suggest one of the great offenders in our society is still French fries cooked in seed oils.

The Omega-6s are incredibly shelf stable; they almost never smell or taste rancid. Why is this? The Omega-6s have a chemical structure which makes them stable and less prone to becoming rancid. This means they are particularly useful for a wholesaler or a retailer in the store supply chain. Foods containing Omega-6s can last longer on the shelf. As a result, they are used almost completely in the making of processed foods and ultra processed foods. This has had near catastrophic effects on the optimal Omega-6 to omega-3 oil ratio.

To further improve shelf stability, the omega-6s were chemically altered to form trans fats. This chemical process involves hydrogenating the oil by breaking the double bonds and adding hydrogen. The oil then becomes solid. Even though these hydrogenated oils are relatively stable they are rarely found in nature. Unfortunately, in the process of hydrogenation, unhealthy trans fats are formed.

When eaten by humans, trans fats make for a stiff, unnatural cell membrane. As such, they are huge contributors to atherosclerosis, "hardening of our arteries", and secondarily, heart attack or stroke. Just to complete the story on trans fats, in the late 1990s, foods containing trans fats were reformulated to reduce or eliminate trans fats, primarily due to consumer pressure and legislation.

An interesting side note here is the term "hardening of the arteries". You will have heard this before. I realize now that by changing these oils into relatively firm, solid fats–or trans fats–they are then deposited as hard fats in the vessel walls to cause a "hardening of the arteries". However, an interesting way to think of it in future is that the omega-3 fatty acids will contribute to a "softening of the arteries" and therefore reversing the hardening of the arteries. Often a metaphor like this helps us understand better why we might make this change in our diet or take an optimal fish oil supplement.

Good research has now shown that the large increase in the use of Omega-6 oils has greatly increased our risk of both heart attack, stroke and even cancer. Heart attack is still the number one killer today and number two is stroke. Each has a similar trigger or set of problems in the blood vessels. Of course, I hope that ideally you will eliminate any or almost any processed or ultra processed foods in your diet.

In fairness to you, the reader, I should outline how closely fats and oils have been linked to heart disease. Cardiovascular disease started to blossom or reach higher levels in the 1960s and 1970s. This early increase in heart disease "created" the new disease called elevated cholesterol.

In 1973, in my first year of medical school, we had our blood cholesterol measured pre and post a session of exams. This was a research project of a classmate of mine to determine whether stress affected cholesterol. In fact, stress is a major factor in cholesterol production. Unfortunately, I was #1 in my class of 67 students with the highest cholesterol. I was somewhat frightened and even mortified. To follow up I tried diet control including eggbeaters, no eggs or minimal fat from meat or butter. These had virtually no effect for me. We did not know then, but we do know now, that 80 to 90% of our blood cholesterol is made by our own body primarily in the liver. We do need cholesterol for most of our body functions including the formation of hormones. Excess stress is the number one trigger in high cholesterol. It is for me too.

Lowering cholesterol to less than 200 in the American units was the major goal with agents like cholestyramine and eventually statins. I will summarize statins here by saying yes, they lower cholesterol but with potential major side effects. In addition, they have very minimal benefit. In essence, if you lower your cholesterol for years with taking a statin, you might live 5 days longer! I suggest this is not worth it. Similarly, as cholesterol was demonized, so were animal fats including tallow, lard, butter and egg yolks. This was unwarranted and today these fats are accepted as healthy.

Omega-6s have been used by food processors to fatten both us and cattle. This includes feedlot fattened beef, lamb, chicken and even farmed salmon.

Please remember that meat from grass-fed animals and products from grass-fed sources –butter, yogurt, lard or tallow, are healthiest.

It is important to note that Omega-6s do have a place in our diet because they are a source of essential Linoleic Acid. However, our modern diets have incorporated excess Omega-6s and dramatically altered the balance of the Omega-6: Omega-3 ratio.

## Sources of Omega-3s

The best sources of Omega-3s are marine-based – fatty fish (mackerel, salmon, herring, sardines, anchovies), oysters and caviar. These provide eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). Plant sources of their precursor, alpha-linolenic acid, include flaxseeds, chia seeds, walnuts and hemp seeds. Although the body can convert these plant sources to EPA and DHA from alpha-linolenic acid, the conversion is inefficient. For those who do not wish to eat fish and seafood, algae-based supplements provide EPA and DHA.

The Omega-3s are essential for heart and brain health as well as the health of blood vessels and, indeed, all our body's cells.

## Omega-3s Enhancing Blood Flow

I will now review how boosting our Omega-3s can enhance blood flow through tiny micro vessels (microcirculation). Of course, better blood flow to peripheral areas means better oxygenation, particularly of the heart, brain and even kidneys. This is the Holy Grail in my estimation.

The red blood cell is 7 microns in size and in its optimum function can squeeze through a 2 Micron or certainly a 5 Micron blood vessel. To do this the red blood cell must have optimal flexibility so it can take its normal doughnut shape and effectively elongate or stretch out. Once the red blood cell passes through the narrow passage, it can shorten and reform its doughnut-like shape and proceed on its journey. Happily, while traversing this tiny vessel, it can drop off oxygen and energy substrates like sugar and fat molecules. In addition, it can absorb the waste carbon dioxide from the "burning" or metabolism of the mitochondrial function.

