BRAINSPAN™

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A Healthy Brain Equals a Healthy Life

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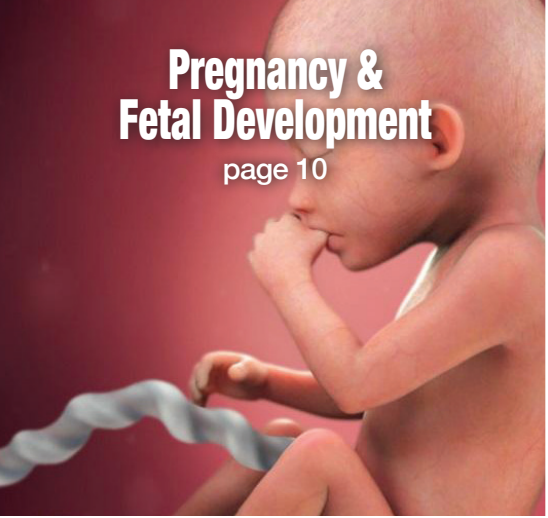
Comprehensive *NeuroHealth*™ Assessment

-- Based on over 100 peer reviewed research studies --


Pregnancy &
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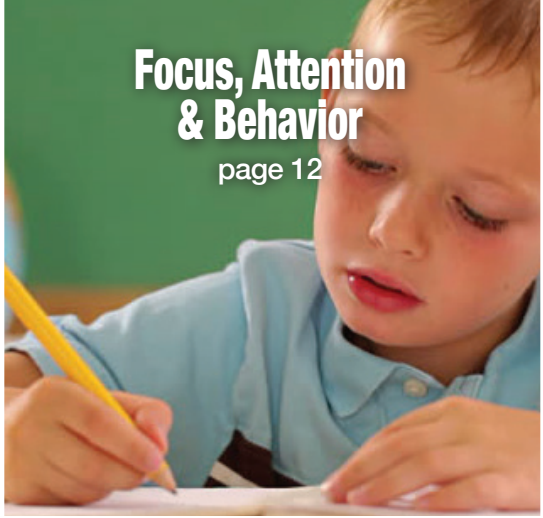
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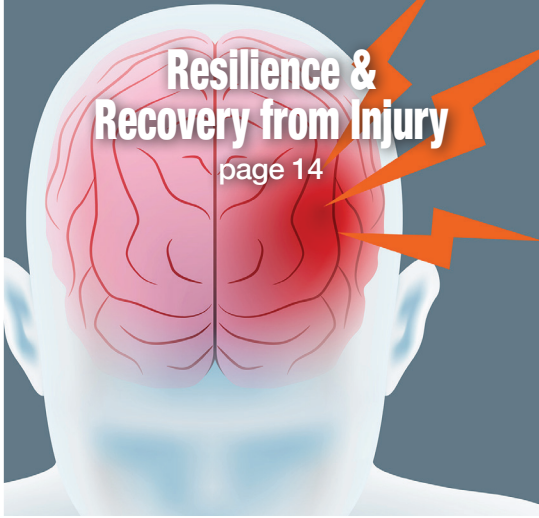
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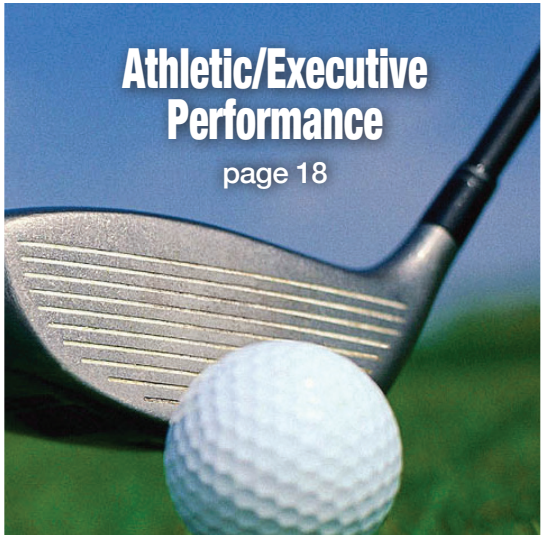
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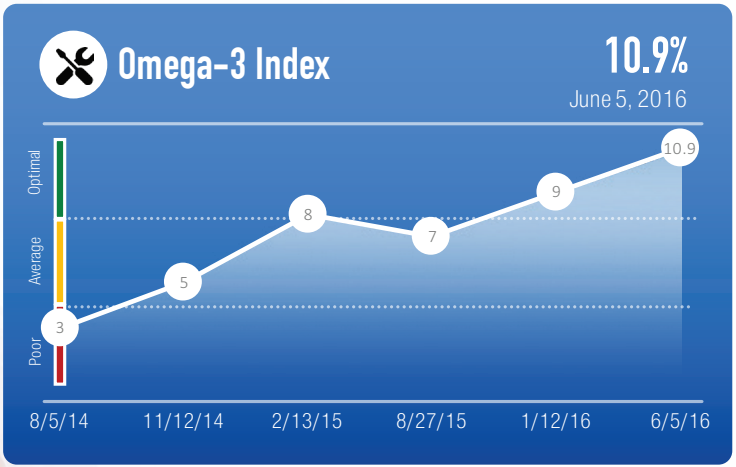
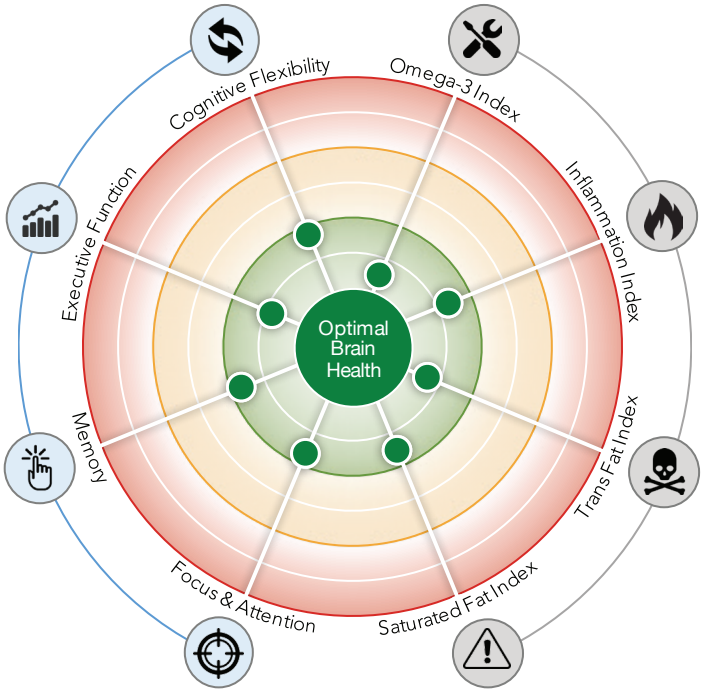
