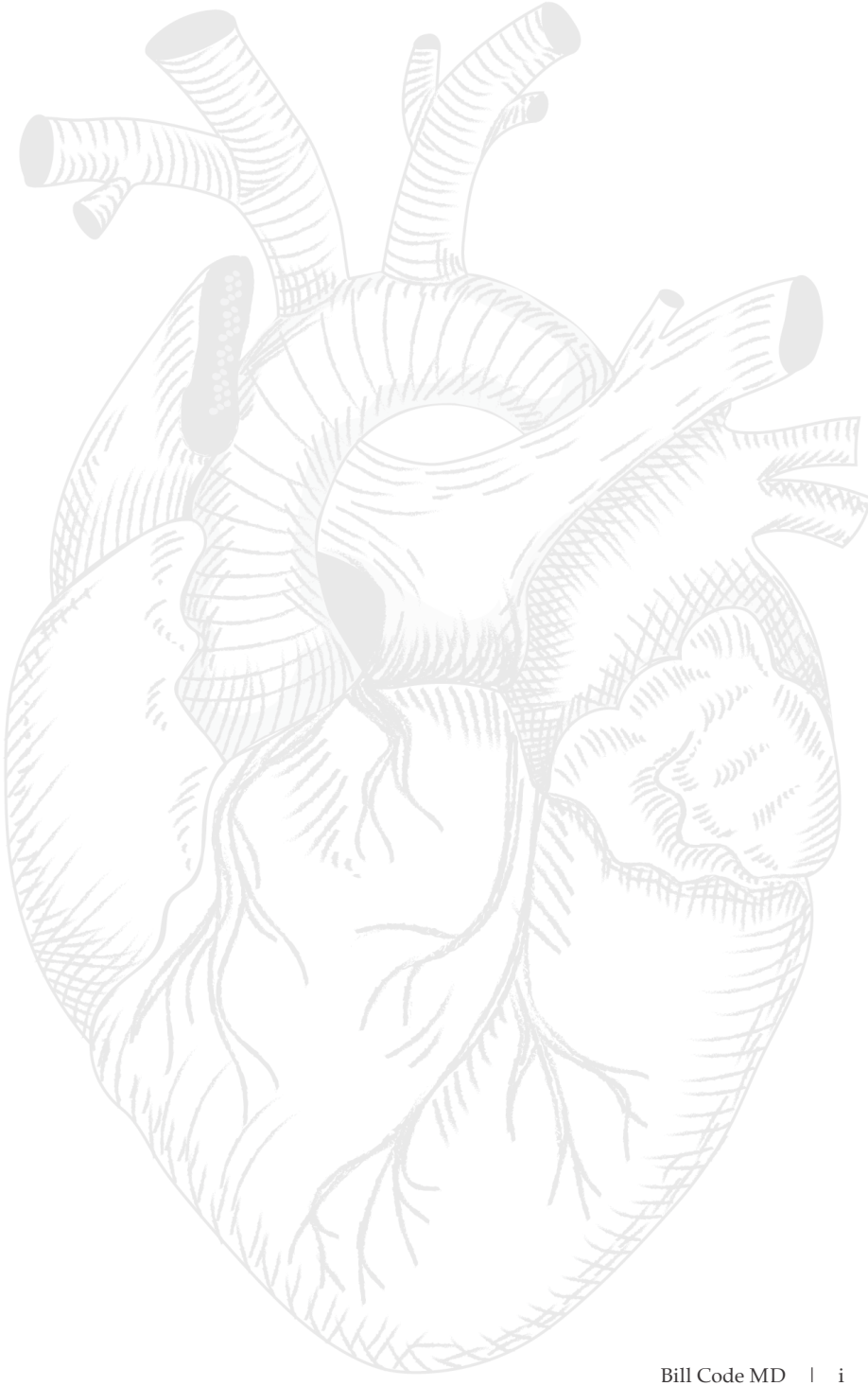

Solving the Heart Puzzle

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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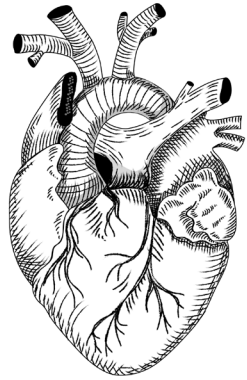

CHAPTER 7

Concussion and The Omega-3 Protocol

Just as we use the term "heart attack", your doctor will call it "myocardial infarction" (MI). Similarly, while you and I use the term "Concussion", your doctor will call this Traumatic Brain Injury (TBI). The primary injury here is torn and leaky blood vessels along with bruising of the nerve cells. This is why it appears in *Solving the Heart Puzzle Book*. Firstly, I will present the Omega-3 Protocol and in the next chapter, the use of Extra Oxygen.

