



TheElite Training Group track club

## Expanding the area of what is possible

In Track & Field Distance Running & Competent Self-Care in medicine and psychology

[www.theetgtrackclub.com](http://www.theetgtrackclub.com)

# TheETG Brain cell Repair

**A major part of TheETG mission** is to expand the area of what is possible in competent self-care in medicine and psychology. TheETG's primary method of achieving that is to proliferate applied science based information by way of \$free packets containing plain language info for anyone seeking to move themselves or others forward in these areas.

As you continue to acquire and apply more information you continue to expand the area of what is possible. Data-less conclusions founded upon faulty assumptions are the mother of all screw-ups. They lead to human belief systems that quickly get set in stone. Put data ahead of dogma. Follow the data -not- the crowd.

### **TheETG packets attempt to address the following:**

".....the benefits that US health care currently deliver may not outweigh the aggregate health harm it imparts."  
[Journal Of The American Medical Association...Volume 302 #1..July 1, 2009...page 89 - 91]

"Not enough doctors adapt appropriately to new scientific findings.....An insufficient number of medical faculty members are well prepared, effective educators, and too few medical schools prepare their students for a lifetime of learning and change."  
[J.Hilliard,et al. -- The Lancet -- Volume 385 #9969 -- February 21, 2015 -- page 672]

".....takes an average of 17 years to translate 14% of original research into benefit.....average of 9 years for interventions recommended as evidence-based practices to be fully adopted."  
[M.Tinkle, et al -- Dissemination and Implementation -- Nursing Research and Practice -- Volume 2013]

".....1.5 million U.S. residents are harmed or killed each year because of medication errors, according to an Institute of Medicine report."  
[Nature Medicine -- Volume 12 #9 -- September 2006 -- page 984 - 985....News In Brief]

"It is estimated that more than 700,000 individuals are seen in hospital emergency departments for adverse drug events each year in the United States."  
[Centers For Disease Control -- 2015]

"Most drugs are only effective for a small percentage of people who take them."  
[Michael Leavitt -- U.S. Secretary of Health & Human Services 2005 - 2009]

".....A recent study for example, found that only half of all cardiac guidelines are based on scientific evidence."</p>  
[President Barack Obama -- Speech to the American Medical Association -- June 15, 2009]

"All the good things....they don't teach us in medical school, because the drug companies pay for our education."  
[Dr. John Sessions M.D.]

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## **Order of events in this ETG packet**

- general info**
- consequences of brain cell overwork, overwhelm**
- ADHD**
- Alzheimer's**
- chronic fatigue, fibromyalgia**
- depression**
- cognitive psychology for improving brain function**
- Nutrition Medicine**

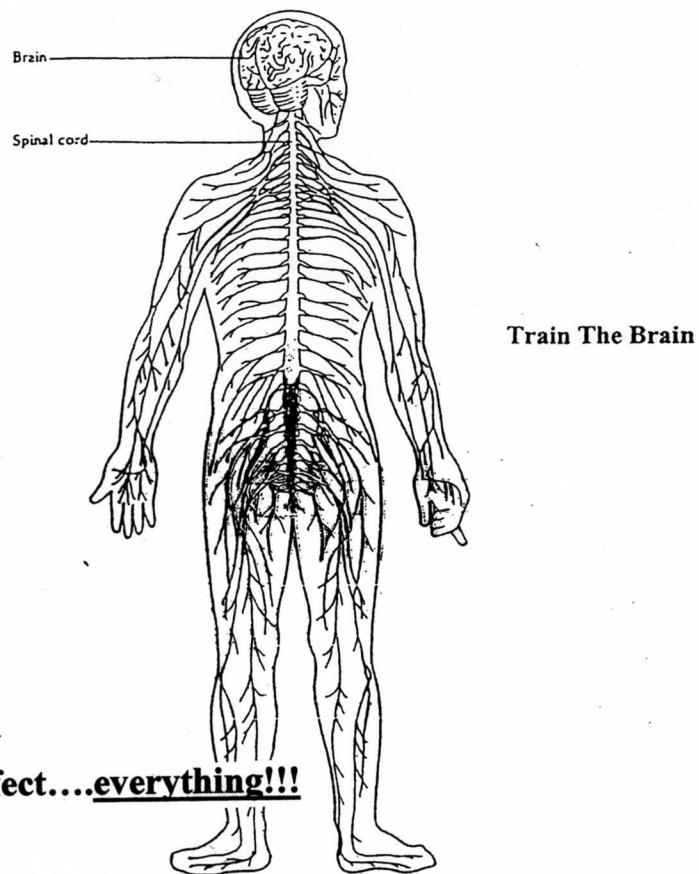
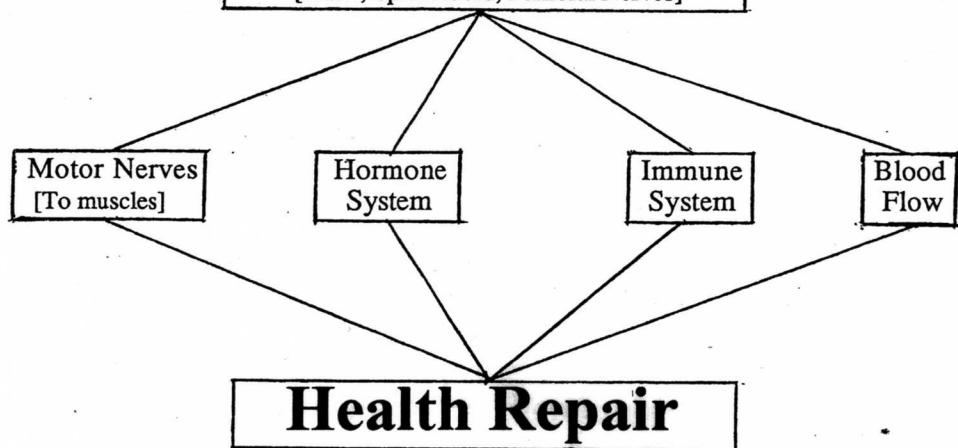
# Mind-Body Medicine

[21rst century Health Repair]

ETG

**Use Your Brain**

Central Nervous System (CNS)  
Periferal Nervous System (PNS)  
[Brain, Spinal Cord, Periferal Nerves]



**The Brain;**

--- Branches out to the body

--- Thus it can control or effect....everything!!!

# **“Mental Health Professionals” should practice more "mental health" and less pharmacology.....**

"The U.S. mental health system is in crisis....according to a federal report."

"The fundamental problem: emphasizing medicating people over fostering ways to help them lead productive lives."

**Associated Press, The Daily Texan [September 17, 2002]**

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“A new study finds a significant decline in psychotherapy practiced by U.S. psychiatrists.”

“The expanded use of pills and insurance policies that favor short office visits are among the reasons, said lead author Dr. Ramin Mojtabai of Johns Hopkins Bloomberg School of Public Health in Baltimore.”

“Psychiatrists who provided talk therapy to everyone had more patients who paid out of pocket compared to those doctors who provided talk therapy less often. And they prescribed fewer pills. As talk therapy declined, TV ads contributed to an “aura of invincibility” around drugs for depression and anxiety.”

**Fewer people seeking therapy as dependence on pills grows**  
[by The Associated Press]

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“The researchers found that the drugs did have a positive impact on people with mild depression - but the effect was no bigger than that achieved by giving patients a sugar-coated "dummy" pill.”

“The number of prescriptions for anti-depressants hit a record high of more than 31 million in England in 2006 - even though official guidance stresses they should not be a first line treatment for mild depression.”

**BBC News [February 26, 2008] Anti-depressants' Little Effect**

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“Practice is not reflecting the research. Ninety to 95% of programs have no research base. The gap between what is known and what is being provided in routine care is huge.”

**Kimberly Hoagwood {New York Office Of Mental Health}  
Associated Press, The Daily Texan, April 11, 2002**

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“For every dollar we spend on prescription drugs, we spend a dollar to fix the complication.”

**Dr. Mehmet Oz [Professor of Surgery, Columbia University]**

Journal Of The American Medical Association.....

"About 60% of US adults have experienced at least 1 adverse childhood experience and nearly 16% experienced 4 or more, substantially increasing their risk of poor health outcomes....."

"Childhood adverse experience can run the gamut from sexual and physical abuse to witnessing violence or growing up in a family with mental health or substance misuse problems."

"Adversity in childhood can increase the risk of dying from 5 of the top 10 causes of death in the United States: heart disease, cancer, respiratory diseases, diabetes, and suicide, Anne Schuchat, MD, the CDC's principal deputy director, said during a press briefing."

"Preventing adverse childhood experiences could potentially reduce the number of US residents with coronary heart disease by 1.9 million, cases of overweight or obesity by 2.5 million, and cases of depression by 21 million, the report noted."

"The accumulation of adverse childhood experiences can lead to health and social problems throughout childhood and into adulthood...."

"Multiple different types of adverse childhood experiences together can produce toxic stress which is a chronic activation of the stress response system that results in negative effects on brain development, behavior, and well-being...."

"She noted that the CDC has a guide to evidence-based methods to prevent or reduce the impact of adverse childhood experiences."

"....women, American Indian/Alaska Native populations, black people, and other racial and ethnic subgroups were more likely to have experienced 4 or more types of adverse childhood experiences than men or white individuals."

B.Kuehn

Childhood Hardships Contribute to Poor Adult Health

Journal Of The American Medical Association -- Volume 322 #24 -- December 24/31, 2019 -- 2376

"The difference between the effect of a placebo and the effect of an anti-depressant is minimal for most people.....People get better when they take the drug, but its not the chemical ingredients in the drug that are making them better, its largely the placebo effect."

**Irving Kirsch [Associate Director Placebo Studies, Harvard Medical School]**

"The U.S. mental health system is in crisis....according to a federal report."

"The fundamental problem: emphasizing medicating people over fostering ways to help them lead productive lives."

**Associated Press, The Daily Texan [September 17, 2002]**

# **consequences of brain cell overwork, overwhelm**

**Brain cell overwork, overwhelm,  
by way of brain cell dysfunction and/or destruction,  
can progress to.....**

Chronic Fatigue syndrome

Fibromyalgia

Obsessive Compulsive Disorder

Schizophrenia

Dementia

Parkinsons

Alzheimers

# “Mental Illness” = Brain Cell Loss

- A bunch of cells missing in the memory and cognition area, in the hippocampus, we call that Alzheimer's.
- A bunch of cells missing in the motor area that produce dopamine, we call that Parkinson's.
- A bunch of cells lose their ability to produce an anti-oxidant called super-oxide dismutase, we call that Lou Gehrig's disease or ALS.
- A bunch of cells missing in the limbic areas, we call that schizophrenia.
- A bunch of nerve fibers missing coverings along with some missing cells in motor areas, we call that Multiple Sclerosis.
- A bunch of cells missing that produce serotonin, we call that chronic major depression.
- A bunch of "inter-neurons" missing in the hippocampus, we call that bi-polar disorder

You can give drugs that artificially try to compensate for production of substances by cells that no longer exist, and just like giving people cholesterol lowering drugs their underlying brain cell loss issue will persist and get worse over time.

Or you can walk willing patients through a process of regenerating the cells. Their issues will improve over time.

Excellent drug care isn't excellent medical care.

Something is wrong with your car. The mechanic isolates the problem and slaps a name on it. Under the excellent care of your mechanic, the problem gets worse over time and never gets resolved. You recommend the mechanic to friends and co-workers.

When it comes to medical care, we are not consumers.

We don't behave as consumers.

We make choices we wouldn't make in any other market sector.

We provide unearned praise about service providers we wouldn't provide in any other market sector.

"As long as people will accept crap, it will be financially profitable to dispense it."

**[Dick Cavett]**

**schizophrenia.....**

**"Excessive synapse elimination during adolescence and early adulthood has long been hypothesized to underpin the emergence of schizophrenia."**

**"A new study reports that induced microglia-like cells derived from schizophrenia patients display increased synapse engulfment...."**

M.Wang, et al  
Microglia, complement and schizophrenia  
Nature Neuroscience -- Volume 22 #3 -- March 2019 -- page 333

"Vascular contributions to cognitive impairment are increasingly recognized as shown by neuropathological, neuroimaging, and cerebrospinal fluid biomarker studies."

"Moreover, **small vessel disease of the brain has been estimated to contribute to approximately 50%** of all dementias worldwide, including those caused by Alzheimer's disease".

"Vascular changes in Alzheimer's disease have been typically attributed to the vasoactive and/or vasculotoxic effects of amyloid- $\beta$ , and more recently tau."