Maintain a Lifetime of Brain Health

Dietary, health, genetic, metabolic, and lifestyle factors influence the structural and functional health of your brain over time. The *NeuroHealth*™ Assessment allows you to track the health of your brain, like your track the health of your heart. When your brain works right, your body works right.





A Healthy Brain Equals a Healthy Life!

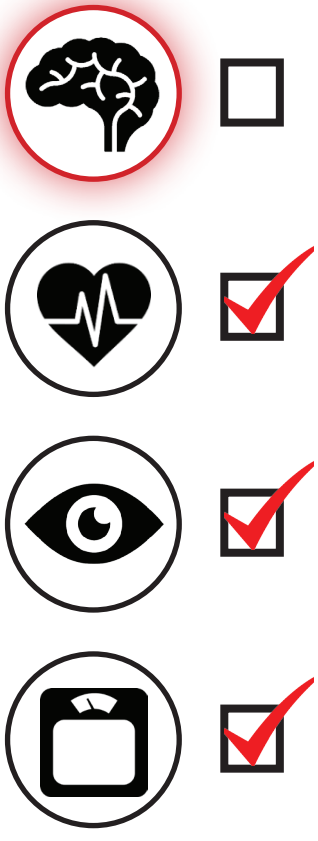
- Decreased stress, inflammation & chronic pain
- Improved quality of sleep
- Balanced hormones & neurotransmitters
- Increased focus & attention
- Improved mood, impulse control & behavior
- Improved memory, planning & organization
- Better resilience & recovery from concussions
- Lower risk of developing dementia

