



A Long Needed Proposal for NFL Players: Comprehensive Mandatory Exit Physical Exams

Background: A study commissioned by the National Football League reports that Alzheimer's disease is being diagnosed in the league's former players at much greater frequencies than in the national population — including a rate of 19 times the normal rate for men ages 30 through 49. This is devastating news. The study was conducted by the University of Michigan's Social Research Department. This particular study supports other smaller studies that have been conducted which have drawn similar conclusions.

Alzheimer's Disease Summary:

- A progressively destructive neurodegenerative disease that results in loss of memory, loss of function and loss of quality of life
- Once diagnosed, treatment is difficult at this point, and patients' symptoms worsen with time
- Risk of AD increases with age, family history, history of head trauma, and many other preventable states including but not limited to: vitamin deficiencies, hormonal decline, poor anti-oxidant status and immune system decline
- NFL players have 19 times the risk of average male adult due to repetitive head trauma
- The goal with AD is PREVENTION

Alzheimer's disease is characterized by a gradual and debilitating loss of memory and cognitive functions. The disease is becoming more prevalent as all of us live longer and healthier lives. For everyone, the risk of developing Alzheimer's increases with age. But, for an NFL player, the risk is significantly greater. The primary etiology for this increased risk stems from the thought that the head trauma sustained through concussions and everyday tackling leads to brain changes that result in greater tendencies towards developing this neurodegenerative disorder. For all of us, developing Alzheimer's disease is a scary proposition, but this data sheds light that for NFL players, this risk is a very scary reality.



The time to act is right now.

NFL players already have a shorter life span than the general population. Now we know that they have a vastly increased risk of developing Alzheimer's Disease. NFL players put their bodies through tremendous physical and emotional stress during their careers. Their rigorous exercise schedules and stress of competition alone takes its toll. Add to that the traumatic brain collisions which are occurring everyday as an occupational hazard and the end result is not favorable.

At first glance, it may seem that not much can be done. The more head trauma someone suffers, the more their risk will be of developing neurodegenerative disease such as Alzheimer's Disease. This certainly makes sense. But let us not resign ourselves to the fact that this is the only reason that NFL players are at increased risk of developing AD. As misunderstood as AD is, there is mounting data that we can turn to in our efforts to help NFL players prevent AD. I will review them here:

Action Plan Summary:

The goal with AD is prevention and I have developed a comprehensive and unique approach to going beyond traditional prevention measures to help people of all ages prevent AD. My program applies specifically to NFL players who are at increased risk due to the head trauma they sustain. In summary, my program consists of:

- Comprehensive Testing of the following parameters of PREVENTABLE health measures:
 - Hormone levels
 - Amino Acid and Fatty Acid levels
 - Vitamin and Mineral levels
 - Anti-oxidant levels
 - Immune Function
- Specific Individual optimization and balancing of any deficiencies discovered through testing
- Specific Nutrition and exercise recommendations based upon testing
- Periodic follow up to include repeat testing and recommendations as needed
- Maximize all nutritional, hormonal, immune status to decrease the risk of developing AD

1.) Hormonal influences:

it is certainly clear that head trauma over and over has the potential to cause anatomic changes in the brain that can lead to any type of neurodegenerative disorder. But I think that this theory is an



oversimplification of what is actually occurring. Head trauma directly affects hormone status, and it is these hormonal deficiencies which directly contribute to the development of AD. The vast majority of hormones in our bodies are controlled via the Hypothalamic-Pituitary-Adrenal (HPA) Axis. Simply put, brain hormones directly influence and control the release of all other hormones. Let me address these as they relate to NFL players (men).