"....studies suggest that amyloid- $\beta$  and tau lead to blood vessel abnormalities and blood-brain barrier breakdown.....neurovascular dysfunction and blood-brain barrier breakdown develop early in Alzheimer's disease..."

"To address this question, we studied brain capillary damage using a novel cerebrospinal fluid biomarker of blood-brain barrier-associated capillary mural cell pericyte, soluble platelet-derived growth factor receptor- $\beta$ , and regional blood-brain barrier permeability using dynamic contrast-enhanced magnetic resonance imaging."

"Our data show that **individuals with early cognitive dysfunction develop brain capillary damage and blood-brain barrier breakdown** in the hippocampus irrespective of Alzheimer's amyloid- $\beta$  and/or tau biomarker changes, suggesting that **blood-brain barrier breakdown is an early biomarker** of human cognitive dysfunction independent of amyloid- $\beta$  and tau."

D.A.Nation, et al

Blood-brain barrier breakdown is an early biomarker of human cognitive dysfunction  
Nature Medicine -- Volume 25 #2 -- February 2019 -- page 270

# **"Mental Illness" vs. Brain Cell Dysfunction**

[Consequences of Overworked--Overwhelmed Brain Cells]

The future of treating what have been traditionally called "mental illnesses" will change -- from -- looking at brain cells as concrete structures that once broken, stay broken..... to -- looking at brain cells as possessing a high level of plasticity, train-ability, and over-train-ability.

The reason why many people with "mental illnesses" relapse is because their "treatment" failed to effectively address the mechanisms of their problem. Drug treatments don't change people's work/social environments, personal belief systems, stress levels, or behavioral programming.....therefore drugs fail to reverse the inability of brain cells to produce "normal" levels of the involved neurotransmitters, and/or have "normal" receptor function.

The primary difficulty for the mental health care person will be in getting people to do the cognitive work and other treatment adherence.

# The New Direction Of Human Psychology

The philosophy of the medical and mental health professions that suggests that brain cells are like concrete objects, that once broken, stay broken.....is wrong. The so-called “mental illnesses” are not mental illnesses, but are symptoms of progressions or stages of deficits in brain cell function that are given a name [anxiety disorder, obsessive-compulsive disorder, schizophrenia].

Thoughts and chemical aspects of brain cell function are directly linked. Attention related cognitions [thoughts] affect the release of the neurotransmitter called glutamate, and neuro-modulator called dopamine. For people under chronic, long term, excessive levels of drive/pressure.....excessive glutamate neurotransmission can lead to physiological deficits in brain cells, and brain cell function.....resulting in deficits in psychological functioning.

The so-called “mental illnesses” all involve the consequences of long term overworking—overwhelming of brain cells....which results in deficiency or over production of the brain neurotransmitters.....glutamate....dopamine.....and/or serotonin. “Mental Illness” symptoms are preceded by chronic overproduction of cortisol [stress hormone], adrenalin, and/or brain cell glutamate.

If you overwork—overwhelm your brain cells, you will suffer the “mental illness” consequences.

If some athletes suffered from “over-training” .....hopefully your advice to them would not be to go see a psychiatrist or medical doctor to get some medication to control their symptoms. Hopefully your advice would be to “stop training”, and to then engage in tasks that will help their cells regenerate themselves. And obviously, one will have to identify and deprogram the behavior patterns that created the situation.

**The amount of time necessary to reverse these problems will be determined by the degree of brain cell deficit in function and the degree to which one implements all of the necessary recovery and regeneration processes.**

“Formation and survival of new neurons.....can be substantially increased by the provision of an enriched environment or by increased locomotor activity”.

“Direct stimulation of patients’ own neural stem cells through.....behavioral manipulation might offer scope for greater repair.....”

R.J.E. Armstrong, R.A.Baker....October 2001

The Lancet....Volume 358.....October 6, 2001.....page 1174 - 1176

The goal of  
Applied  
Psychology  
is to empower  
people  
to achieve  
Self-Mastery

**Attention should be paid mainly to the role of the major substance called glutamate in the chemical aspects of our thoughts [intensely directed, and focused thoughts].**

1 --- Over production of glutamate, causes a highly studied situation called glutamate neuro-toxicity, and subsequent destruction of brain cells.

2 --- Chronic--dysfunctional levels of, intensely directed and focused thoughts/attention results over time, in glutamate neuro-toxicity.

3 --- Glutamate toxicity has already been identified as the underlying malady in the so-called "mental illnesses" of Schizophrenia, Obsessive Compulsive Disorder, Post Traumatic Stress Disorder, Psuedo Seizers, and other brain degenerative "diseases" such as fibromyalgia, and Chronic Fatigue Syndrome

4 --- "all".....of these can be reversed subsequent to the.....reduction—removal.....of the dysfunctional levels of intensely directed, and focused thoughts.....which can be achieved without drug treatment.

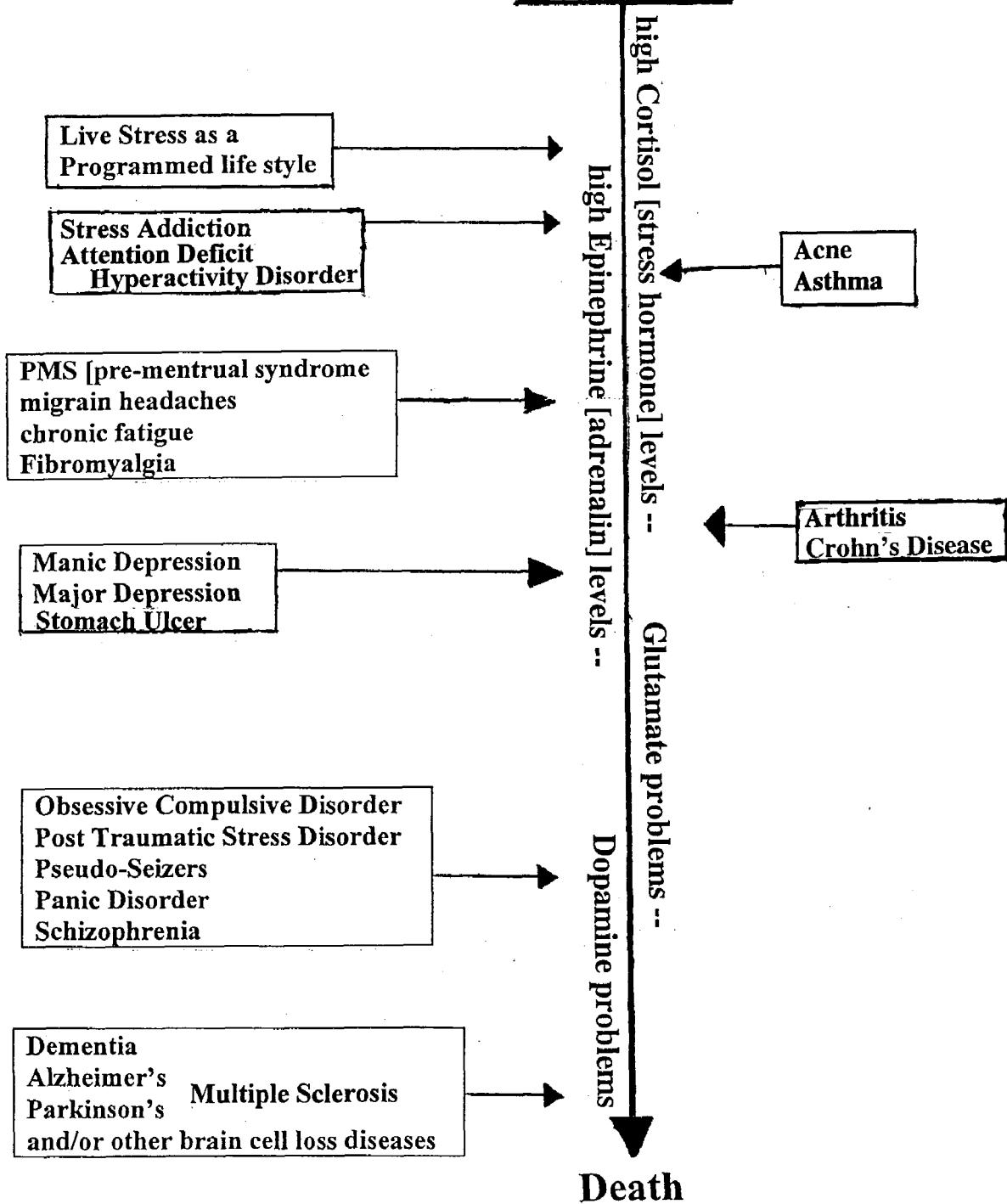
# “Mental Illness” vs. Brain Cell Dysfunction

[Consequences of Overworked--Overwhelmed Brain Cells]

These are not “Mental Illnesses”.....they are the consequences of brain cell overwork—overwhelm.

These “Mental Illnesses” are progressions or stages of deficits in Brain Cell function from overwork—overwhelm, that exist along a continuum.

## “Normal” Brain Cell Function



# Denial

**"If I don't look at it, it doesn't exist."**

**"If I don't talk about it, it won't hurt me."**

**"If I don't deal with it, it will go away."**

**"Feelings buried alive don't die."**

[Iyanla Vanzant]

Denial.....

If you don't manage your mindset your mindset will manage you.

Let growth be your first option, not the last resort.

**--- schizophrenia = loss of brain cells in certain areas, leads to "schizophrenic behaviors"**

"Most societies believe that a mother's psychological state can influence her unborn baby. Severe adverse life events during pregnancy have been consistently associated with an elevated risk of low birth weight and prematurity. Such events during the first trimester have also been associated with risk of congenital malformations."

"In a cohort of 1.38 million Danish births from 1973 to 1995...."

"Offspring were followed up from their 10th birthday until their death, migration, onset of schizophrenia, or June 30, 2005"...."

"Our population-based study suggests that severe stress to a mother during the first trimester may alter the risk of schizophrenia in offspring. This finding is consistent with ecological evidence from whole populations exposed to severe stressors and suggests that environment may influence neurodevelopment at the feto-placental-maternal interface."

A.S.Khashan, et al  
Higher risk of offspring schizophrenia following antenatal maternal exposure to severe adverse life events  
Archives of General Psychiatry. 2008 Feb;Volume 65 #2.....February 2008....page 146 - 152

# Over-training

The term "over-training" means different things to different people. In running, most people in the sport define it in such a way as to relate to a running injury.

That's the common way people think of it. However, the more common manner in which it manifests itself is in suppressing one's body from gaining fitness, thus suppressing improvements in performance level.

**There are --2-- separate consequences of "Over-training"**

**1. The one where you incur a running injury**

**2. The one where your body enters into the physiological state where your anabolic system [a.k.a tissue building] is suppressed to some significant degree and thus your ability to acquire training adaptations and move forward in fitness level is suppressed. This can be referred to generally as "Physiological Over-training", or being in an "over-trained state".**

**Physiological over-training, or being in an "over-trained state" is something one can measure. It often comes in the form of cortisol [stress hormone] production, which suppresses anabolic [tissue building] hormones and other hormone production [ie. testosterone, estrogen, growth hormone, thyroid hormone, and overall adrenal gland function], and competes with anabolic hormones for binding sites on tissues such as muscle. It reduces protein production, such as muscle protein, blood proteins [ie. Red Blood Cells, Immune system cells, etc]. This is a state where even though you are -not- injured, and even though you are training fully, your fitness level does -not- move forward, and may even reverse.**

Again, this is a measurable state. You can measure cortisol levels. You can measure red blood cell and EPO production ability. You can measure muscle protein synthesis. You can measure immune system activity. You can measure adrenal gland function. You can measure certain aspects of brain activity.

Regardless of what type of training program you believe in and follow [mileage oriented, or velocity oriented], its helpful if one's body can stay in an anabolic state such that it can adapt to one's training, thus moving forward in fitness, leading to increases in performance level.

That's major challenge and the major objective when designing any training program.

If your body can't adapt, you can't move forward in fitness level. If your body can't move forward in fitness level, it can't move forward in performance level.

Much of sport is about moving forward in performance.

**Long term repetitive episodes of anxiety and depression.**

**The area of the brain = the amygdala.**

**The pathway taken = PTSD to anxiety to depression.**

One or more drama-and-trauma life events....[bullied, child abuse, car wreck, getting hit by a car, domestic violence, rape, war fighting, etc] result in effects on brain cells, just as being hit on the head does in a traumatic brain injury event. Some cells in the amygdala get over activated for a long period of time, the pathway by which PTSD heads towards repetitive episodes of anxiety and depression.