How Healthy Is Your Brain?

When it comes to your health, you measure everything that is important to you. But do you neglect the command center of your body... your brain?

Your brain communicates through your spinal cord and the vast network of your nervous system to control every function your body performs. From musculoskeletal health to immune system regulation, your body depends on its command center working efficiently. When your brain works right, your body works right.

Optimal health care focuses on the brain-body connection and on improving nervous system health, so the brain and body can communicate efficiently.



Measure, Improve & Track Your Brain Health

If you can measure it, you can change it... Take control of your brain health.

The *NeuroHealth*™ Assessment quantifies two types of brain health: 1) Structural brain health - the nutritional health of your neurons; and 2) Functional brain health - how strong your brain's connections are. The assessment quantifies four structural biomarkers (from your blood cells) and measures four cognitive functions (attention, memory, executive function, and cognitive flexibility). Each of these is scored from poor (red) to optimum (green) based on the latest scientific research and validated normative databases.

Your goal should be to achieve all scores in the "green – optimal zone." This represents the highest level of brain health, cognitive function for your age, and resilience to concussion injury. The "yellow - low zone" represents lower than optimal brain health. The "red - poor zone" is significantly associated with increased risk of future disease and early cognitive decline.

Research has shown that having a high Omega-3 Index and a low level of trans fat in your blood cells can help protect your brain from the loss of volume and function that is associated with normal aging. Omega-3 fatty acids are critical to maintaining healthy brain cell structure, lowering oxidative stress, and reducing your risk of early cognitive decline or dementia.

Low Omega-3 Index scores associated with accelerated brain aging and lower cognitive abilities

Framingham Heart Study researchers from Boston University reported that participants with Omega-3 Index levels in the lowest quartile, when compared to the others, had lower total brain volumes. Additionally, they had lower scores on tests of visual memory, executive function, and abstract thinking.

