

# BRAINSPAN™

**MEASURE. TRACK. OPTIMIZE.**

Sleep, Fatigue and Omega-3 by Dr Daniel Johnston, MD, MPH

Fatigue has wrongly been viewed in our society as "the price you pay" to get ahead, or even by some as a "badge of honor" to climb that ladder in corporate America, earn that title of "doctor", or get those straight A's in the classroom. For some, fatigue is simply the result of all the distractions of modern day living—always one more email to read, another topic to surf on the web, or another video game to master. The boom in caffeine consumption across America probably tells us something about how much sleep people are getting.

In the military aviation environment as well as the civilian workforce, experts recognize this view of fatigue can cost lives through its effect on brain performance--your memory, communication, patience, and ability to make good decisions. The effects of fatigue on brain performance are similar to drinking alcohol. A new study suggests that an afternoon power nap may boost your ability to process and store information tenfold! However, this is only if you dream while you're asleep. The study, conducted at the Center for Sleep and Cognition at Beth Israel Deaconess Medical Center, in Boston, Massachusetts reveals the importance of naps and the dream ("or REM"—Rapid Eye Movement) period. "In the dream...the brain tries to figure out what's important and what it should keep or dump because it's of no value." Also, did you know that during REM is when your body releases the most growth hormone? Did you know that alcohol and certain drugs can interfere with your ability to dream while sleeping even though you are "asleep"? Bottomline, sleep and REM is critical to your brain's "smartness" as well as physical health.

What nutrients can make you smarter? Fish oil that is high in the Omega-3s called EPA/DHA seem to play a critical role both throughout fetal development, early infancy/childhood, and into adulthood affecting mood and cognition. DHA seems especially critical in cognition and memory specifically. Why? These fatty acids seem to have a critical role in neuronal cell function through allowing the cell wall to remain

“fluid”. This allows them to transmit important signals and optimize the health and function of neurons and other cells.

## Brain health

The dry weight of the human brain is 60% “fat” or “lipid” that is full of critical polyunsaturated fatty acids (PUFAs) that include those found in fish! There are two classes of polyunsaturated fatty acids that are essential (essential because we cannot make them on our own but need to get them from our diet) to human health and brain function: Omega-3s and Omega-6s. Even the retina, the very rear part of the eye (that is really a “stem” from the brain) is rich with an Omega-3 called DHA so Omega-3s help you see not just think!

These fatty acids, Omega-3s and Omega-6s, are particularly critical to the developing brain of the young and both are consistent components of human breast milk but not cow’s milk. Today, there is an overabundance of Omega-6s in our diet, yet this is not the case for Omega-3s. The most critical Omega-3s are EPA and DHA found in certain oily fish and fish oil supplements (WARNING: not all fish oil supplements are high in EPA/DHA so be sure to read the facts label, not just the front “fish oil” label).

The work of Dr Joseph Hibbeln at the National Institutes of Health (NIH) has shown that mother’s who eat more seafood (greater than the recommended 340grams per week) while pregnant actually have children with better neuro-developmental outcomes, including higher IQs and better social behaviour, communication, and fine motor skills! This outweighed the risk from harm from any of the trace contaminants sometimes found in certain fish.

Later in life, after weaning from the breast, our brain relies on fish/fish oil mainly for these which unfortunately is largely deficient in the Western world. I liken this crisis to the Vitamin C deficiency which took hundreds of years to uncover.

Inadequate intake of Omega-3 EPA/DHA may have profound health consequences leading to mood disorders such as depression and stress/anxiety as well as cognitive problems (memory and IQ) from the young to the very old. In fact, the work of Dr Hibbeln at

Fish and fish oil and its implications for human brain health (and health in general), have important biblical as well as evolutionary stories to tell us. Dr. Michael Crawford at the Institute of Brain Chemistry and, Human Nutrition in London has eloquently described the association of human brain size with Omega-3 EPA/DHA from an evolutionary and human civilization perspective. Bottom-line, fish and fish oil specifically high in EPA/DHA feeds the brain with critical Omega-3s for healthy function that has a very long, proven and powerful significance in human history.