Long term over-activation of cells in the amygdala results in a very high burn rate of nutrients essential for their normal functioning. With that comes long term under-supply. Some of those cells eventually become dysfunctional cells....problems with production or utilization of dopamine, mono-amine oxidase, serotonin, etc.

This screws with your fear based thoughts, causing anxiety attacks, negative thoughts and memories that feed depression.

Our amygdala's job is to protect us. It generates fear based stuff to steer us away from doing things that might cause harm. It also houses fear based memories. When the functioning of some of those cells goes awry, problems result.

Many people can reduce the burn rate of the over-utilized nutrients by supplying some of them.....essential fats [a.k.a. fish oil], B-vitamins, probiotics, anti-oxidants [glutathione, selenium, resveratrol, E vitamins, vit C, carotenes]. If you're willing to spend some money on a high grade, liquid fish oil and take about -3- grams per day with food for at least 3 months, you'll tend to see fewer anxiety attacks as well as less depression. It ain't cheap. "Nordic Naturals" is a relatively high grade brand.

Quality matters, dosage matters....there's hard data available on all of the above. Beware of folks that contradict that statement.

Many people can reduce the over-activation of amygdala cells, the brain cell overwork--overwhelm situation by pursuing Cognitive Behavior Therapy, also known as CBT. This can be done in person, over the phone, or via online consultations.

Beware of psychologists and psychiatrists that claim to practice CBT but don't. They're like a medical doctor that wants to see athletes so they call themselves a "sports medicine" doctor. You'll keep returning to them because you like them. The reason you have to keep returning to them is because they don't practice CBT.

Beware of the doctor, psychiatrist, or psychologist that engages in "cover your ass" mental health. Also known as CYA medicine. You walk into their office, say something about having suicidal thoughts, they immediately cover their ass by demanding that you start psyc meds. Beware of the medical doctor that blindly writes you prescriptions for psyc meds forever.

The doctor is keeping you in an endless loop of supposed symptom management and non-verbally saying to you that there is no other approach that will work.

Tough times never last.

Tough people never do either.

The ability to be non-reactive to negative life events, to aggressively adapt to change quickly, and to be solution oriented as the main mechanism of escape from stress and turmoil....are major life skills to be learned. They tend to get omitted from the grade school, college, and graduate school curriculum.

At everyone's peril.

We get inserted into a society where ya just have to hope things don't head south too often and that everything will turnout Ok. Not a lotta guidance on how best to approach adversity.

For all of us the drama and trauma of negative life events would be much easier to live through, live with, and/or resolve if the teaching and development of life skills were a bit more of a priority in our society. Intentionally developing some degree of mastery in this area advances the ball in multiple, permanent, life altering ways.

# schizophrenia & Mind-body medicine

terms = cortisol....stress hormone

"A growing body of evidence suggests that resting cortisol levels are elevated in patients with schizophrenia and closely tied to symptom severity. However, there is limited research on the biological stress system during the ultra high-risk period immediately preceding the onset of psychosis....."

"Consistent with previous studies, ultra high-risk period participants exhibited elevated resting cortisol levels when compared with controls. In addition, ultra high-risk period adolescents exhibited increased negative self-concept and their relatives/caretakers endorsed significantly fewer initial positive statements about the participant."

"Interestingly, a strong trend in the ultra high-risk period group suggests that higher cortisol levels are associated with higher rates of critical statements from relatives/caretakers."

"Furthermore, elevated cortisol levels in the participants were associated with increased negative self-concept as well as fewer initial positive comments from relatives/caretakers. Results suggest that hypothalamic-pituitary-adrenal axis dysfunction is closely associated with both individual and environmental-level characteristics."

Taken together, these findings support a neural diathesis-stress model of psychosis....."

E.E.Carol, V.A.Mittal  
Resting cortisol level, self-concept, and putative familial environment in adolescents at ultra high-risk for psychotic disorders  
Psychoneuroendocrinology.....Volume 57 ....July 2015.....page 26

# Stay Anabolic

As with any training program, it's helpful if one's body can stay in an anabolic state such that it can adapt to one's training, thus moving forward in fitness, leading to increases in performance level.

In human physiology, the term "over-training" does -not- always refer to "injury", but rather the physiological state where your anabolic system is suppressed to some significant degree and thus your ability to adapt to your training and move forward in fitness level and performance level is suppressed.

The training program must be designed in a way that allows the runner's body to stay in an anabolic state over time.

"Exercise bouts that maximize anabolic hormonal response and/or minimize the catabolic hormonal response promote greater long-term adaptations....."

"Similarly, exercise bouts that limit the anabolic hormonal response and/or exacerbate the catabolic hormonal response suppress adaptations....."

D.A.Judelson, et al  
Effect of hydration state on resistance exercise-induced endocrine markers of anabolism, catabolism, and metabolism  
Journal Of Applied Physiology.....Volume 105 #3....September 2008....page 815 - 824

# **Human Cellular Function**

**You're either with it  
or against it.**

**Everyone must choose.**

## **Psychology -vs- drugs for treatment of mental illness.....**

"Cognitive rehabilitation has shown efficacy in improving cognition in patients with schizophrenia...."

".....examine differential changes in brain morphology in early course schizophrenia during cognitive rehabilitation vs supportive therapy"

"A 2-year trial with annual structural magnetic resonance imaging and cognitive assessments."

"Cognitive enhancement therapy is an integrated approach to the remediation of cognitive impairment in schizophrenia that uses computer-assisted neurocognitive training and group-based social-cognitive exercises."

"Patients who received cognitive enhancement therapy demonstrated significantly greater preservation of gray matter volume over 2 years in the left hippocampus, parahippocampal gyrus, and fusiform gyrus, and significantly greater gray matter increases in the left amygdala...."

"Less gray matter loss in the left parahippocampal and fusiform gyrus and greater gray matter increases in the left amygdala were significantly related to improved cognition and mediated the beneficial cognitive effects of cognitive enhancement therapy."

"Cognitive enhancement therapy may offer neurobiologic protective and enhancing effects in early schizophrenia that are associated with improved long-term cognitive outcomes."

**S.M.Eack, et al**

**Neuroprotective effects of cognitive enhancement therapy against gray matter loss in early schizophrenia: results from a 2-year randomized controlled trial**

**Archives Of General Psychiatry.....Volume 67 #7.....May 2010.....page 674 - 682**

## **Stimulating the brain -vs- drugs for treatment of depression.....**

"Daily left prefrontal repetitive transcranial magnetic stimulation has been studied as a potential treatment for depression....."

"Four US university hospital clinics."

"199 antidepressant drug-free patients with.....major depressive disorder."

"Primary efficacy analysis revealed a significant effect of treatment...."

"Daily left prefrontal transcranial magnetic stimulation.....produced statistically significant and clinically meaningful antidepressant therapeutic effects...."

**M.S.George, et al**

**Daily left prefrontal transcranial magnetic stimulation therapy for major depressive disorder: a sham-controlled randomized trial**

**Archives Of General Psychiatry.....Volume 67 #5....May 2010.....page 507 - 516**

"Progressive neuro-degenerative disease.....is increasing in prevalence."

D.H.S. Silverman, et al.....November 2001  
Positron Emission Tomography In Evaluation Of Dementia  
Journal Of The American Medical Association.....Volume 286 #17.....November 7,2001.....page 2120

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".....levels of excitatory amino acids were measured in 38 psychiatric out-patients.....the patients had.....diagnoses of organic mental disorders (N = 3), mood disorders (N = 15), schizophrenia (N = 13), and anxiety disorders (N = 7)."

"The glutamate plasma levels were significantly higher in the patients with mood disorders than in the comparison group."

C.A. Altamura.....November 1993  
Plasma And Platelet Excitatory Amino Acids In Psychiatric Disorders  
American Journal Of Psychiatry.....Volume 150 #11.....November 1993.....page 1731 - 1733

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"Glutamatergic dysfunction has been suggested as a possible substrate of the pathophysiology of schizophrenia."

"These data support the hypothesis of abnormal glutamatergic neurotransmission involving the ionotropic glutamate receptors in schizophrenia."

J.H Meador-Woodruff.....March 2000  
Glutamate Receptor Expression In Schizophrenic Brain  
Brain Research Reviews.....Volume 31 #2-3.....March 2000.....page 288 - 294

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"The objective of the present study was to compare the phenomenology and pathophysiology of obsessive compulsive disorder (OCD) and attention deficit hyperactivity disorder/deficits in attention, motor control and perception."

"It appears that OCD is a hyperglutamatergic and ADHD a hypoglutamatergic condition, with prefrontal brain regions being especially affected."

M.L. Carlsson.....January 2001  
On The Role Of Prefrontal Cortex Glutamate For The Antithetical Phenomenology Of Obsessive Compulsive Disorder And Attention Deficit Hyperactivity Disorder  
Progress In Neuro-Psychopharmacology & Biological Psychiatry.....Volume 25 #1.....January 2001.....page 5 - 26

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"Neurobiological Models for obsessive-compulsive disorder [OCD] have consistently implicated the caudate nucleus I the pathophysiology of this disorder."

"These data provide further support for the glutamatergic-serotonin pathway involvement in the caudate nucleus."

G.J. Moore.....June 1998  
Case Study: Caudate Glutamatergic Changes With Paroxetine Therapy For Pediatric Obsessive-Compulsive Disorder  
Journal Of The American Academy Of Child & Adolescent Psychiatry.....Volume 37 # 6.....June 1998.....page 663 - 667

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".....baseline adrenaline levels were significantly higher in Chronic Fatigue Syndrome patients."

A. Kavelaars.....February 2000  
Disturbed Neuroendocrine-Immune Interactions In Chronic Fatigue Syndrome  
Journal Of Clinical Endocrinology & Metabolism.....Volume 85 #2.....February 2000.....page 692 - 696

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"This system is closely linked with glutamate neurotoxicity....."

"Interactions between glutamate and dopamine neurotoxicity are explored including the possible role for the redox properties of catecholamines. The hypothesis presented that some of the demonstrated cellular damage in the schizophrenic brain may be mediated by catecholamine o-quinones."

J.R. Smythies.....April 1997  
Oxidative Reactions And Schizophrenia: A Review Discussion  
Schizophrenia Research.....Volume 24 #3.....April 11, 1997.....page 357 - 364

"Dissociative cognitive and perceptual alterations commonly occur at the time of traumatization and as an enduring feature of post-traumatic stress disorder (PTSD). After stress exposure, dissociative symptoms are a predictor of the development of PTSD."

....."stress stimulates the cortico-limbic release of glutamate. The glutamate that is released during stress .....contributes to neural toxicity."

"Clinical studies suggest that NMDA antagonists may transiently stimulate glutamate release and produce symptoms resembling dissociative states in humans."

R.A.Chambers, et al.....October 1999  
Glutamate And Post-Traumatic Stress Disorder: Toward A Psycho-Biology of Dissociation  
Seminars In Clinical Neuro-Psychiatry.....Volume 4 #4.....October 1999

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"These findings are discussed in the context of.....enhancers of glutamatergic excitotoxicity and consequent development of morphological abnormalities in the brains of schizophrenics."

R.Waziri.....January 1993  
Abnormal Serine-Glycine Metabolism In The Brains Of Schizophrenics  
Schizophrenia Research.....Volume 8 #3.....January 1993.....page 233 - 243

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".....dysfunction of NMDA receptor-mediated neuro-transmission may play a critical role in the patho-physiology of schizophrenia."

"NMDA receptors are activated by.....glutamate....."

U.Heresco-Levy, et al.....1996  
Glycinergic Augmentation Of NMDA Receptor-Mediated Neurotransmission In The Treatment Of Schizophrenia  
Psychopharmacology Bulletin.....Volume 32 #4.....1996.....page 731 - 740

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"While a variety of rehabilitation interventions have been developed, many are not appropriate for the most severely ill patients, whose attention spans are so short that they cannot attend to the material being presented."

S.M. Silverstein  
Shaping Attention Span: An Operant Conditioning Procedure To Improve Neurocognition And Functioning In Schizophrenia  
Schizophrenia Bulletin.....Volume 27....2001.....page 247 - 257

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"The central role that the thalamus plays in information processing and sensory integration suggests that its dysfunction may be a factor in the pathophysiology of schizophrenia. Glutamate is a key neurotransmitter in thalamic function....."

"The modulatory roles proposed for glutamate receptors.....suggests that glutamate receptors may be involved in the pathophysiology of schizophrenia....."