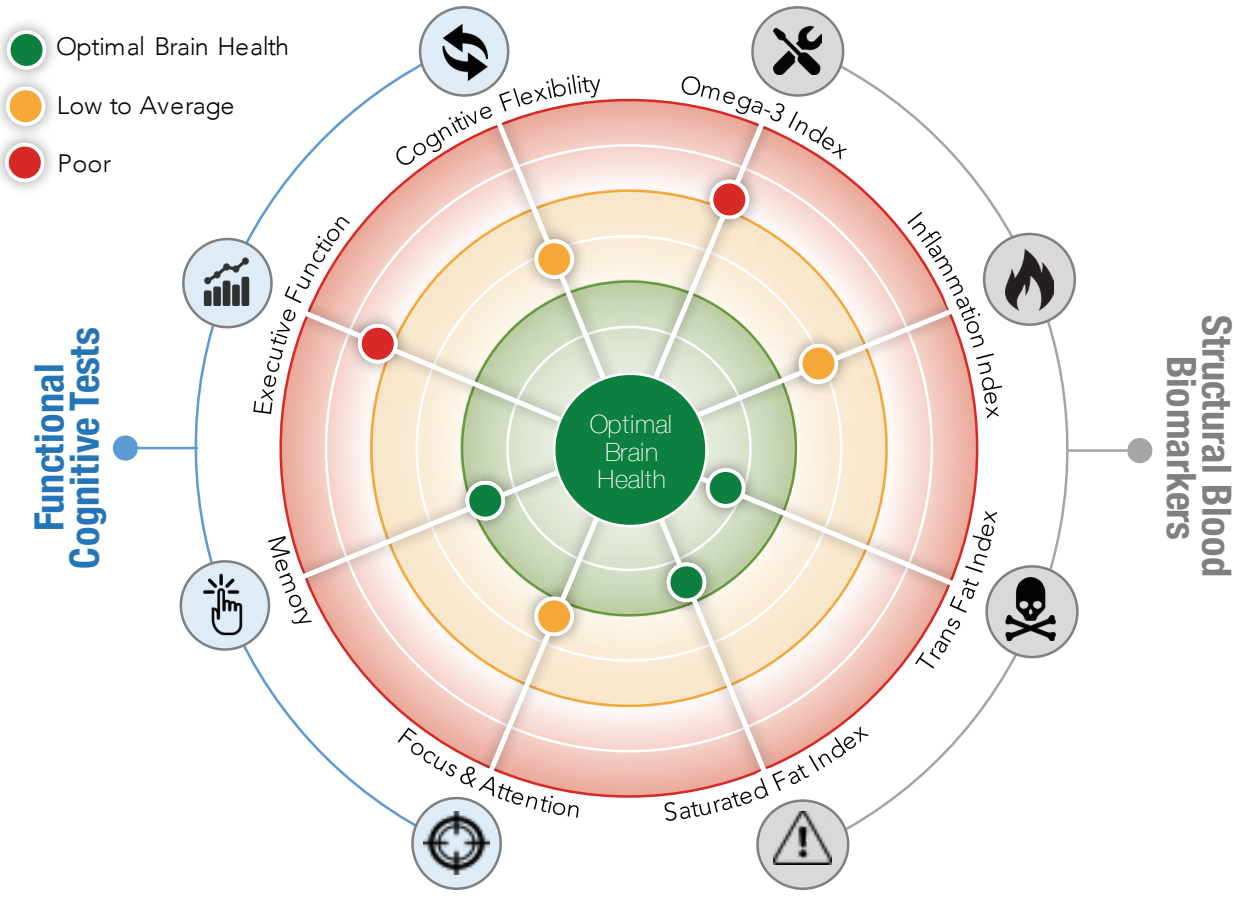
Tan et al. Neurology, 2012;78:658-664

Individuals with high blood cell DHA had a 47% lower risk of developing dementia than those with low DHA

Tufts University researchers studied the relationship between blood DHA levels and the development of dementia and/or Alzheimer's disease in about 900 healthy men and women from the Framingham Heart study. The group averaged 76 years of age at the beginning. Those people who had the highest DHA levels had a 47% lower risk of developing dementia than those with lower levels.

Schaefer et al. JAMA Neurology, 2006;63:1527-1528

STAYING SHARP WHILE AGING


Optimal Brain Health
Low to Average
Poor
Functional Cognitive Tests
Structural Blood Biomarkers
Cognitive Flexibility
Omega-3 Index
Inflammation Index
Trans Fat Index
Saturated Fat Index
Focus & Attention
Memory
Executive Function
Optimal Brain Health

Assessment - Part 1:

Cell Biomarkers of Brain Health

Your brain's structural health is quantified by analyzing fatty acid biomarkers in your blood cells. Fatty acids are some of the most essential nutrients in the human diet. They are critical for cell membrane structure and function as well as hormonal regulation. Essential fatty acids (EFAs) are transformed into local hormonal mediators, which regulate all stages of inflammation. This process is vital to the body's regulation of pain and appropriate immune system response.

Fatty acids are also crucial components of neural membranes and receptors that ensure proper communication between the brain and nervous system. By knowing your fatty acid levels, you can establish an optimal balance using nutritional intervention.

A study published in the Journal of Sports Science Medicine supports that a high Omega-3 Index may improve athletic performance and recovery. The study showed improved CRP levels, blood lactate levels, and reduced soreness after heavy eccentric exercise in the high Omega-3 Index group. Other studies have shown improvements in focus, reaction time, mood & vigor.