I am hopeful you now appreciate how critical the optimal functioning of the red blood cell is, particularly to heart and brain function.

From another perspective every cell in the body is enveloped in a cell membrane or coating. This membrane is a lipid bilayer with occasional protein channels through it.

A major part of flexibility of each cell is the internal interdigitation or interlinking of the Omega-3 fatty acids. They can kink and unkink in a dramatic number of ways. When optimally working this gives huge flexibility to the membrane and therefore, to the cell's wall. This function is hindered by trans fats. This is why all trans fats should be strictly avoided, and Omega-6 fatty acids should be relatively minimized. Happily, health legislation has helped to do this, and trans fats are now reduced or eliminated in most of our real food choices. The trans fats have mostly been replaced by the much healthier saturated fats of palm oil, coconut oil, butter, lard and beef tallow.

## Home Measurement of Fatty Acids — A New Option

The home measurement via a Dried Blood Spot test is a recent option to guide you in your journey towards optimal Omega-6 to Omega-3 ratio. The blood spot test analysis is done by an independent third-party laboratory called Vitas in Norway. The phrase that is used is "test-based nutrition" or "don't guess just test". I recently did this home blood test and revealed that my Omega-6 to Omega-3 ratio was 7.9 to one. Mine, therefore, is fair, but it is not great. However, the average ratio in North America is about 20 to 1 and in some groups even 25 to 1. The optimal ratio is probably four to one (4:1) and even as low as 1 to 1.

In the major Lyon Heart study in France, they noted that persons benefit by a 70% reduction in the risk of cardiovascular disease with an Omega-6 to Omega-3 ratio of 4 to 1 or better, even to 1:1. This is a huge factor compared to other preventive or treatment modalities. This 70% easily overshadows reducing cholesterol, stent placement and coronary artery bypass graft, and even if all are combined. The key point is that a better Omega-6 to Omega-3 ratio is preventative and helps all blood vessels including within the heart and brain.

## Optimal Omega-3 Oil Intake:

For any of you despairing to this point, there is a fish oil/olive oil blend which, when taken daily, will improve the Omega-6 to Omega-3 ratio to 3:1 within four months in 95% of people involved. This is particularly interesting because this occurs even if people do not alter their diet. This improvement has been confirmed in many thousands of people in follow-up testing after four months on this oil blend. I suggest that this will grab the

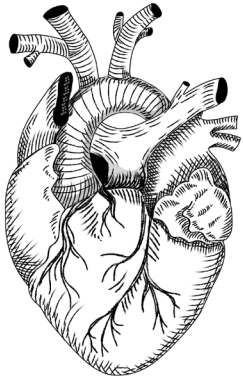
attention of most people who are looking to maintain or improve health. I am on this path and, in an effort to help others discover this path toward health, I have written a chapter on oxygenation because that too is improved by quality Omega-3s.

I started the suggested daily amount of 0.15 mls per kilogram (12 mls) of fish oil/olive oil blend for my 80 kilogram weight. This oil is unique as it contains 60% high quality fish oil from fish near Iceland and 40% of a top-quality olive oil containing polyphenols. The olive oil is from pre harvested olives from the Mediterranean region. It is now understood that these polyphenols from a terrestrial or land-based source are hugely protective of the delicate and fragile Omega-3 oil from fish. Most commercial fish oils are purified to remove the pollutants from the ocean (heavy metals, dioxins and even microplastics) but this also removes the protective polyphenols. This leaves the Omega-3 oils almost naked and unprotected. However, once these land-based polyphenols were combined with the naked fish oil, everything worked much better. Nature is of course brilliant in her work and often duplicates her best work. The terrestrial olive tree polyphenols were equivalent to the polyphenols of algae in the ocean. I was incredibly excited to learn of this breakthrough from Scandinavia.

Once I heard the background of the development of this fish oil/olive oil blend and its success in helping people in improving their Omega 6:Omega-3 ratio, I was intrigued. I knew that studies of quality fish oils over the last 20 years have had mixed results in reducing heart disease and cardiovascular disease. I now understand that the problem was that the earlier omega-3 fish oils were compromised and our body cells were not able to use them. This explains the variability in earlier results with even occasionally worse outcomes instead of better outcomes.

I now think this is a superb example of where understanding nature and using nature's strong points is a much better approach than trying to fully educate people to reduce their Omega-6 intake or change their diets.

In chapter 18 of this book, I will discuss the synergy between improved EPA and DHA in the red blood cell membranes and extra oxygen delivery.



# Acknowledgements

Just as it takes a village to raise a child, I have needed a village to write this book. I am grateful to everyone who have contributed to this end result. Inevitably, I will miss someone, and I sincerely apologize for that.

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*Any errors you note in this book are my responsibility. Please forgive me and let me know for the next printing.*