S.M. Richardson-Burns.....January 2000  
Metabotropic Glutamate Receptor mRNA Expression In The Schizophrenic Thalamus  
Biological Psychiatry.....Volume 47 #1.....January 2000.....page 22 - 28

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"Formation and survival of new neurons.....can be substantially increased by the provision of an enriched environment or by increased locomotor activity".

"Direct stimulation of patients' own neural stem cells through.....behavioral manipulation might offer scope for greater repair....."

R.J.E. Armstrong, R.A.Baker.....October 2001  
The Lancet.....Volume 358.....October 6, 2001.....page 1174 - 1176

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"Research has produced a phenomenal growth of knowledge in the past 15 years..."

"Practice is not reflecting the research. Ninety to 95 percent of programs have no research base. The gap between what is known and what is being provided in routine care is huge."

Kimberly Hoagwood [New York Office Of Mental Health]  
Speaker Cites Ills In Research.....The Daily Texan.....April 11, 2002....by Stephanie Weintraub

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"Loss of neurons is thought to be irreversible in the adult human brain, because dying neurons cannot be replaced."  
"Our results further indicate that human hippocampus retains its ability to generate neurons throughout life."

P.S.Erikson.....November 1998  
Nature Medicine.....Volume 4 #11.....November 1998.....page 1313

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".....this study supports the hypothesis that cumulative exposure to cortisol over the life span may contribute to age-related loss of neurons in the hippocampus, and that prolonged stress or exposure to cortisol accelerates this process."

The Journal Of Neuroscience.....Volume 5 #5.....May 1995.....page 1222

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"Oxidative stress in brain is emerging as a potential causal factor in aging and age-related neurodegenerative disorders."

"To the extent that the animal models faithfully mirror their respective disorders, and based on the totality of the studies, it is apparent that oxidative stress, the excess of free radicals over the means of scavenging these harmful agents, may play critical roles in the molecular basis of accelerated aging, Alzheimer's disease, and Huntington's disease."

D.A.Butterfield, B.J.Howard, M.A. LaFontaine.....June 2001  
Brain Oxidative Stress In Animal Models Of Accelerated Aging And The Age-Related Neurodegenerative Disorders, Alzheimer's Disease And Huntington's Disease  
Current Medicinal Chemistry.....Volume 8 #7.....June 2001.....page 815 - 828

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".....findings on MRI of the brain are associated with poorer cognitive and neurological function among older adults. We sought to determine how alcohol consumption is related to these findings."

"As part of the Cardiovascular Health Study, 3660 adults aged 65 years and older underwent MRI of the brain from 1992 to 1994."

"We assessed self-reported intake of beer, wine, and liquor at the annual clinic visit closest to the date of the MRI....."

"Moderate alcohol consumption is associated with.....a dose-dependent higher prevalence of brain atrophy on MRI among older adults."

K.J. Mukamal, et.al.....September 2001  
Alcohol Consumption And Subclinical Findings On Magnetic Resonance Imaging Of The Brain In Older Adults: The Cardiovascular Health Study.  
Stroke.....Volume 32 #9.....September 2001.....page 1939 - 1946

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"Acute caffeine administration increases cortisol....."

M.A. Lee, et al.....April 1988  
Chronic Caffeine Consumption And The Dexarnethasone Suppression Test In Depression  
Psychiatry Research.....Volume 24 #1.....April 1988.....page 61 - 65

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".....caffeine use during periods of increased occupational stress may enhance the cumulative stress response."

G.A.Pincomb, et al.....1987  
Caffeine Enhances The Physiological Response To Occupational Stress In Medical Students.  
Health Psychology.....Volume 6 #2.....1987.....page 101 - 112

“.....the importance of caffeine in inducing migraine attacks and thwarting treatment efforts. Variations in caffeine levels, which are inevitable in persons with substantial intake of caffeine, often induce withdrawal or rebound migraine headaches. The elimination of dietary caffeine frequently results in much greater responsiveness to treatment or even makes long-term pharmacologic intervention unnecessary.”

A.Werner

Treatment Of Migraine

New England Journal Of Medicine.....Volume 347 #10....September 5, 2002....page 764

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“....elevated plasma homocysteine levels have been associated with.....dementia.”

“A total of 1092 subjects without dementia.....constituted our study sample.”

“Over a median.....of eight years, dementia developed in 111 subjects, including 83 given a diagnosis of Alzheimer's disease.”

“An increased plasma homocysteine level is a strong independent risk factor for the development of dementia and Alzheimer's disease.”

“....plasma homocysteine levels can be lowered by supplementation with folic acid.”

“Two case-control studies have found higher plasma homocysteine levels in persons with Alzheimer's disease.”

S. Seshadri, et.al.

Plasma Homocysteine As A Risk Factor For Dementia And Alzheimer's Disease

New England Journal Of Medicine.....Volume 346 #7....February 14, 2002....page 476

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“Individuals with multiple sclerosis [MS] are often advised not to participate in vigorous exercise. Leading a relatively sedentary life style, however, may exacerbate the debilitating effects of MS.”

“.....after the intervention, the exercise group had more energy and vigor [extremely large effect sizes].

Other very large effects were found in the exercise group, which had better social and sexual functioning and less bodily pain and fatigue than the control group.”

“Recent clinical investigations indicate that regular participation in aerobic exercise may benefit the MS population.”

G.Sutherland, M.B.Andersen, M.A.Stoove

Can Aerobic Exercise Training Affect Health-Related Quality Of Life For People With Multiple Sclerosis

Journal Of Sport & Exercise Psychology.....Volume 23...2001....page 122 - 135

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“Glutamate neurotoxicity has been implicated in stroke,.....multiple sclerosis and neurodegenerative diseases.”

Gliomas are the most common tumors on the central nervous system. “

“Glioblastoma.....is a highly malignant almost uniformly fatal brain tumor. It is based on the cancerous transformation of astrocytes.....cells that are abundant in the brain that send out fine process encircling neurons.”

“Gliomas release glutamate.....”

“....the more glutamate tumors release, the larger the tumor mass.”

J.D. Rothstein, H Grem

Excitotoxic Destruction Facilitates Brain Tumor Growth

Nature Medicine.....Volume 7 #9.....September 2001....page 994

Resveratrol is a chemical found in plants that require anti-oxidant protection from sun light and other oxidant stimulators. In humans and animals resveratrol stimulates cell regeneration following damage and/or reduces degenerative processes following damage. Given this effect resveratrol has on brain cells and nerve cells, it is being used and studied in Multiple Sclerosis patients.

"Resveratrol has been shown to be beneficial....in models of central nervous system neuron death and degeneration."

**B.L.Tang**

**Resveratrol is neuro-protective because it is not a direct activator of Sirt 1—A hypothesis**

**Brain Research Bulletin.....Volume 81 #4 and 5....March 16, 2010....page 359**

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**HealthDay News.....September 19, 2008**

"Resveratrol a natural polyphenol compound.....may help prevent the axonal degeneration characteristic of multiple sclerosis, according to research presented at the World Congress on Treatment and Research in Multiple Sclerosis held September 17 to 20 in Montreal, Canada."

"Ikuo Tsunoda, M.D., of the University of Utah in Salt Lake City, and colleagues studied the effects of a diet containing....resveratrol."

".....potential axonal sparing activity by resveratrol could be of great benefit."

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"Epidemiological and experimental evidence suggests that high levels of vitamin D, a potent immunomodulator, may decrease the risk of multiple sclerosis."

".....the risk of multiple sclerosis significantly decreased with increasing levels of 25-hydroxyvitamin D...."

"The results of our study suggest that high circulating levels of vitamin D are associated with a lower risk of multiple sclerosis."

"Prevailing thought is that MS is an autoimmune disorder whereby an unknown agent or agents triggers a T cell-mediated inflammatory attack, causing demyelination of central nervous system tissue. A striking feature of the global distribution of MS is a multifold increase in incidence with increasing latitude, both north and south of the equator."

"A protective effect of vitamin D on MS is supported by the reduced MS risk associated with sun exposure and use of vitamin D supplements...."

"In this large prospective study, we found that the risk of MS decreased with increasing serum levels of 25-hydroxyvitamin D."

"Of interest, **regulatory T cells have been shown to be suppressed** in individuals with MS."

".....our previous finding of a lower MS risk among women taking vitamin D supplements supports a specific role for vitamin D."

"These results suggest that vitamin D levels earlier in life may be critical in conferring protection for MS and our finding of a strong protective effect of 25-hydroxyvitamin D levels of 100 nmol/L or higher before age 20 years supports this view. Vitamin D supplementation in infancy seems to exert a strong protective effect against the autoimmune disease type 1 diabetes, and vitamin D levels in early childhood could also have an impact on the risk of MS. Although there are no data on vitamin D levels earlier in life and risk of MS, the strong inverse association between MS risk and 25-hydroxyvitamin D levels at ages 16 to 19 years suggests that levels in late adolescence are likely to be important."

"Almost half of white and two thirds of black adults in the United States have 25-hydroxyvitamin D levels below 70 nmol/L. Although levels above 25 nmol/L have traditionally been considered normal and almost everyone in this study had measurements above this level, much higher levels may be required for bone mineralization and prevention of fractures. According to a recent review, the best serum 25-hydroxyvitamin D concentrations are between 90 and 100 nmol/L. Adolescents have somewhat higher levels than adults, but few have levels higher than that associated with a reduced risk of MS in our study. If the association reported here reflects a true protective effect of vitamin D, increasing the vitamin D levels of adolescents and young adults could result in an important reduction in MS incidence."

"Such an increase could be achieved by using vitamin D supplements. Although the current Institute of Medicine adequate intake of vitamin D is 200 U/d for adults younger than 50 years, and the highest dose that is considered safe is 2000 U/d, adverse effects have been reported only at intakes several-fold higher."

**K.L.Munger, et al**

**Serum 25-Hydroxyvitamin D Levels and Risk Of Multiple Sclerosis**

**Journal Of The American Medical Association.....Volume 296 #23....December 20, 2006**

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"We longitudinally monitored life events and health changes in patients with multiple sclerosis (MS) to determine whether stressful events may trigger exacerbation of MS."

"Eighty-five percent of MS exacerbations were associated with stressful life events in the preceding 6 weeks."

"Survival analysis confirmed that an increase in frequency of life events was associated with greater likelihood of MS exacerbations"

"These results are consistent with the hypothesis that stress is a potential trigger of disease activity in patients with relapsing-remitting MS."

**Psychosomatic Medicine....Volume 64....2002....page 916-920**

**K.D. Ackerman, et al**

**Stressful Life Events Precede Exacerbations of Multiple Sclerosis**

**"Caffeine is the most popular psychoactive drug in the world** which contributes to behavioral and metabolic changes when ingested. Within the central nervous system, caffeine has a high affinity for A1 and A2a adenosine receptors."

"Serving as an antagonist, caffeine affects the ability of adenosine to bind to these receptors."

**"Microglia** are one phenotype of non-neuronal glia within the central nervous system. Acting as phagocytes, **they contribute to the immune defense system of the brain** and express A1 and A2a adenosine receptors."

"Caffeine, therefore, may affect microglia."

"In order to test this hypothesis, CD-1 mice were randomly placed into one of three groups: control, low caffeine (0.3 g/L water) and high caffeine (1.0 g/L water) and were allowed to drink freely for 30 days. Following 30 days, brain sections were stained to reveal microglia. Morphological reconstructions and density measurements were examined in cortical and subcortical areas including the primary sensory cortex, primary motor cortex and striatum."

"Results indicate that **microglial density throughout the brain is decreased in the caffeine groups** as compared to the control."

"Caffeine also impacted microglia morphology **shortening process length and decreasing branching**. These results suggest that chronic caffeine ingestion has a systemic impact on microglia density and their activation."

R.Steger, et al  
Chronic caffeine ingestion causes microglia activation, but not proliferation in the healthy brain  
Brain Research Bulletin....Volume 106.....July 2014.....page 39 – 46

"The influence of pre- and postnatal caffeine treatment on brain excitability during development and adulthood is reviewed. Pre- and postnatal exposure to caffeine induces sex- and age-specific long-term neurochemical alterations in the brain and the behavior of rodents."

J.D. Tchekalarova, et al  
Early caffeine exposure: Transient and long-term consequences on brain excitability  
Brain Research Bulletin.....volume 104.....May 2014.....page 27 – 35

# Migraine

# migraine vs mind-body

Central information processing, visible in evoked potentials like the contingent negative variation is altered in migraine patients who exhibit higher contingent negative variation amplitudes....."

"35 migraine patients and 46 healthy controls were examined. 16 migraineurs and 21 healthy participants conducted a 6-week Progressive Muscle Relaxation-training with contingent negative variation-measures before and after as well as three months after Progressive Muscle Relaxation-training completion."