A lower AA/EPA fatty acid ratio is associated with improved vigor, reaction time & performance

In a study published in the European Journal of Clinical Investigation, researchers found that a reduction in the ratio of fatty acids AA/EPA was correlated with improved scores in mood, reaction time, and vigor as well as a reduction in anger and anxiety states. The study concluded that a lower AA/EPA ratio is associated with improved attentional and physiological function, particularly those involving complex cortical processing.

Fontani et al. Eur J Clin Invest. 2005 Nov;35(11):691-9

A high Omega-3 Index may improve athletic performance and exercise recovery in healthy young adults.

A study comparing the Omega-3 Index levels of college-age, athletic adults found that the group with higher Omega-3 Index scores had significantly better blood lactate levels, significantly better CRP levels, and a reduction in soreness after heavy eccentric exercise. This study supports maintaining a high Omega-3 Index may improve athletic performance and exercise recovery in healthy young adults.

Lembke et all. J Sports Sci Med. 2014 Jan;13(1):151-156

ATHLETIC & EXECUTIVE PERFORMANCE

ONE DROP OF BLOOD

can quantify levels of specific fatty acids that are critical to your brain health. The test has been validated by large studies funded by the National Institute of Health as well as by over 100 peer-reviewed research studies.

OMEGA-3 INDEX

(Percentage of EPA & DHA in your blood cells)

The Omega-3 Index is one of the most researched indicators of the structural health of your brain. Omega-3 fatty acids, EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid), are essential to reducing inflammation, repairing cells, and regulating vital neurotransmitters. An Omega-3 Index greater than 8% is associated with optimal brain & body health.

1% 2% 3% 4% 5% 6% 7% 8% 9% 10% 11%

Deficient Insufficient sufficient Optimal

Current Status	*Omega-3 Index Score*
Deficient	3.9%

INFLAMMATION INDEX

(Ratio of Omega-6s to Omega-3s in your blood cells)

Both Omega-3s and Omega-6s perform distinct biological functions and offer their own unique health benefits when in balance. However, when Omega-6s far exceed Omega-3s, the body's ability to manage inflammation is disrupted. An optimal ratio of Omega-6s to Omega-3s is between 1:1 and 4:1 to help manage inflammation and lower your risk of disease.

14:1 12:1 10:1 8:1 6:1 4:1 2:1 1:1

Inflammatory Moderate Risk Optimal

Current Status	*Omega 6:3 Ratio*
Moderate Risk	8:1

TRANS FAT INDEX

(Percentage trans fat in your blood cells)

Trans fats can cause cellular destruction, deregulate hormone production, adversely affect memory, and increase inflammation in the brain & body. Research has associated people with higher levels of trans fats in their blood with smaller brain volume due to accelerated aging. You should keep your percentage of trans fat at less than 1% for optimal brain health.

2.5% 2% 1.5% 1.0% 0.5%

Significantly High Optimal

Current Status	*Trans Fat Index Score*
Optimal	0.5%

SATURATED FAT INDEX

(Percentage of palmitic acid in your blood cells)

Recently it was found that higher levels of palmitic acid (a saturated fat) in the blood are linked with greater risk for diabetes and may raise blood cholesterol levels. So, keeping palmitic acid levels below "average" (i.e., less than about 23%) would probably be wise although firm evidence that this will lower risk for diabetes has not yet been produced.

31% 29% 27% 25% 23% 21% 19% 17% 15%

Significantly High Optimal

Current Status	*Saturated Fat Index Score*
Optimal	17.6%

Assessment - Part 2:

Cognitive Functional Testing

Your brain's connections can become stronger or weaker over time due to many – often small and repetitive – physical, nutritional, or emotional events. When your brain's connections become stronger, your cognitive performance improves. Likewise, when you experience stress or nervous system interference, your cognitive performance is reduced.