The dry weight of the human brain is 60% “fat” that is full of critical polyunsaturated fatty acids that include those found in fish called Omega-3 EPA/DHA! Even the retina, the very rear part of the eye (that is really a “stem” from the brain) is rich with an Omega-3 called DHA. So, Omega-3s help you and think.

There are two classes of polyunsaturated fatty acids that are essential to healthy human brain function: Omega-3s and Omega-6s. Today, there is a tremendous overabundance

of Omega-6s in our diet, yet this is not the case for Omega-3s. The ideal ratio of dietary Omega-6 to Omega-3 is said to be anywhere from 1:1 or 5:1 but our current diet is 25:1 or worse. The most critical Omega-3s are EPA and DHA found in certain oily fish and fish oil supplements (WARNING: not all fish oil supplements are high in EPA/DHA so be sure to read the facts label, not just the front “fish oil” label).

Omega-3s are particularly critical to the developing brain of the young and are a consistent component of human breast milk but not cow’s milk. The work of Dr Joseph Hibbeln at the National Institutes of Health (NIH) has shown that mother’s who eat more seafood (greater than the recommended 340 grams per week) while pregnant actually have children with better neuro-developmental outcomes, including higher IQs and better social behaviour, communication, and fine motor skills! This far outweighed the risk from harm from any of the trace contaminants sometimes found in certain fish. Other research shows that people who eat more fish have lower rates of depression. A new study, just released, shows the benefit of these Omega-3s to improve memory in adults suffering from memory loss or impairment. Fish rich in Omega-3 EPA/DHA seem to combat mood disorders such as depression, possibly stress/anxiety, as well as cognitive problems (memory and IQ) from the young to the very old. This is the reason for my interest in them in the US military—a population who is very deficient in them and who needs these added benefits for mission effectiveness and resilience.

Omega-3 EPA/DHA seems to have what I call a long and intimate “health relationship” with human civilization whether from a biblical or evolutionary perspective. Maybe subconsciously this explains some of the joys we experience from beautiful ocean and coastal vistas.

The dry weight of the human brain is 60% “fat” that is full of critical polyunsaturated fatty acids that include those found in certain fish called Omega-3 EPA/DHA! Even the retina, the very rear part of the eye (that is really a “stem” from the brain) is rich with Omega-3 DHA.

There are actually two classes of polyunsaturated fatty acids that are essential to healthy human brain function: Omega-3s and Omega-6s. Today, there is a tremendous overabundance of Omega-6s in our diet, yet this is not the case for Omega-3s. The ideal ratio of dietary Omega-6 to Omega-3 is said to be anywhere from 1:1 or 5:1 but our current diet is 25:1 or worse. The most critical Omega-3s are EPA and DHA found in certain oily fish and fish oil supplements (WARNING: not all fish oil supplements are high in EPA/DHA so be sure to read the facts label, not just the front “fish oil” label).

Omega-3s are particularly critical to the developing brain of the young and are a consistent component of human breast milk but not cow’s milk. The work of Dr Joseph Hibbeln at the National Institutes of Health (NIH) has shown that mother’s who eat more seafood (greater than the recommended 340 grams per week) while pregnant actually have children with better neuro-developmental outcomes, including higher IQs and better social behaviour, communication, and fine motor skills! This far outweighed the risk from harm from any of the trace contaminants sometimes found in certain fish. Other research shows that people who eat more fish have lower rates of depression. A new study, just released, shows the benefit of these Omega-3s to improve memory in adults suffering from memory loss or impairment. Fish rich in Omega-3 EPA/DHA seem

to combat mood disorders such as depression, possibly stress/anxiety, as well as cognitive problems (memory and IQ) from the young to the very old. This is the reason for my interest in them in the US military—a population who is very deficient in them and who needs these added benefits for mission effectiveness and resilience.

Omega-3 EPA/DHA seems to have what I call a long and intimate “health relationship” with human civilization whether from a biblical or evolutionary perspective. Maybe subconsciously this explains some of the joys we experience from beautiful ocean and coastal vistas.