"After Progressive Muscle Relaxation-training, migraine patients showed a significant reduction of migraine frequency."

Preliminary to the Progressive Muscle Relaxation-training, migraine patients exhibited higher amplitudes in the early component of the contingent negative variation (iCNV) and the overall contingent negative variation (oCNV) than healthy controls....."

"After completion of the Progressive Muscle Relaxation-training, migraineurs showed a normalization of the iCNV amplitude....."

"The results confirm clinical efficacy of Progressive Muscle Relaxation for migraine prophylaxis."

"The pre-treatment measure confirms altered cortical information processing in migraine patients. Regarding the changes in the iCNV after Progressive Muscle Relaxation-training, central nervous mechanisms of the Progressive Muscle Relaxation-effect are supposed which may be mediated by the serotonin metabolism."

B. Meyer, et al

Progressive muscle relaxation reduces migraine frequency and normalizes amplitudes of contingent negative variation  
Journal of Headache Pain -- Volume 17 #37 -- April 2016 --

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"Spiritual meditation has been found to reduce the frequency of migraines and physiological reactivity to stress."

"92 meditation naïve participants were randomly assigned to four groups (Spiritual Meditation (N=25), Internally Focused Secular Meditation (N=23), Externally Focused Secular Meditation (N=22), Progressive Muscle Relaxation (N=22)) and practiced their technique for 20minutes per day over 30 days while completing daily diaries."

"Headache frequency, headache severity, and pain medication use were assessed."

"Migraine frequency decreased in the Spiritual Meditation group compared to other groups. Headache severity ratings did not differ across groups."

"After adjusting for headache frequency, migraine medication usage decreased in the Spiritual Meditation group compared to other groups. Spiritual Meditation was found to not affect pain sensitivity, but it does improve pain tolerance with reduced headache related analgesic medication usage."

A.B. Wachholtz, et al

Effect of Different Meditation Types on Migraine Headache Medication Use  
Behavioral Medicine -- Volume 43 #1 -- January-March 2017 -- page 1

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"Research supports the general benefits of mind/body interventions for migraines...."

"Mindfulness-based stress reduction is a standardized 8-week mind/body intervention that teaches mindfulness meditation/yoga. Preliminary research has shown mindfulness-based stress reduction to be effective for chronic pain syndromes....."

"We conducted a randomized controlled trial with 19 episodic migraineurs randomized to either mindfulness-based stress reduction (n = 10) or usual care (n = 9). Our primary outcome was change in migraine frequency from baseline to initial follow-up. Secondary outcomes included change in headache severity....."

"....0% dropout and excellent adherence (daily meditation average:  $34 \pm 11$  minutes, range 16-50 minutes/day)."

"Median class attendance from 9 classes (including retreat day) was 8 (range [3, 9]); average class attendance was  $6.7 \pm 2.5$ ....."

"Mindfulness-based stress reduction participants had 1.4 fewer migraines per month (3.5 to 1.0 vs control)..."

"Headaches were less severe....and shorter (-2.9 hours per headache vs control)...."

"....this intervention had a beneficial effect on headache duration, disability, self-efficacy, and mindfulness."

R.E. Wells, et al

Meditation for migraines: a pilot randomized controlled trial.  
Headache -- Volume 54 #9 -- October 2014 -- page 1484

## migraine vs nutrients

"27 adolescents suffering from frequent migraines for at least 1 year participated in a randomized, double-blind, cross-over study consisting of 2 months of fish oil, 1-month washout period, and 2 months of placebo (olive oil)."

23 adolescents completed the study."

"Compared with frequency of headaches before the study (31 +/- 4 episodes/2 months), there was a significant reduction in headache frequency during fish oil treatment (4 +/- 1 episodes/2 months) and during placebo (olive oil) treatment (4 +/- 1 episodes/2 months)....."

"Likewise, self-assessment on a 7-point faces pain scale revealed a significant reduction in headache severity during fish oil treatment (2.9 +/- 0.5)....."

Patients' ratings of treatments revealed that 87% experienced reduction in headache frequency, 74% experienced reduction in headache duration, and 83% experienced reduction in headache severity during treatment with fish oil....."

"About 91% stated that they would recommend fish oil to friends or relatives...."

Z.Harel,et al

Supplementation with omega-3 polyunsaturated fatty acids in the management of recurrent migraines in adolescents

Journal Of Adolescent Health -- Volume 31 #2 -- August 2002 -- page 154

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"Activation of trigeminal nerves and release of neuropeptides that promote inflammation are implicated in the underlying pathology of migraine and temporomandibular joint (TMJ) disorders."

"The overall response of trigeminal nerves to peripheral inflammatory stimuli involves a balance between enzymes that promote inflammation.....and those that restore homeostasis...."

"The goal of this study was to determine the effects of a cocoa-enriched diet on the expression of key inflammatory proteins in trigeminal....neurons..."

"....dietary cocoa significantly suppressed basal neuronal expression of....proteins implicated in the underlying pathology of migraine and TMJ disorders. To our knowledge, this is the first evidence that a dietary supplement can cause upregulation of MKP, and that cocoa can prevent inflammatory responses in trigeminal...neurons."

"Furthermore, our data provide evidence that cocoa contains biologically active compounds that would be beneficial in the treatment of migraine and TMJ disorders."

R.J. Cady, P.L. Durham

Cocoa-enriched diets enhance expression of phosphatases and decrease expression of inflammatory molecules in trigeminal ganglion neurons

Brain Research.....Volume 1323.....April 6, 2010.....pages 18 - 32

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## migraine vs high intensity exercise

"Aerobic exercise training.....can reduce migraine days and improve retinal microvascular function. Our aim was to elucidate whether different aerobic exercise programs at high vs moderate intensities distinctly affect migraine days as primary outcome and retinal vessel parameters as a secondary."

"In this randomized controlled trial, migraine days were recorded by a validated migraine diary in 45 migraineurs of which 36 (female: 28; age: 36 completed the training period (dropout: 20%)."

"Participants were assigned to either high intensity interval training, moderate continuous training, or a control group."

"Intervention groups trained twice a week over a 12-week intervention period."

"Overall, moderate migraine day reductions were observed (=12): high intensity interval training revealed 89% likely beneficial effects compared to moderate continuous training and control group."

"High intensity interval training seems more effective for migraine day reduction and improvement of cerebrovascular health compared to moderate continuous training. Intermittent exercise programs of higher intensities may need to be considered as an additional treatment option in migraine patients."

H.Hanssen, et al

Effects of different endurance exercise modalities on migraine days and cerebrovascular health in episodic migraineurs: A randomized controlled trial

Scandinavian Journal Of Medicine & Science in Sports — Volume 28 #3 — March 2018 — page 1103

# **ADHD -- Alzheimer's**

# ADHD...Attention Deficit/Hyperactivity Disorder

"Resting brain activity appears altered in Attention Deficit/Hyperactivity Disorder"

"The default mode interference hypothesis postulates that patterns of spontaneous very low frequency brain activity, typical of the resting brain, cause attention lapses in ADHD when they remain unattenuated following the transition from rest to active task performance."

"DC-EEG recordings of very low frequency brain activity were compared for 16 male children with ADHD and 16 healthy controls during both rest and active task performance..."

"At rest ADHD children showed less EEG power in very low frequency bands. They also showed less attenuation of power at these frequency bands during rest-to-task transition. Reduced attenuation was associated with a number of measures of performance."

"We confirmed the existence of altered very low frequency brain activity in ADHD. ADHD children may have deficits both in maintaining a resting brain when needed and 'protecting' an active brain from the intrusion of resting state brain activity."

S.K. Helps, et al

Altered spontaneous low frequency brain activity in Attention Deficit/Hyperactivity Disorder

Brain Research.....Volume 1322.....March 2010....page 134-143

## ADHD & Dementia.....

"Adults who suffer from attention-deficit and hyperactivity disorder [ADHD] are more than three times as likely to develop a common form of degenerative dementia....research in the January issue of the European Journal of Neurology."

"We believe that our study is the first of its kind to examine the clinical association between adult ADHD symptoms and DLB and that it has established a clear link between the two conditions" says Dr Golimstok. Our theory is that this association can be explained by the common neurotransmitter dysfunction present in both conditions. There is clearly a common process involved in both illnesses and it appears that ADHD often develops into DLB as the patient ages."

[ScienceDaily January 18, 2011]

# Alzheimer's 101.....

--- brain area = hippocampus, responsible for memory and cognition  
--- brain cell destroyer in the hippocampus = accumulation of a protein called beta amyloid or amyloid beta  
--- beta amyloid tool for brain cell death = induces glutamate neuro-toxicity  
--- stimulator of beta amyloid plaque accumulation = cortisol, also known as stress hormone  
--- immune cells that remove beta amyloid plaques = broadly referred to as microglia, specific cells = macrophages  
--- suppressors of macrophage removal of beta amyloid = an item called macrophage inhibitory factor, chronic stress related cortisol [stress hormone]  
--- associated with high levels of macrophage inhibitory factor = beta amyloid  
Mechanism of reversal of Alzheimer's =  
-- remove beta amyloid via restoration of macrophage function via mind-body medicine strategies that reduce cortisol [ie. stress reduction]  
-- remove beta amyloid via nutraceuticals [resveratrol, N-acetyl-cysteine, L-carnitine, curcumin]  
-- remove beta amyloid via low volume high intensity exercise  
-- reduce stimulation of beta amyloid accumulation via mind-body medicine strategies that reduce cortisol [ie. stress reduction]  
- restore glucose utilization via supply of fat soluble, "bioavailable" form of thiamine [vitamin B1], examples.....benfotiamine, allithiamine

--- "The scope of this study was to provide a functional link between macrophage migration inhibitory factor and beta-amyloid induced neurotoxicity."  
--- "Macrophage migration inhibitory factor also has been isolated in association with the beta-amyloid.....which is the main constituent of Alzheimer's plaques....."  
--- "The clustering of microglia at sites of amyloid deposition suggests that microglia are drawn to these sites and attempt to remove the amyloid protein.....it is likely that microglia are unable to clear it."  
--- "...increased release of macrophage migration inhibitory factor.....might impair the function of microglial cells."  
--- "...in this study we obtained the highest macrophage migration inhibitory factor level in patients with mild cognitive impairment.....considered as the prodromal phase in the development of Alzheimer's.  
--- "...link between macrophage migration inhibitory factor and the progression of Alzheimer's.....the toxicity of beta-amyloid can be attributed directly to the increased expression of macrophage migration inhibitory factor."  
--- "...significantly higher levels of macrophage migration inhibitory factor in Alzheimer's patients compared with age-matched controls.  
--- "Previous studies have shown that amyloid beta protein, the essential molecule for the formation of toxic oligomers and, subsequently, Alzheimer plaques, has been associated in vivo with the immune modulator, macrophage migration inhibitory factor."  
--- "Our results demonstrate a marked increase of macrophage migration inhibitory factor levels within the cerebral spinal fluid of Alzheimer's patients compared with controls. Combined, our results indicate a strong role for macrophage migration inhibitory factor in the pathogenesis of Alzheimer's...."

M.Bacher, et al  
The Role of Macrophage Migration Inhibitory Factor in Alzheimer's Disease  
Molecular Medicine.....Volume 16 #3 - 4.....March - April 2010.....page 116 - 121

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"Beta-amyloid aggregation has been strongly associated with the neurodegenerative pathology and a cascade of harmful events related to Alzheimer's disease. Inhibition of Beta-amyloid assembly, destabilization of preformed beta-amyloid aggregates and attenuation of the cytotoxicity of beta-amyloid oligomers and fibrils could be valuable therapeutics of patients with Alzheimer's."  
"Recent studies suggested that.....intake of dietary polyphenols, such as resveratrol, may benefit Alzheimer's phenotypes in animal models and reduce the relative risk for Alzheimer's clinical dementia. "  
"To understand the mechanism of this neuroprotection, we studied the effects of resveratrol, an active ingredient of polyphenols in wine and many plants, on the polymerization of beta-amyloid42 monomer, the destabilization of beta-amyloid42 fibril and the cell toxicity of beta-amyloid in vitro....."  
"The results showed that resveratrol could dose-dependently inhibit beta-amyloid42 fibril formation and cytotoxicity but could not prevent beta-amyloid42 oligomerization."  
".....aside from potential antioxidant activities, resveratrol may directly bind to beta-amyloid42, interfere in beta-amyloid42 aggregation, change the beta-amyloid42 oligomer conformation and attenuate beta-amyloid42 oligomeric cytotoxicity."