The *NeuroHealth*™ Assessment measures the capacity and efficiency of the nerve connections associated with four basic cognitive functions. How well your brain performs these functions can be associated with how well it is regulating your body's systems (musculoskeletal, nervous, immune, etc.). Scores are based on a large, normative database and represent where you scored compared to others your same age and gender.

A healthy aging study published in the Journal of the American Medical Association (JAMA) suggests you may be able to slow down your cellular aging process by as much as 65% by maintaining a high Omega-3 Index. Additionally, higher levels of Omega-3s and lower levels of trans fats in your blood cells are associated with healthy skin, weight loss, lean muscle mass, and increased longevity.

Six weeks of increased EPA & DHA significantly improved lean mass & decreased fat mass in healthy adults

A study published in the Journal of the International Society of Sports Medicine concluded that 6 weeks of supplemental fish oil significantly increased lean mass, and significantly reduced fat mass in healthy adults. Additionally, a reduction in salivary cortisol following fish oil treatment was significantly correlated. Since higher salivary cortisol levels are associated with higher mortality rates, Omega-3 supplementation likely has positive implications beyond improved body composition.

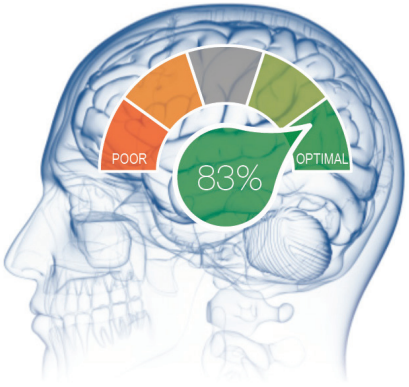
Noreen et al. J. Int. Soc. of Sports Nutrition, 2010; 7:31

JAMA study suggests individuals with a higher Omega-3 Index have a 65% slower cellular aging process

The study compared the omega-3 Index scores of the participants with how fast their cells aged over five years as measured by telomere attrition. Researchers discovered that those individuals who had the lowest omega-3 index scores age 65% faster than those with the highest Omega-3 Index scores. Therefore, the omega-3 index score may be an effective marker of your rate of cellular aging.

Farzaneh-Far et al. JAMA. 2010;303(3):250-257

HEALTH, WEIGHT LOSS & LONGEVITY



Cognitive dysfunction can cause attention problems, impulsiveness, memory decline, mood instability, and behavior problems.

Being able to measure these symptoms is essential to improving cognitive function.

FOCUS & ATTENTION
(Continuous Performance Test)

The Sustained Attention Test measures your ability to focus on one specific task for a prolonged amount of time without being fatigued or distracted. A key aspect of sustained attention is your ability to tune out a competing stimulus and your ability to re-focus on the task after a distraction arises.

1 10 20 30 40 50 60 70 80 90+

Poor Low Average High Optimal

Current Status	Percentile Score
High Average	64th

MEMORY
(Working Memory & Recall Memory Tests)

Working memory is a set of processes that allow you to store and manipulate temporary information. It allows you to be able to perform tasks like language comprehension, reading, learning, or reasoning. It enables you to retain the multiple pieces of information you need to carry out a complex task.

1 10 20 30 40 50 60 70 80 90+

Poor Low Average High Optimal

Current Status	Percentile Score
High Range	73rd

EXECUTIVE FUNCTION
(Hidden Maze Test)

Executive function is a measurement of your capacity to plan, organize and complete a goal. It is the higher-level cognitive skills you use to control and coordinate your other cognitive abilities and behaviors. Who you are, how you organize your life, how you plan, and how you execute those plans is largely directed by your Executive Function.

1 10 20 30 40 50 60 70 80 90+

Poor Low Average High Optimal

Current Status	Percentile Score
Poor	21st

COGNITIVE FLEXIBILITY
(Switching of Attention Test)

The Cognitive Flexibility Test measures your capacity to shift or switch your thinking and attention between different tasks or operations in response to a change in rules or demands. It is your ability to rapidly and efficiently adapt to new or different situations without getting stuck simply because it's the way you have always done it before.