The Omega-3 Protocol

New information has emerged since I wrote Solving the Brain Puzzle, and one of the most important contributions comes from Dr. Michael Lewis in his book When Brains Collide, where he describes what he calls "The Omega Protocol."

Concussion and post-concussion syndrome are increasingly important for several reasons:

- Our modern diet has become highly pro-inflammatory, with excessive Omega-6 fats and inadequate Omega-3s.
- We have given little attention to true recovery and prevention strategies for the brain. Historically, "wear a helmet" and "rest in a dark room for up to two weeks" have been the main advice.

- Vehicle speeds and usage have risen — not just in cars but also motorcycles and electric bicycles — and the popularity of mountain biking and other high-velocity sports has increased.

In this setting, it is not surprising that we are seeing more concussions and more people who do not fully recover.

Two Phases of Concussion/Traumatic Brain Injury

Concussion essentially unfolds in two steps.

1. **Primary injury:** The first blow is mechanical. The brain is shaken within the skull and suffers a "coup–contrecoup" injury — bruising on the side of the impact and on the opposite side. Think of banging your knee hard and bruising both the front and back at once. The brain has multiple tissue densities and delicate internal structures. When it is rapidly accelerated and decelerated, these structures shear and tear.
2. **Secondary injury:** The secondary injury can begin immediately but often builds over 6–8 hours. This period may represent a small but critically important window in which high-quality Omega-3s and optimised oxygen can make a decisive difference. At the cellular level, a biochemical cascade begins. This can last minutes, hours, days, weeks, or even months. It is particularly aggressive when a person is deficient in omega-3 fatty acids, especially DHA.

One way to assess risk is by measuring the Omega-6 to Omega-3 ratio. When Omega-6 is excessive relative to Omega-3, inflammatory pathways are over-amplified. Swelling and inflammatory mediators rise and may not fully resolve even when we later add Omega-3s. Swelling then further compromises blood flow, deepening oxygen deprivation in already vulnerable brain areas.

I was able to meet Dr Lewis in January, 2026. He now recommends a fish oil/olive oil blend as his first choice.

Symptoms and Signs of Concussion/ Traumatic Brain Injury

Physical symptoms of concussion commonly include:

- Fatigue
- Headache or a feeling of pressure in the head
- Nausea or vomiting
- Balance problems or unsteady walking
- Dizziness
- Blurry or double vision

- Sensitivity to light and/or noise
- Numbness or tingling
- A general sense of "not feeling right"

Cognitive symptoms include:

- Difficulty thinking clearly
- Poor concentration
- Short-term memory problems
- Feeling groggy, sluggish, hazy, or "in a fog" — a term many patients use spontaneously

Behavioural and observational signs that suggest concussion include:

1. Inability to recall events before or after the hit or fall
2. Appearing dazed, stunned, or confused
3. Moving clumsily or showing very poor balance
4. Repeating questions, or answering slowly
5. Any loss of consciousness, even momentary
6. Mood, behaviour, or personality changes, often with ongoing brain fog

How Common Is Concussion/Traumatic Brain Injury?

CDC data from 2010 reported about 2.5 million hospital and emergency room encounters for traumatic brain injury (TBI) in the United States. More recent estimates suggest 3–4 million TBIs per year, in part because we now recognize that for every reported concussion there may be one to two unreported cases.

Traumatic brain injury contributes to more than 50,000 deaths per year in the United States, over 280,000 hospitalizations, and roughly 2.2 million emergency department visits annually. The leading causes are:

1. Falls
2. Assaults
3. Motor vehicle crashes
4. Being struck by or against an object
5. Other or unknown causes

Who Is Most at Risk?

The very young and the very old are particularly vulnerable.

- Both groups tend to have reduced neck muscle strength, making them less able to protect the head during rapid acceleration or deceleration.
- The elderly brain is more fragile, with more space around it as some age-related shrinkage has occurred.
- Blood vessels in the neck and brain may already be compromised by atherosclerosis, making them more prone to injury and less able to recover.