Y.Feng, et al  
Resveratrol inhibits beta-amyloid oligomeric cytotoxicity but does not prevent oligomer formation.  
Neurotoxicology.....Volume 30 #6.....November 2009.....page 986

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"Alzheimer's disease patients have defects in phagocytosis of beta-amyloid in vitro by the innate immune cells, monocyte/macrophages and in clearance of beta-amyloid plaques."  
"The natural product curcuminoids enhanced brain clearance of beta-amyloid in animal models."  
"We, therefore, treated macrophages of six Alzheimer's disease patients and 3 controls by curcuminoids in vitro and measured beta-amyloid uptake....."  
"At baseline, the intensity of uptake by Alzheimer's disease macrophages was significantly lower in comparison to control macrophages and involved surface binding beta-amyloid but no intracellular uptake. After treatment of macrophages with curcuminoids, beta-amyloid uptake by macrophages of three of the six Alzheimer's disease patients was significantly increased."  
"Immunomodulation of the innate immune system by curcuminoids might be a safe approach to immune clearance of amyloidosis in Alzheimer's disease brain."

L.Zhang, et al  
Curcuminoids enhance amyloid-beta uptake by macrophages of Alzheimer's disease patients.  
Journal of Alzheimers Disease.....Volume 10 #1.....September 2006.....page 1 - 7

#### **background info....**

Xiaoli Pan, et al. Zhongshan Hospital, Shanghai, China.....

----- "A disturbance of brain glucose metabolism is one of the most important pathophysiological features, and precedes the overt symptoms of Alzheimer's disease by decades.....For this reason, Alzheimer's disease has even been considered to be "brain insulin resistance" or type III diabetes...."

----- "...the disturbance of cerebral glucose metabolism.....significant pathophysiological alteration in Alzheimer's disease, which precedes.....cognitive impairment."

----- "Thiamine diphosphate, the active form of thiamine, is critical for glucose metabolism because it serves as a key coenzyme of three rate-limiting enzymes of glucose catabolism."

----- "Both the Thiamine diphosphate level and the activity of Thiamine diphosphate-dependent enzymes are significantly reduced in blood and brain autopsy samples from Alzheimer's disease patients. Our previous study showed that Thiamine diphosphate reduction is a significant biomarker for Alzheimer's disease diagnosis.....we hypothesized that disruption of thiamine metabolism directly contributes to Alzheimer's disease pathogenesis by perturbing glucose utilization and by activating multiple pathophysiological cascades in the brain."

----- "The better bioavailability and the pharmacological effects via multiple mechanisms against abnormal glucose metabolism and its consequences may explain why benfotiamine administration but not thiamine supplementation had a long-term beneficial effect on cognitive ability in Alzheimer's disease patients."

----- "benfotiamine has beneficial effects against abnormal glucose metabolism and its consequences via multiple mechanisms, including the elimination of oxidative stress and the inhibition of glycogen synthase kinase-3, which are both considered to be major pathogenic factors that cause neurodegeneration in Alzheimer's disease"

#### **terms.....**

-- benfotiamine = a fat soluble form of the water soluble B vitamin called Thiamine, also known as Vitamin B1.

-- benfotiamine has better bioavailability than thiamine, and does better at getting into the brain

-- Mini-Mental Status Examination = measurement of cognitive function. Maximum score is 30 points.

Score of 20 to 24 suggests mild dementia

Score of 13 to 20 suggests moderate dementia

Score of 12 and below indicates severe dementia.

The score of a person with Alzheimer's declines 2 to 4 points each year

"To date, we still lack disease-modifying therapies for Alzheimer's disease. Here, we report that **long-term administration of benfotiamine improved the cognitive ability of patients with Alzheimer's disease.**"

"Five patients with mild to moderate Alzheimer's disease received oral benfotiamine (300mg daily) over 18 months."

"All patients received oral benfotiamine (**300mg/day; Doctor's Best, Irvine, California**) over 18 months."

"All patients were examined by positron emission tomography with Pittsburgh compound B (PiB-PET) and exhibited positive imaging with  $\beta$ -amyloid deposition, and three received PiB-PET imaging at follow-up."

"The five patients exhibited cognitive improvement as assayed by the Mini-Mental Status Examination with an average increase of 3.2 points at month 18 of benfotiamine administration."

"The three patients who received follow-up PiB-PET had a 36.7% increase in the average standardized uptake value ratio in the brain compared with that in the first scan. Importantly, the MMSE scores of these three had an average increase of 3 points during the same period. Benfotiamine significantly improved the cognitive abilities of mild to moderate Alzheimer's disease patients independently of brain amyloid accumulation."

"These results indicate that brain dysfunction may be independent of amyloid deposition and that the disease progression can be halted in the dementia stage of Alzheimer's disease."

"Our study showed that Alzheimer's disease patients with mild-to-moderate dementia manifested a long-term (over 18 months) improvement in cognitive ability after benfotiamine administration, despite the progressive exacerbation of brain amyloid accumulation as evaluated by PiB-PET scans."

"These results reveal two important messages:

(1) the progression of brain dysfunction in the dementia stage of Alzheimer's disease can be halted and even improved  
(2) the alteration of cognitive capability is independent of brain amyloid accumulation, which is consistent with previous results showing that the reduction of brain amyloid accumulation by vaccines, antibodies, or  $\beta$ - and  $\gamma$ -secretase inhibitors has little beneficial effect on the cognitive ability and disease progression...."

**Xiaoli Pan, et al**

**Long-Term Cognitive Improvement After Benfotiamine Administration in Patients with Alzheimer's Disease**

**Neuroscience Bulletin – Volume 32 #6 – December 2016 – page 591**

# Alzheimer's, Heart Disease, Cancer.....

Medically the 3 big ticket items in America.

Fewer than 10% of people that get these are in an "its genetic" situation.

Medically the 3 big ticket items in America all have the immune system in common.....

--- In Alzheimer's....macrophages are a specific type of immune system cell that are supposed to remove beta-amyloid plaques from brain blood vessel walls, preventing beta-amyloid's continued accumulation and toxicity to brain cells, especially those in the memory areas of the brain called the hippocampus.

--- In Heart Disease....macrophages are a specific type of immune system cell that are supposed to remove cholesterol plaques from blood vessel walls, preventing their continued accumulation and significant blocking of blood flow through blood vessels.

--- In cancer..."Natural killer cells" are a specific type of immune system cells that are supposed to kill cancer cells, preventing their continued growth and spread.

At autopsy, many Americans that died of Alzheimer's were developing heart disease and cancer.

At autopsy, many Americans that died of Heart Disease were developing Alzheimer's and cancer.

At autopsy, many Americans that died of cancer were developing Alzheimer's and cancer.

--- In the brain, when rate of beta-amyloid deposits exceeds the rate of removal, and does so for years or decades, this is what Alzheimer's looks like.

--- In the blood vessels around the heart, legs, neck, etc, when rate of cholesterol deposits exceeds the rate of removal, and does so for years or decades, this is what Heart Disease looks like.

--- In the body in general, when rate of cancer cell production, growth, and/or spread exceeds the rate of cancer cell death, and does so for years or decades, this is what Cancer looks like.

To be a good doctor one must -first- be a good physiologist.

Physiology is -not- pharmacology.

You can't drug your way to a fully functioning immune system.

You can't drug your way to restore an immune system to full functioning.

Rather than focus on the removal of beta-amyloid plaques in the brain by macrophages, the Traditional Medicine approach is to drug their way to artificially upping neurotransmitters related to memory and thinking ability to help people 'live with' beta amyloid continuing to kill off their brain cells.

Rather than focus on the removal of cholesterol plaques by macrophages, the Traditional Medicine approach is to drug [via statin drugs....Lipitor, Crestor, Pravastatin, etc] their way to slowing the rate that cholesterol plaques continue to accumulate on blood vessels walls, continuing to close off the blood vessel and kill patient.

Rather than focus on the killing of cancer cells by Natural Killer cells, the Traditional Medicine approach is to drug and radiate their way to temporarily killing some cancer cells while also killing off the body's main killers of cancer cells, sending the patient on their way with a low functioning immune system and the likelihood of recurrence in spite of the "cancer survivor" mantra.

--- Relatively modest levels of immune system suppression maintained over years or decades can have major effects. It can be enough to create a situation where....beta amyloid's binding of a small amount of a substance called "macrophage-inhibitory factor" can be all that's necessary for Alzheimer's progression across years and decades.

--- Relatively modest levels of immune system suppression maintained over years or decades can have major effects. It can be enough to create a situation where....a small amount of cholesterol causing engorgement of macrophages rendering them useless can be all that's necessary for Heart Disease progression across years and decades.

--- Relatively modest levels of immune system suppression maintained over years or decades can have major effects. It can be enough to create a situation where....cancer cell production of a small amount a substance called "Inter-Leukin-10", preventing Natural Killer cells from killing them off can be all that's necessary for Cancer progression across years and decades.

To be a good doctor one must -first- be a good physiologist.

Physiology is -not- pharmacology.

Mind-Body Medicine is all but exclusively about using the brain to increase immune cell number, immune cell activity, and restore immune system functioning. Through published research, Nutrition Medicine has identified several individual nutrients that can be consumed in supplement form to increase immune cell number, immune cell activity, and restore immune system functioning.

The immune system.....Chronically elevated levels of stress, levels maintained for years or decades chronically reduces immune cell number, immune cell activity, immune system functioning. Stress leads to increased production of beta-amyloid, increased deposits of cholesterol on blood vessel walls, increased production of cancerous cells.

Through published research, Nutrition Medicine has identified several individual nutrients that can be consumed in supplement form that interfere with beta amyloid production or its continued existence. Such as resveratrol. Such as curcumin. Such as N-Acetyl-L-cysteine. Such as L-Carnitine.

Through published research, Nutrition Medicine has identified several individual nutrients that can be consumed in supplement form that interfere with cholesterol getting deposited on artery walls or aid in its removal. Such as Vitamin K2. Such as Allicin [Kyolic]. Such as Resveratrol.

Through published research, Nutrition Medicine has identified several individual nutrients that can be consumed in supplement form that can increase Natural Killer Cell activity and function in killing cancer cells. Such as liquid colostrum. Such as very long chain plant sugars [organic Aloe Juice]. Such as nucleotides.

To be a good doctor one must -first- be a good physiologist.

Physiology is -not- pharmacology.

"All the good things....they don't teach us in medical school, because the drug companies pay for our education."

[Dr. John Sessions M.D.]

".....the benefits that US health care currently deliver may not outweigh the aggregate health harm it imparts."

[Journal Of The American Medical Association...Volume 302 #1..July 1, 2009...page 89 - 91]

"In the United States, 50% of people over age 85 will develop Alzheimer's disease"

[CEO of the Alzheimer's Foundation Of America]

#### **Meditation or relaxation exercises.**

The memory, thinking, and reasoning areas of the brain are no different than muscle. Decades of stress and overwork will present its bill at some point.

#### **Exercise the brain.**

The memory, thinking, and reasoning areas of the brain are no different than muscle. Atrophy due to disuse will eventually create a breeding ground for oxidants and pro-oxidants that will attack tissues and DNA, leading to several disease processes, from clogged blood vessels [stroke] to altered cell production [cancer]. This is more than "use it or lose it". You'll not only lose it if you don't use it, but you'll contribute to disease if you don't use it.

#### **Exercise the brain.**

The brain controls muscle. Walking, running, lifting weights, ect, don't just exercise muscles and heart, they exercise the brain cells as well. Atrophy due to disuse [ie. lack of exercise] will eventually create a breeding ground for oxidants and pro-oxidants that will attack tissues and DNA, leading to several disease processes, from clogged blood vessels [stroke] to altered cell production [cancer]. This is more than "use it or lose it". You'll not only lose it if you don't use it, but you'll contribute to disease if you don't use it.

# Vascular Dementia

--- Brain cell death that occurs after loss of adequate blood flow.

--- Loss of adequate blood flow....due to loss of small blood vessels in the brain.

--- Loss of small blood vessels in the brain....due to at least 1 of these 3 issues.....

1. stroke or micro-strokes from clogged blood vessels in the brain [arteriosclerotic damage]

Can include thrombosis which blocks blood flow or inflammatory changes that destroy the vessel wall and kill the endothelium

2. oxidative-induced inflammatory damage to small blood vessels

The resulting loss of blood flow activates amyloid related enzymes and other inflammatory substances that impair brain cell function

3. long term high levels of stress, depression, etc resulting in long term destruction of endothelial progenitor cells

## Concussions in football, soccer, sport in general..

One of the major mechanisms of long term damage to brain caused by repeated concussions is the production of things called oxidants that cause something called oxidative damage.