1 10 20 30 40 50 60 70 80 90+

Poor Low Average High Optimal

Current Status	Percentile Score
Average	57th

PREGNANCY & FETAL DEVELOPMENT

Even mild head injuries can damage brain cells and increase oxidative stress. This can disrupt normal cell metabolism and cause further cell damage. Research indicates that higher blood cell levels of EPA & DHA fatty acids can help inhibit cell death, reconnect damaged neurons, activate genes that repair damaged cells, and turn off genes that promote brain inflammation.

Increased DHA levels inhibit neuronal cell death and is an important neuro-protective agent

DHA is incorporated into the phospholipids in neuronal membranes, which in turn can influence not only the membrane chemical and physical properties but also the cell signaling involved in neuronal survival. Our studies have indicated that DHA supplementation inhibits neuronal cell death under challenged conditions, supporting a notion that DHA is an important neuroprotective agent.

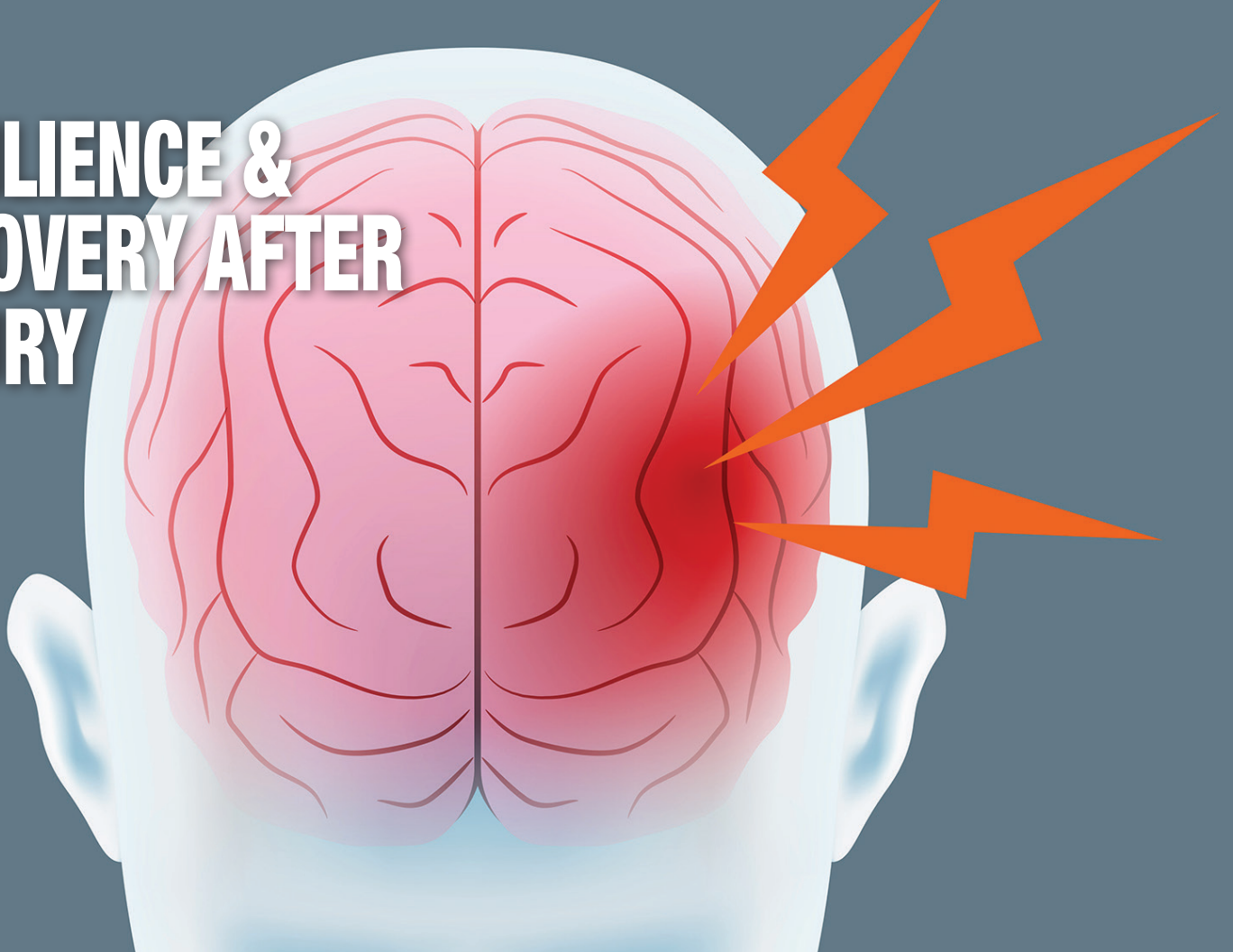
Prostaglandins Leukot Essent Fatty Acids. 2010 Apr-Jun; 82(4-6): 165–172.