1. **Melatonin:** this is a hormone secreted by the pineal gland in the brain. There is good data that declines in melatonin production and secretion lead to increased risk of developing Alzheimer's Disease. Melatonin controls our sleep/wake cycle and is strongly influenced by the adrenal gland hormone Cortisol. Melatonin is formed from the metabolism of Serotonin, a brain neurotransmitter (chemical messenger). Normally Melatonin is released at nighttime to help us settle down and sleep. Melatonin has both anti-cancer and anti-inflammatory properties. Now we know that leading up to the development of AD, there are deficiencies of Melatonin production and this contributes to AD development. This is summarized well in the attached article, "Molecular Changes Underlying Reduced Pineal Melatonin Levels in Alzheimer Disease: Alterations in Preclinical and Clinical Stages," which goes more in depth into the pathophysiology of this process. In short, by understanding how Melatonin is processed and metabolized, we can then seek to optimize Melatonin output and therefore decrease risk of AD development from this angle. This can be accomplished by measurement of several parameters including Melatonin, Cortisol and Serotonin.
2. **Cortisol:** this is our stress hormone and is released by our adrenal glands in response to any internal or external stressor. This includes good stressors such as exercise and bad stressors such as trauma. Cortisol is unique in that it is the only hormone which increases as we age. It is very clear that excess Cortisol leads to an increased risk of ALL inflammatory diseases such as heart disease, stroke, cancer and neurodegenerative disorders such as AD and Parkinson's. As noted above, Cortisol influences the production and metabolism of many other hormones including Melatonin, Growth Hormone and Testosterone. In general, we want our Cortisol metabolism to be efficient and well maintained. When we have too much stress, we stop metabolizing Cortisol efficiently and as a result inflammation goes unchecked and hormonal imbalance results. The good news is that we can readily measure Cortisol levels and then understand how each individual is processing their Cortisol. Once measured, we can balance Cortisol levels: lowering if too high and raising if too low. As a result we can keep Cortisol levels constant and steady and maintained.
3. **Testosterone:** this is the primary male hormone and we know it declines in all men with age. There is a plethora of data that supports the notion that decreased Testosterone leads to decreased cognition leading to an increased risk of AD. Please see the attached article, "Longitudinal Assessment of Serum Free Testosterone Concentration Predicts Memory Performance and Cognitive Status in Elderly Men," for a detailed review of this physiological process. As men age, their need for Testosterone increases, but due to decreasing Testosterone levels, men suffer, both cognitively and metabolically. Low Testosterone levels are also risk factors for both heart attack and stroke. It is very clear that all men need to have their Testosterone levels measured and then optimized to PREVENT the onset of AD, heart attack and stroke.
4. **Growth Hormone:** a brain hormone released by our pituitary glands. There is mounting evidence that head trauma leads to Traumatic Brain Injury (TBI) which directly affects the function of the pituitary gland. As a result, patients with TBI have low Growth Hormone levels and a higher incidence of many degenerative diseases such as AD, Parkinson's, Heart Failure and Chronic Fatigue. Growth Hormone, like Melatonin, is mostly secreted while we sleep and acts to keep muscles lean and strong, keep fat at bay and keep our cells healthy and strong. We can measure Growth Hormone levels in the blood by measuring Insulin-Like Growth Factor I (IGF-1) levels. We now know that declining levels of IGF-1 lead to poor cognition and increased risk of AD. Please see the attached article titled, "Midlife Plasma Insulin-Like Growth Factor I and Cognitive Function in Older Men,"



which reveals how this process works. Human Growth Hormone use is obviously banned in the NFL. And it is unfortunate that this hormone gets a lot of bad press as it is critical to healthy aging and as you can see to the development of AD.

5. **Thyroid hormone:** released by our thyroid gland and in charge of our metabolism. Unfortunately, thyroid hormone is misunderstood in that many individuals have a sluggish thyroid gland and suffer from poor memory, fatigue, weight gain as well as are at increased risk of AD, heart disease and stroke. By measuring thyroid levels and then optimizing thyroid function we can prevent many of these symptoms and go a long way to helping NFL players prevent the development of memory decline.

2.) Nutritional influences:

It is now well understood that poor nutrition leads to the development of all forms of chronic disease including AD, heart disease, cancer and diabetes. We clearly understand that we should not drink alcohol excessively and that cigarette smoking is very detrimental to our health. But what has been less clear is how we affect our health by our nutritional practices. This includes choosing the right foods and the best nutritional supplements. Attached are a few articles that help shed light on the connection between our nutritional status and our risk of AD:

1. "Low plasma eicosapentaenoic acid and depressive symptomatology are independent predictors of dementia risk," reveals that low blood levels of Omega 3 Fatty Acids put us at greater risk for cognitive decline and AD.
2. "Green tea consumption and cognitive function: a cross-sectional study from the Tsurugaya Project," reveals how the intake of Green Tea can boost cognitive function and lower our risk for AD.
3. "Plasma amino acid concentrations in patients with amnesic mild cognitive impairment or Alzheimer disease," reveals that low blood levels of amino acids (precursors to protein) increase the risk of cognitive impairment and AD.

And there are many more studies which each the same conclusions: proper nutrition is a powerful tool in achieving optimal health and preventing AD. In the next section of this paper, I will describe how we can easily accomplish this goal.

3.) Oxidative influences:

While there are certainly genetic influences which contribute to AD, there is also a growing body of data that suggests that free radical accumulation leads to neuronal cell dysfunction and ultimately death. This process then leads to declining cognitive function which leads to AD. Here is a quote from the article entitled, "Oxidative stress and Alzheimer disease," that describes this process:

"An effort must also be made to produce a proper account of the actual neurodegenerative process itself and of neuronal death. Free radicals probably play a role in these processes. The free radical hypothesis of aging, which was proposed many years ago, posits that the age-related accumulation of reactive oxygen species (ROS) results in damage to major components of cells: nucleus, mitochondrial DNA, membranes, and cytoplasmic proteins. The imbalance between the generation of free radicals and ROS may be involved in the pathogenesis of most of the neurodegenerative disorders, including AD."