Thus, avoidance of long term damage to brain from repeated concussions is a matter of anti-oxidant supply.

As tends to be the norm in our popular culture in areas of cancer and heart disease, etc...on the subject of concussions, brain research and brain researchers specializing in nutrition medicine are being ignored.

Logical, science based approaches to resolving such issues fail to attract the attention of the popular media, and people suffer as a result.

Hence a commonly used slogan.."my people perish from a lack of knowledge.

Long term oxidant induced damage to brain cells is one of the major mechanisms of aging. Dramatically accelerated oxidant induced damage to brain cells caused by -very- high levels of stress, repeated concussions, or traumatic brain injury causes dramatically accelerated aging in brain cells. This kills them off by the million, a rate exceeds the rate of regeneration.

Thus obviously the fix is to reduce the level of oxidants by supplying anti-oxidants. And at the same time, engage in activities and consume foods to elevate brain cell regeneration levels. Engaging in these for one or 2 months post-concussion will likely prove sufficient to resolve concerns of long term brain injury.

.

.

----- Consume foods and supplements to reduce oxidants

Consume at one time, the combination of these mixed berries...

- strawberries
- black berries
- blue berries
- raspberries

Consuming at one time, the combination of these 4 vegetables.

- broccoli florets .
- chopped carrot
- chopped romano tomato
- chopped cucumber

The combination of these 4 supplements

- selenium [200mg]
- beta carotene [25,000 IU]
- vitamin E [400 IU]
- vitamin C [500mg]

.

.

----- Consume supplements and engage in activities to elevate brain cell regeneration levels..

- resveratrol [100mg]
- n-acetyl-Cysteine [500 - 600mg]
- Autogenic relaxation
- meditation
- math problems [do in your head, addition, subtraction, multiplication, division]

## **essential fatty acids for concussion & brain injury.....**

"Traumatic brain injury.....remains a clinical challenge. Clinical studies thus far have failed to identify an effective treatment strategy."

".....controlling aspects of neuroprotection, neuroinflammation, and neuroregeneration is needed."

"Omega-3 fatty acids offer the advantage of this approach."

".....there is a growing body of strong preclinical evidence and clinical experience that suggests that benefits may be possible from aggressively adding substantial amounts of Omega-3 fatty acids to optimize the nutritional foundation of traumatic brain injury, concussion, and postconcussion syndrome patients."

"Early and optimal doses of Omega-3 fatty acids, even in a prophylactic setting, have the potential to improve outcomes from this potentially devastating problem."

"....Omega-3 fatty acids should be considered mainstream, conventional medicine, if conventional medicine can overcome its inherent bias against nutritional, nonpharmacologic therapies."

M.D.Lewis, et al  
Concussions, Traumatic Brain Injury, and the Innovative Use of Omega-3s  
Journal Of The American College Of Nutrition -- Volume 35 #7 -- July 2016 -- page 469

**chronic fatigue, fibromyalgia**

# Chronic Fatigue, Fibromyalgia.....

"Two overlapping syndromes, chronic fatigue syndrome and fibromyalgia, remain both enigmatic and controversial despite considerable research efforts. Many authors believe that they represent the same condition, although their pathophysiological mechanisms may differ."

"One of the possible psychosocial factors that may play an etiological role in both conditions is the lifestyle pre-morbidly adopted by the patients. Since the introduction of the "neurasthenia" concept - generally considered a "precursor" of Chronic Fatigue Syndrome - chronic fatigue has often been linked with "overwork": Chronic Fatigue Syndrome sufferers have been described as "overactive," "high achievers," "type-A-like," "perfectionist" or "unable to set limits to the demands of others"."

"According to some investigators, chronic pain patients also frequently report a history of "overactivity," the so-called ergomania...."

"Given the presumable etiological role of high "action-proneness" in Chronic Fatigue Syndrome and Fibromyalgia, lifestyle adjustment should always be a central goal in cognitive-behavioral programs for these patients. This is evidently not an easy task for individuals whose self-esteem has been strongly dependent on high achievement and appreciation from others, which may still drive them to periodic "outburst of activity" when feeling somewhat better. However, patients can be helped to better recognize and respect their limits and substitute their previous "overactive" lifestyle by a more balanced activity-rest schema."

"The results of this study provide further support for the hypothesis that high "action-proneness" and an associated "overactive" lifestyle may be one of the factors that play a predisposing, initiating, as well as perpetuating role in Chronic Fatigue Syndrome, and Fibromyalgia. The ways leading from high "action-proneness" or "overactivity" to chronic fatigue and pain may involve psychological, as well as physiological aspects. With respect to the latter, recent research has opened exciting perspectives to better understand how severe life burden might eventually give rise to a long-lasting dysfunction of the stress system. In words that reflect the story of many Chronic Fatigue Syndrome and Fibromyalgia patients: how the exhausted fighter eventually capitulates."

**B.Van Houdenhove, et al**

**Premorbid "overactive" lifestyle in chronic fatigue syndrome and fibromyalgia: An etiological factor or proof of good citizenship?**

**Journal of Psychosomatic Research....Volume 51 #4....October 2001....pages 571 - 576**

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"Prior studies have reported cross-sectional associations among life stress, emotional trauma, and fibromyalgia."

"Retrospective and prospective studies suggest that stress and psychosocial factors are predictive of major symptoms of fibromyalgia, such as chronic widespread body pain and chronic fatigue."

"This study provides prospective evidence that stress at work is predictive of newly diagnosed fibromyalgia. High workload, low decision latitude, and experience of being bullied at work were associated with a two- to fourfold risk of new fibromyalgia."

"The strong association between stress and subsequent fibromyalgia remained unchanged after exclusion of participants with depression at baseline from the analyses."

".....the strongest association was found between workplace bullying and incidence of fibromyalgia."

".....our results are consistent with the possibility that psychosocial factors may contribute to the development of newly diagnosed fibromyalgia."

"Endocrinological studies indirectly support the psychosocial hypothesis. Fibromyalgia patients have been described to have reduced cortisol level, a characteristic finding in people suffering from prolonged stress or chronic fatigue."

"Our findings from hospital staff support the possibility that stress at work interacts with the etiological factors resulting in the onset of fibromyalgia. Fibromyalgia is not an unusual diagnosis, and for patients it has a major negative impact on quality of life."

**M.Kivimaki, et al**

**Work stress and incidence of newly diagnosed fibromyalgia: Prospective cohort study**

**Journal of Psychosomatic Research....Volume 57 #5....November 2004....pages 417 - 422**

# Reversing Chronic Fatigue, Fibromyalgia.....

Chronic Fatigue, Fibromyalgia, are the labels placed on the body's symptoms of that which is the result of Brain cell overwork, overwhelm. It is the sport equivalent of a severe state of over-training. Several of the body's organ systems gradually lose their ability to function normally. The brain, nervous system, immune system, adrenal glands, hormone function, etc, all at some point end up in an over-stressed state, and lose some portion of their normal functioning and ability to adapt.

--- As goes the brain and nervous system, so goes the body's adaptation ability.

--- As goes the immune system, so goes the body's adaptation ability.

## Getting Your Organ Systems Back Online

Getting the human body into a state of chronic fatigue, progressing to full fibro-myalgia must first be preceded by the behavior pattern that can be characterized as "go, go, go, push, push, push, add stress, add stress, and add more stress". The fastest, easiest, and probably the -only- way to get the body back to fully functioning is to deprogram the behaviors that got one into the state of chronic fatigue that progresses into fibro-myalgia.

The plasticity of the human body is pretty incredible. So it takes a lot of years of a lot of stuff to push it into a state where it loses some of that.

Just like driving onto a long dead-end street, the path into that state is also the path out of it. And just like being on a dead-end street, driving back out in the opposite direction from which you came in, isn't the tough part. Getting turned around is the tough part.

Remember the law of motion in physics. An object set in motion will remain in motion unless acted upon by a force. This is the physics of behavioral psychology. Once you start down the dead-end street, stopping the continued movement in the dead-end direction is the tough part. And getting turned around is the tough part.

Heading in the opposite direction is easy. But stopping and getting turned around is the big thing for anybody and everybody who is even in the ballpark of their body being in a state of chronic fatigue//fibromyalgia.

A plan that achieves that is one that requires a lot of thinking through the normal stresses and stressors that you have day to day, and growing to see those things as not normal. They are the lot of years of a lot of stuff that is accumulating to impact your body.

--- Downtime scheduled throughout the day.....everyday

--- Delegating out some of the daily household work load is a great step. Pat yourself on the back every time you do it.

--- Supply the brain and body with the nutrients [see the next post] they need to restore cellular function to something that approaches normal

--- 2 to 3 days each week, 10 minutes Jacuzzi-whirlpool-hot bath

--- As things improve, avoid the temptation to conclude that all is well or that your body is giving you permission to go back into over-work overwhelm mode

--- Rid your diet of alcohol, caffeine, and any other brain cell impairing or destroying drugs. Avoid trying to use medications [ie. anti-depressants to "treat" fibro-myalgia and its related mental maladies]

--- Low duration exercise. You've gotta do it. No, you don't have the energy for it. Yes it will take a lot out of you. Yes it may put you out for days. You've gotta do it. It must be done!!!

## Coming Back From Chronic Fatigue, Fibromyalgia

To some degree, the changes in behavior and approach to life you're making have to be permanent. There'll have to be some level of viewing things not as a temporary change that you're making just until you get your body fully functioning. View it instead as stacking several small changes like little blocks, one on top of the other.

The recovery process is a process. Return of normal brain and body functioning comes in stages and layers, rather than all at once. Various things come back online one at a time. As this process plays out, you'll notice that an activity you engage in that used to put you out for a month puts you out for only a week. Then an activity that used to put you out for a week puts you out for only a few days. Then an activity that used to put you out for a few days puts you out for only a day. Then an activity that used to put you out for a day puts you out for only a few hours. And so on.

As your energy returns and your brain and body functions return those are things that you should use to make you more committed and more aggressive at staying out of the go, go, go, push, push, push mode of living stress as a lifestyle.

Downtime, relaxation, layed back life style is the way.

".....57% of the Fibromyalgia sample had clinically significant levels of Post Traumatic Stress Disorder symptoms."

"The result represent the first comprehensive study applying structured clinical assessment of trauma exposure and Post Traumatic Stress Disorder to a group of Fibromyalgia patients. **This study shows a significant overlap** between Fibromyalgia and Post Traumatic Stress Disorder..."

H, Cohen, et al.  
Prevalence Of Post-Traumatic Stress Disorder In Fibromyalgia Patients: Overlapping Syndromes Or Post-Traumatic Fibromyalgia Syndromes  
Journal Of The American Medical Association....Volume 289 #3....January 15, 2003....page 278

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"Beliefs about Activity appear to be an important variable in predicting behaviour and avoidance of exercise. As avoidance has been suggested as a key to the maintenance of symptoms, disability and distress in CFS patients, this research has important theoretical, clinical and research implications."

A. Silver, M. Haeneyb, P. Vijayaduraic, D. Wilksd, M. Pattricke and C. J. Mainf  
The Role Of Fear Of Physical Movement And Activity In Chronic Fatigue Syndrome  
Journal of Psychosomatic Research....Volume 52 #6....June 2002...page 485-493

“The present study.....studied emotional reactivity to daily life stress as a vulnerability marker for psychotic illness.”

“Higher levels of.....risk for psychosis were associated with higher levels of emotional reactivity to daily life stress....”

“.....alterations in the way persons interact with their environment may constitute part of the vulnerability for psychotic illness.”

I.M.Germeyns, et. al.  
Emotional Reactivity To Daily Life Stress In Psychosis  
Archives Of General Psychiatry.....Volume 58.....2001.....page 1137-1144

“These results suggest that frequent participation in cognitively stimulating activities is associated with reduced risk of Alzheimer Disease.”

R.S.Wilson, et al.  
Participation In Cognitively Stimulating Activities And Risk Of Incident Alzheimer Disease  
Journal Of The American Medical Association.....February 13,2002.....Volume 287 #6.....page 742

“A growing body of research supports the protective effects of late-life intellectual stimulation on.....dementia. Research from both human and animal studies indicates that neural plasticity endures across the life span, and that cognitive stimulation in the environment is an important predictor of enhancement and maintenance of cognitive functioning.....”

K.Ball, et al.  
Effects Of Cognitive Training Interventions With Older Adults  
Journal Of The American Medical Association.....November 23,2002.....Volume 288 #18.....page 2271

“Case reports link anti-psychotic drugs with sudden cardiac deaths.”  
“Patients prescribed moderate doses of anti-psychotics had large relative and absolute increases in the risk of sudden cardiac death.”