Girls and women also experience concussion symptoms at a higher rate than boys and men in similar sports. Contrary to popular belief, the highest rates are not in National Football League players but in girls playing ice hockey and certain other contact sports. Genetic susceptibility plays a role; some individuals with repeated concussions may also be at increased risk for later Alzheimer's-type pathology.

Nutrition Matters — Especially Early

Severe TBI that leads to coma or prolonged unconsciousness is metabolically demanding. The basal metabolic rate of the body can nearly double after a significant head injury. The brain already consumes a high percentage of the body's calories in normal conditions; after injury, this demand increases further.

A 2008 study showed that patients with traumatic brain injury who were not fed within 4–7 days had a two- to four-fold increase in mortality compared with those who received earlier nutritional support. We now know that early nutrition is not optional — it is critical to survival and recovery.

The old phrase "feed a cold, starve a fever" does not apply to brain injury. In TBI, we must feed the brain — both in terms of calories and in terms of specific nutrients such as Omega-3s.

Omega-3s as Prevention and Acute Support

Pre-injury use of Omega-3s (EPA and DHA) appears to be protective in animal models of concussion and TBI. Animals receiving DHA-rich Omega-3s before injury show better functional recovery and less damage on microscopic examination.

Similar findings exist in experimental stroke models, where Omega-3s —

especially DHA — provide significant neuroprotection when present before the ischemic event. Even in spinal cord injury models, giving DHA within three hours of injury improved healing and functional outcomes. In contrast, adding more Omega-6 (arachidonic acid) after injury worsened outcomes dramatically.

Research from the U.S. National Institutes of Health has shown that DHA helps neurons grow and improves synaptic connections. Dr. Lewis and others have built on this to develop practical protocols for athletes and soldiers. As a result of his work, many coaches across the United States now encourage athletes to take fish oil prophylactically. A common preventive dose is about 3,000 mg per day of combined EPA and DHA, often given as 1,000 mg three times per day. This closely approximates the 40 mg/kg dosing used in animal experiments. An added benefit is that some individuals starting such doses notice an improvement in mood and a lifting of longstanding depression.

The Omega-3 Protocol for Concussion

The Omega-3 fatty acids play an important role in the structure of cell walls. They are what I like to call "the bricks of the brain." Regulatory agencies consider a daily intake of up to about 3,000 mg of EPA + DHA to be generally regarded as safe for the general population.

Based on available evidence and clinical experience, Dr. Lewis recommends the following, which I broadly support and adapt:

- Prevention and general brain-heart health: 3,000 mg per day of combined EPA + DHA (for example, 1,000 mg three times daily).
- Mild to moderate concussion (with prolonged symptoms but no coma): Increase to approximately 9,000 mg per day of EPA + DHA (3,000 mg three times daily) for a defined period.
- Severe concussion or TBI with coma: If the patient has a feeding tube, administer liquid fish oil via the tube at similarly high doses—e.g., 3,000 mg EPA + DHA three times per day—ideally starting as early as possible.

In practice, a reasonable course for coma would be:

1. Acute phase: 9,000 mg per day (3,000 mg three times daily) for several days to a few weeks, depending on severity and tolerance.
2. Early recovery phase: Once the patient is clearly awakening and improving, reduce to 6,000 mg per day (3,000 mg twice daily) for another week or two.
3. Long-term maintenance: Continue at 3,000 mg per day as a baseline.

If the patient's status regresses when you lower the dose — more headaches, fogginess, irritability — you may consider temporarily increasing the dose again. These doses should always be considered in light of bleeding risk, other medications (especially anticoagulants), and individual medical circumstances.

Oxygen, Concussion, and Stroke — Two Faces of the Same Problem

It is helpful to see concussion and stroke as closely related conditions. The primary cause differs:

- In stroke, the initial insult is usually a blood clot blocking an artery (ischemic stroke) or bleeding within the brain (hemorrhagic stroke).
- In concussion and TBI, the initial insult is mechanical — the brain is shaken and bruised within the skull.

However, after the initial event, the biochemical cascade that follows is remarkably similar in both conditions:

- Impaired blood flow
- Local hypoxia (low oxygen in injured tissue)
- Glutamate excitotoxicity
- Oxidative stress
- Inflammation and swelling

Because of this close kinship, it makes sense to use similar tools — especially Omega-3s and oxygen — to protect and heal the brain in both conditions.