Low dietary Omega-3 consumption responsible for up to 96,000 preventable deaths each year

A recent study by Harvard School of Public Health revealed that Omega-3 fatty acid deficiency is the sixth biggest killer of Americans - even more deadly than excess trans fat intake. The study utilized 2005 data from the US National Health Center for Health Statistics and revealed there are between 72,000 and 96,000 preventable deaths each year due to omega-3 deficiency.

PLoS Med, 2009 April; 6(4)

RESILIENCE & RECOVERY AFTER INJURY



Maintaining a high Omega-3 Index during pregnancy and breastfeeding is vital to a baby's brain development. These essential fatty acids in your blood cells are the building blocks of the fetal brain. A higher Index during pregnancy is associated with better child IQ scores and motor development. Additionally, it may help support a full gestation period and help reduce postpartum depression.

Maternal dietary consumption of Omega-3 fatty acids during pregnancy improved children's IQ

In a randomized and double-blinded study from the University of Oslo, children's mental processing scores at 4 years of age correlated significantly with maternal intake of Omega-3 EPA and DHA during pregnancy. In a multiple regression model, maternal intake of EPA/DHA during pregnancy was the only variable of statistical significance for the children's improved mental processing scores.

Helland et al. Pediatrics, 2003; 111:e39-44

Higher blood cell levels of Omega-3 DHA in babies are linked with better nervous system development

A research team from the University Medical Center Groningen compared red blood cell DHA levels and movement scores in 112, 3-month old breastfed babies from the Netherlands and Tanzania. The higher the DHA level, the better the scores. This suggests a link between healthy nervous system development and DHA status early in life.

Luxwolda et al. Nutritional Neuroscience, 2014;17:97-103

ATTENTION, WORKING MEMORY, & BEHAVIOR

In a published study, researchers from the University of Pittsburgh were able to positively correlate higher levels of blood cell fatty acids (EPA & DHA) with improved working memory in healthy young adults. Optimizing blood levels of these essential fatty acids is crucial to increasing attention, improving executive function, and reducing behavioral problems.

Children's level of DHA in their blood cells significantly predicts their ability to concentrate & learn at school

An Oxford University study involving nearly 500 school-children found that blood levels of Omega-3 fatty acids significantly predicted a child's behavior and ability to learn. Higher levels of Omega-3, DHA in particular, were associated with better reading and memory, as well as with fewer behavior problems as rated by parents and teachers.

Montgomery et al. PLoS ONE, 2013; 8:e66697

Increased Omega-3 Index scores improved both memory and reaction time in healthy young adults

A research team from Massey University in Auckland, New Zealand gave DHA supplements or a placebo to 176 young adults for 6 months. They reported that DHA raised the Omega-3 Index from 5.9% to 8.7% and that this was associated with improvements in memory scores.

Stonehouse et al. American J. of Clinical Nutrition,2013;97:1134-1143