We now know how to measure for oxidative damage and then reduce it through the use of anti-oxidants such as Vitamin C, Vitamin E, CoQ10, Resveratrol, and N-Acetyl-Cysteine intake. We are past the point where we can say that we just cannot do anything about free radical damage. For NFL players this is great news because now we can help them prevent this oxidative damage through the proper use of anti-oxidants. Here is some information about a unique anti-oxidant, Resveratrol:



Resveratrol tackles Alzheimer's plaques, shows lab study

By Dominique Patton

11/4/2005 - Resveratrol, a compound found in grapes and red wine, lowers levels of the amyloid-beta peptides that cause the plaques in the brain leading to Alzheimer's disease, shows new research. It could help to explain the large body of epidemiological evidence linking wine consumption to lower risk of dementia.

Writing in the 11 November issue of the *Journal of Biological Chemistry*, Philippe Marambaud and his colleagues at the Litwin-Zucker Research Center for the Study of Alzheimers Disease and Memory Disorders in Manhasset, New York, describe adding resveratrol to cells which produce human amyloid-beta.

They found that levels of amyloid-beta in the treated cells were much lower than those in untreated cells. The deposition of amyloid-beta peptides in the brain is one of the characteristic features of Alzheimer's disease. But although resveratrol is naturally found in several plants, including grapes, berries and peanuts, and is particularly high in Pinot Noir grape varieties, Marambaud said that these concentrations are unlikely to be enough to reach the effect seen in his study. "Resveratrol in grapes may never reach the concentrations required to obtain the effect observed in our studies," he said. But he added: "Grapes and wine however contain more than 600 different components, including well-characterized antioxidant molecules. Therefore, we cannot exclude the possibility that several compounds work in synergy with small amounts of resveratrol to slow down the progression of the neurodegenerative process in humans."

Marambaud and his colleagues are now trying to explain how resveratrol exerts its effects in order to develop similar compounds to use in new drugs to treat Alzheimer's disease. The researchers believe that resveratrol acts by stimulating the degradation of amyloid-beta peptides by the proteasome, a barrel-shaped multi-protein complex that can specifically digest proteins into short polypeptides and amino acids. Resveratrol may also be effective in fighting other human amyloid-related diseases such as Huntington's, Parkinson's and prion diseases. Studies by a group at the Institut National de la Santé et de la Recherche Médicale in Paris, France headed by Christian Néri have recently shown that resveratrol may protect neurons against amyloid-like polyglutamines, a hallmark of Huntington's disease.

Another important protective measure comes from Vitamin D, a vitamin nearly everyone is deficient in. This article summary from the "*Journal of Alzheimer's Disease*," shed light on this very topic:

Source: *Journal of Alzheimer's Disease*

May 2009, 17:1, Pages 151-159

Hypothesis

William B. Grant

Does Vitamin D Reduce the Risk of Dementia?

Abstract: The understanding of the role of vitamin D in maintaining optimal health has advanced sharply in the past two decades. There is mounting evidence for beneficial roles for vitamin D in reducing the risk of bone diseases and fractures, many types of cancer, bacterial and viral infections, autoimmune diseases, and cardiovascular diseases. Recently, several reports have also been published regarding the role of vitamin D in neuroprotection. This article develops the hypothesis that vitamin D can reduce the risk of developing dementia, presenting the evidence from observational and laboratory studies. The observational evidence includes that low serum 25-hydroxyvitamin D [25(OH)D] has been associated with increased risk for cardiovascular diseases, diabetes mellitus, depression, dental caries, osteoporosis, and periodontal disease, all of which are either considered risk factors for dementia or have preceded incidence of dementia. The laboratory evidence includes several findings on the role of vitamin D



inneprotection and reducing inflammation. Although this evidence is supportive, there do not appear to be observational studies of incidence of dementia with respect to prediagnostic serum 25(OH)D or vitamin D supplementation. Such studies now appear to be warranted.

We are learning more and more about the benefits of Vitamin D everyday and so it is no surprise that Vitamin D plays a protective role in the development of AD.

4.) Infection influences:

Although still in it's infancy, the infection theory in the development of AD, is gaining momentum with the amount of data we are collecting. The theory is that one or many different types of infectious organisms contributes to neuronal cell decline which leads to increased brain inflammation and ultimately AD development. This includes infectious agents such as the bacteria that causes Lyme disease and Toxoplasma infection (a parasite infection). Here are a few article references that help shed light on the infectious etiologies of AD:

85% of Alzheimer brains in one study had DNA of Borrelia in the plaques.

A study in Canada treating patients with Abx(Doxy and Rifampin) for 3 months showed improvement over placebo. Monocycline would be better.