The key points are:

- A brain rich in Omega-3s before an injury is more resilient.
- Rapid use of high-dose Omega-3s after concussion or TBI can help limit the secondary injury.
- Adequate oxygen and early nutrition are essential partners in this process.

Together, these measures offer a much more active, hopeful approach than "rest in a dark room and wait." The companion section of this chapter describes how hyperbaric oxygen and home oxygen strategies can be applied alongside the Omega-3 Protocol, both for acute care and for longer-term recovery.

Your To Do List:

Suggested steps to protect brain health before or after concussion or stroke:

1. Take a Fish Oil/Olive Oil Blend, 0.15 mls/kg (0.07 mls/lb) daily
2. Exercise 5-6 days per week (Vibration unit, Exercise While Oxygen Training (EWOT), walk)
3. Daily oxygen with non-rebreather mask at 5 or 10 liters/min; 30 minutes twice a day

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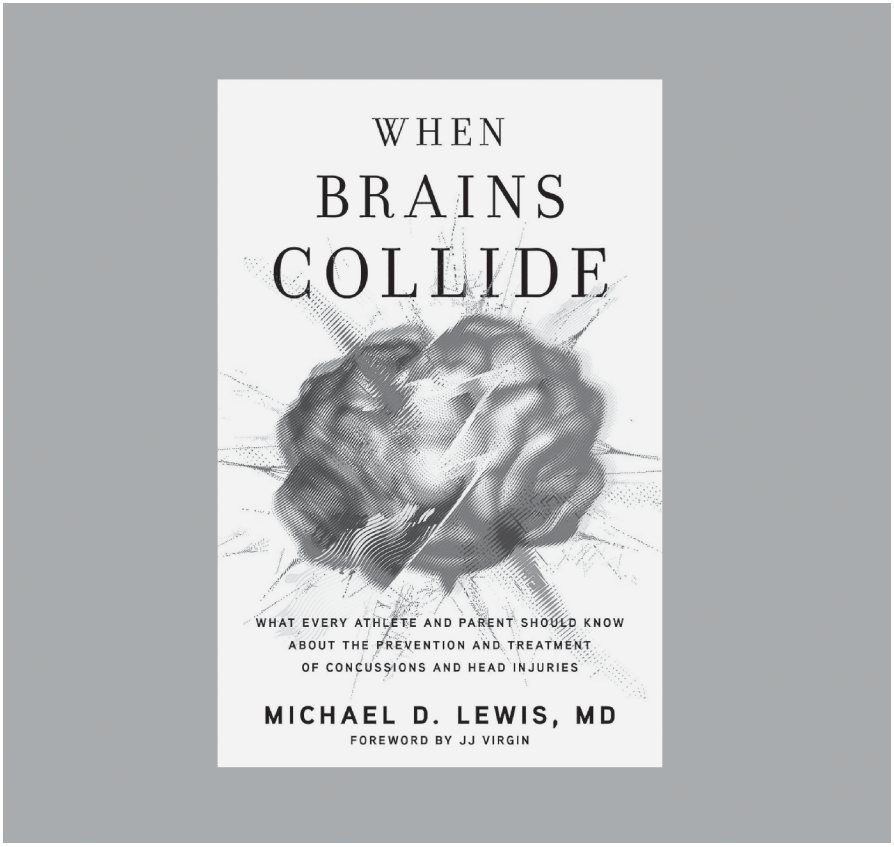
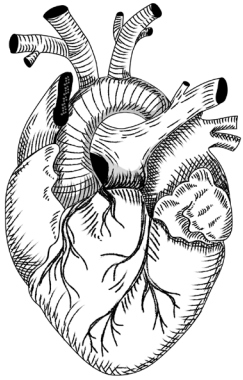


Figure 4: "*When Brains Collide*" Concussion and the Omega-3 Protocol.
I met Dr Lewis in January 2026. He now recommends the same Fish oil/Olive oil blend that I do. We both suggest use of this as The Omega-3 Protocol.



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.

My inhouse editors of my wife Denise, son Brian, Karen Whitehouse, Patrick Hrushowy, Amy Newhook and Andrew Paterson. I also thank my many friends for their assistance: McKenzie Paterson, Elaina Konoby, Peter Burris, Lani Royce, Elaine Merritt, Alan, Diane and Ashlee Brough, Julie Monty, Cynthia Pincombe, and Stuart Tomc. These individuals have all contributed both inspiration and effort. I have been greatly assisted in this book's preparation by Laura Timmermans.

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