1: Med Hypotheses. 2006;67(3):592-600. Epub 2006 May 3. Links
Plaques of Alzheimer's disease originate from cysts of Borrelia burgdorferi, the Lyme disease spirochete. MacDonald AB.
St. Catherine of Siena Medical Center, Department of Pathology, 50 Rte 25 A, Smithtown, NY 11787, USA. inmacdonald@yahoo.com

1: Neurobiol Aging. 2006 Feb;27(2):228-36. Links
Beta-amyloid deposition and Alzheimer's type changes induced by Borrelia spirochetes. Miklossy J, Kis A, Radenovic A, Miller L, Forro L, Martins R, Reiss K, Darbinian N, Darekar P, Mihaly L, Khalili K. Kinsmen Laboratory of Neurological Research, University of British Columbia, 2255 Wesbrook Mall, Vancouver, BC, Canada V6T 1Z3.
judmik@telus.net

1: Curr Microbiol. 2006 Apr;52(4):330-2. Epub 2006 Mar 9. Links
Lyme disease associated with Alzheimer's disease. Meer-Scherrer L, Chang Loa C, Adelson ME, Mordechai E, Lobrinus JA, Fallon BA, Tilton RC.
Laurence Meer-Scherrer, 37 Flammat, Aumatt, Switzerland.

This case report discusses a patient with co-occurring neuroborreliosis and Alzheimer's disease (AD). Although no claim is made for causality nor is there objective evidence that spirochetes are involved in AD, co-infection may exacerbate the symptoms of either neuroborreliosis or AD. Much is to be learned about the role of spirochetes in degenerative central nervous system disease.

1: J Am Geriatr Soc. 2004 Mar;52(3):381-7. Links
A randomized, controlled trial of doxycycline and rifampin for patients with Alzheimer's disease. Loeb MB, Molloy DW, Smieja M, Standish T, Goldsmith CH, Mahony J, Smith S, Borrie M, Decoteau E, Davidson W, McDougall A, Gnarpe J, O'DONNell M, Chernesky M. Department of Pathology and Molecular Medicine, Biostatistics Hamilton Regional Laboratory Medicine Program, Hamilton, Ontario, Canada.

Again, this data coming out is new and exciting because it provides a unique role for treatment and prevention of AD: find the infectious source, eradicate it and move on.



Action Plan:

As an Organic Medicine doctor who works with professional athletes, my goal is to help them achieve their highest level of performance by measuring how well they are doing on a cellular level. We employ several different biochemical blood, urine and saliva tests to help understand how each athlete is doing from a metabolic, nutritional, and oxidative standpoint. My testing services and ECO-Athlete program is what is needed as mandatory Exit Physicals for all NFL Players. By going through my series of tests, I will be able to help each player completely optimize their nutritional, hormonal, vitamin, oxidative and immune function. By doing so, I will be able to reduce their risk of AD development. We can no longer attribute the gigantic increased risk of AD development to just head collisions and brain concussions. This is an injustice to all of the NFL players. We can dig much deeper. We can provide them a way to maximize and optimize how their body is functioning on a cellular level. This will not only help them prevent AD development, but also help prevent them from getting heart disease, stroke and cancer.

Here are descriptions of the testing services I provide with sample reports:

- **Food Compatibility Testing** to determine if the foods you're eating are the right foods for you and identify any dietary changes you should make. ([click here for sample report](#))
- **Fatty Acid Testing** to determine the amount and ratio of Omega 3, 6, and 9 supplements you need to achieve an optimal balance of these Essential Fatty Acids. ([click here for sample report](#))
- **Amino Acid Testing** to determine if your body is absorbing enough of the amino acids you're getting from food and supplements. ([click here for sample report](#))
- **Organic Acid Testing** to determine how your cells are working on the mitochondrial level. This test measures your ability to make ATP on a cellular level – essentially, your body's ability to charge its own batteries – and how to correct any deficiencies. ([click here for sample report](#))
- **Vitamin and Mineral Testing** to determine if you are getting all of the vitamins and minerals, crucial to cellular health, from the food you eat
- **Hormone testing** to determine levels of Cortisol, DHEA, Testosterone, Melatonin, Growth Hormone, Thyroid hormones
- **Oxidative testing** to determine how your body is handling the free radicals being produced
- **Infectious disease testing** to determine if there has been exposure to chronic infectious agents such as the bacteria that causes Lyme disease, parasites, Mycoplasma, yeast and several other bacterial agent

NFL players provide us so much joy and fun by stressing their bodies day in and day out. They put themselves through the rigors of physical training that most of us cannot even imagine. And as a result their bodies suffer from these physical and emotional stressors. It is time we reached out and helped them live as long and as healthily as possible. We can no longer stand by and let their bodies crumble away with time.

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