W.A. Ray, et. al.  
Antipsychotics and the Risk Of Sudden Cardiac Death  
Archives Of General Psychiatry.....Volume 58.....2001.....page 1161-1167

# Depression

Usually the result of having a pre-existing relatively sustained stressful state....piled onto by a significant drama or trauma event or series of events that overwhelm one's ability to adapt. The significant drama or trauma event or series of events tend to be outside of one's control and/or influence.

This process results in high levels of brain cell activity and thus high levels of brain cell nutrient depletion on top of high levels of stress hormone production that create lowered levels of brain substances that regenerate brain cells. This cascade of events results in what we call depression. The life events result in internal brain cell events, that result in a set of deficits in brain cell repair and function. Those physiological deficits in brain cell repair and function usually go unaddressed. It's best to address them.

We're fortunate to live in an era where we have enough research behind us to know how to do that without adding more health issues than you started with [ie. without anti-depressant drugs or endless counseling sessions that go no where].

**--- We know what psychological therapy works best to address the initiating drama and trauma event[s].**

**--- We know what activities are required to reduce stress hormone levels and reverse its effects**

**--- We know what nutrients brain cells have depleted and must be provided for return to normal functioning.**

As described above, depression is a mind-body issue, thus it is best addressed via mind-body medicine. And as described above, depression is a brain cell nutrient depletion issue, thus it is best addressed via nutrition medicine. Therefore, as one can see, anti-depressant drugs have no place in reversing depression.

## **Reversing Depression via addressing the mechanisms of causation.....**

--- The psychological issues are best addressed with something called Cognitive Behavioral Therapy [CBT]. The majority of psychologists in the United States -don't- practice it. Find someone who does, stay away from those that don't. Sessions by phone are a possibility if no one in your area practices CBT.

--- The elevated stress hormone levels, best addressed with autogenic relaxation sessions, or meditation session, or simple eyes closed down-time during the day to sit or lay down for a few minutes, napping, etc. Jacuzzi or hot baths for 10 minutes 2 - 3 days a week, and short duration exercise.

--- The brain cell nutrient depletion is best addressed by supplying these nutrients....essential fatty acids, polysaccharides [plant sugars], nucleotides [ribose], resveratrol [low dose], phos-pha-ti-dyl-serine, vitamin D3, magnesium, zinc, probiotics, and alkaline foods.

## **Find a practitioner of Cognitive Behavioral Therapy [CBT].....**

National Association Of Cognitive Behavioral Therapy [CBT]  
<http://nacbt.org/searchfortherapists.aspx>

Online counseling in Cognitive Behavioral Therapy  
<http://www.onlinecbtcounseling.com/default.aspx>

## **Stress hormone reduction and brain cell regeneration activities.....**

Psychological stress generally gets manifested in the body in the form of elevated stress hormone (cortisol) levels, reduced brain substances that repair and regenerate brain cells [neurotrophin], as well as elevated adrenaline (epinephrine). Cortisol down-regulates receptors in the brain for the neurotransmitter called serotonin, which results in significant effects on mood and behavior (ie. depression, irritability). Autogenic relaxation and meditation have positive, cortisol reducing effects.

Auto-genic Relaxation ----

Auto-genics affects people directly through the brain, the principal regulator of all body systems. The brain can put into practice the verbal instructions and imagined feelings oriented toward the operation of internal organ systems, such as blood flow, heart rate, nervous system relaxation, etc..

Purpose.....increase nerve/muscle blood flow, oxygenation, and reduction of brain & peripheral nervous system activity in order to promote recovery of nerve/muscle functions, and to facilitate immune system functions related to recovery and adaptation.

Duration.....5 - 10 minutes.

Autogenic Relaxation: Stage 1 ---

Oxygenation.....lie down on back place one hand on stomach feel stomach rise during inhalation prior to rise of chest

Autogenic Relaxation: Stage 2 ---

Brain Activity Reduction.....close eyes let go of cognitions related to daily activities, etc. repeat affirmations several times I am calming down I am resting every cell in my body is resting I'm feeling better and better my forehead feels cool and relaxed

Autogenic Relaxation: Stage 3 ---

Peripheral Nervous System Activity Reduction & Blood Flow Increase.....create warmth and heaviness in limbs and torso by repeating and feeling the following affirmations....."my hands and arms are becoming warmer and heavier"....."my feet and legs are becoming warmer and heavier"....."I feel calm and relaxed my stomach and chest are feeling warmer and warmer"....."I feel more and more relaxed."

Eyes Closed rest time -----

Purpose.....reduce total daily stress on brain by providing "Down-time", to split up the day.

Duration.....5 - 30 minutes.

Preferably laying down, eyes closed bed rest, but you can do it seated if you're at work or out and about away from home.

Napping -----

Purpose.....reduce total daily stress on brain by providing "Down-time", to split up the awake time during the day.

Duration.....15 - 30 minutes.

Jacuzzi/Hot Whirlpool/Hot Bath -----

Purpose.....increase production of substances [nerve growth factor, brain derived growth factor, growth hormone] in brain and body that aid cell repair and regeneration.

Duration.....10 - 15 minutes.....Temperature = 98 -105 degrees

Short Duration Exercise -----

Purpose.....stimulate production of brain cell substances [neurotrophin, nerve growth factor, etc] that aid brain cell regeneration.

Duration.....2 - 3 days each week of 15 - 20 minutes running or fast walking. The running should have 3 or 4 periodic surges in pace held for a half-minute to a minute.

Short Duration Exercise -----

Purpose.....stimulate production of brain cell substances [neurotrophin, nerve growth factor, etc] that aid brain cell regeneration

1 - 2 days each week of lifting weights. One set of 4 or 5 repetitions of a partial squat-down, calf raise, bench press, arm curl, pull up.

## **Brain cell nutrients to supply.....**

--- essential fatty acids

Ultimate Omega [liquid] by Nordic Naturals

--- polysaccharides [plant sugars]

Aloe Juice [Inner Fillet] by Lily Of The Desert

--- nucleotides [ribose]

Ribose by Jarrow Formulas

--- resveratrol [low dose]

Longevinex

--- phos-pha-ti-dyl-serine

Source Naturals 500mg

--- vitamin D3

Jarrow Formulas, each capsule = 5000IU

--- magnesium

Tri-magnesium by Integrative Therapeutics

--- zinc

Zinc Balance by Jarrow Formulas

--- probiotics

Dr. Ohhira's Probiotics 12 Plus

--- alkaline foods

Its best to combine these 4 in one meal, as a meal by themselves, on several days each week.

Unheated, eaten raw, cut into relatively small sizes.....

broccoli florets, carrot, tomato, cucumber

# Depression

## Levels Of Depression

- Disappointment = defeat of expectations, hopes, desires
- Discouragement
- Despondent
- Despair
- Depression

Take all of your major negative life events and turn them into the mass of minor reasons why you have succeeded, rather than into a few major excuses why you have failed.

Depression causes you to **center** your thoughts, choices, and behaviors **on your circumstances, problems, and difficulties**. Investing energy into wounds of the past, people send their energy back in time to their wound. People get into their hurt instead on into their power. Forgiveness empowers you to detach so you can get your energy back. People may use their wounds to sabotage their healing. Fear of changes or fear of the rapidity of change can lead to avoidance behaviors. You become limited by your “comfort zone”.....engaging in avoidance and sabotage behaviors geared toward maintaining boundaries and slowing change.

Fill yourself, not with things, people, or substances, but with the shameless pursuit of self-change, improvement, and growth. The mechanisms of Depression run directly opposite to the mechanisms of Personal Growth. Thus the process of moving out of depression are consistent with ways of production personal growth. Improving yourself provides more things about yourself for you to value and hold in high esteem. Self-Change is the conscious and intentional pursuit of self-improvement.

**Program yourself to engage in self-developing behaviors** that are good for building up yourself and others. Hold yourself to behaviors that build and reinforce your own level of competence and trustworthiness.

---

The Way out of depression is through learning how to command your thoughts.

“.....be transformed by the renewing of the mind” [New testament].

Control your mind and obsessive thoughts with the word of God.....by doing good **works**. Take action on **doing things** to help/serve others.

“Commit thy work unto the lord, and thy thoughts shall be established.” [proverbs]

“Do good works.” “Be ones willing to share.” “Take the lead in showing honor to one another.”

“Seek and ye shall find ways” to engage in service and to show love. “He that seeketh, findeth.”

“Seek ye first the kingdom of God and all these things shall be added unto you.”

“If any man will do his will, he shall know the doctrine.”

When you experience the loss of a friend/spouse/family member, or the loss of a relationship, friendship, or marriage.....grant yourself permission to use a set in stone, 30-day period to focus on the feelings of pain, hurt, frustration, and fear.

After the 30-days, intentionally move on to the first of many days of focusing on the actions and behaviors of growth, letting go of what happened, healing, and focusing on the use of your inner-strength.

# **cognitive psychology for improving brain function**

**Any and every science & evidence based "treatment" should include.....**

**----- Cognitive Behavior Therapy [CBT]**

**----- probiotics**

**----- exercise**

# Personal Power

**The most powerful people in this world**, are not those who have power over others, but those who have mastery over themselves. You are not your social status, your bank account, your grades, or your job title. You are.....above all else.....Powerful. You are in this world to discover that, to grow into living it, to overcome the distractions from it, and to help others do the same.

**Love is power. Self-love is the root of Personal Power.** Show kindness and love to yourself and others by aggressively pursuing self-improvement as a way of life. Improving yourself provides more things about yourself for you to value and hold in high esteem.....producing a more powerful self-image and higher levels of mastery over self. Self-improvement is a process of improving one's thoughts, choices, behaviors, and actions. You can never say that you love yourself while you are unwilling or resistant to change and improve yourself.

**The purpose of life is not to see how many personal problems we can choose to deny or do nothing about, or to see how many limitations we can set or accept for ourselves. The purpose of life is to grow into living your personal power. Fill your life, not with the distractions of substances, things, or shallow relationships, but with the shameless pursuit of self-change, improvement, and growth.**

**The true source of abundant happiness**, is not outside yourself, but within. All of your possessions in this world are within you. What you.....choose.....to do with them, is what life is all about. The instruction to "Preach to all nations the message of repentance for the forgiveness of sins", is an instruction of Self-Change through the conscious, intentional, and aggressive pursuit of self-improvement.

"The universal human journey is one of becoming conscious of our power, and how to use that power."  
Carolyn Myss.....Anatomy of The Spirit

"The personal power that comes from principle-centered living is the power of a self-aware, knowledgeable, proactive individual, unrestricted by the attitudes, behaviors, and actions of others or by many of the circumstances and environmental influences that limit other people."  
Stephen Covey [7 Habits Of Highly Effective People...page 123]

"Not that I have already obtained, or am already perfected, but I pursue."  
Apostle Paul [Phillipians 3:12]

## Your 5 Outlets Of Power

- What you **are**
- What you **do**
- What you **say**
- What you **give**
- What you **pray**

**The brain is a computer.**

**The self-image is the programming.**

**How you see yourself....the self-image is everything.**

What you'll accept and what you'll reject.

Where you will and won't go.

What you will and won't do.

What you will and won't pursue.

What you can have but won't let yourself have, pursue, or keep.

Achievement you'll pursue, then undermine, sabotage, push away, and/or destroy.

Relationships you'll seek, then undermine and/or destroy.

**The brain is a computer. The self-image is the programming.** If you aren't constantly and intentionally throughout your life improving it and moving it forward, it'll keep you where you are....or worse, it'll return you to where you've been following an experience of a level of success or achievement that exceeds what your brain's programming will allow to stay in your life.

In your life experiences, your job and career, your finances and money issues, your romantic relationships, it'll have you sabotaging, pushing away, or avoiding every bit of success and achievement that is beyond what your brain is programmed to acquire, accept, and embrace.

In sport, in business, in life in general, you'll see this phenomena occurring everywhere you look. Everybody has a responsibility to themselves in their adult years to improve the way they see themselves.

To move their self-image forward.

To fix their self-talk.

To develop and create more things about themselves to hold in high esteem.

Constantly and intentionally throughout your life improve it, move it forward so that you can acquire, accept, and embrace all the great things that can or do come into your life.

Overcome yourself, the status quo, resistance to change. Do the work within yourself. In the pursuit of your goals, remove all potential self-created limitations from your path.

**Implement the process of purposely programming yourself with the beliefs, philosophy, values, and self-image that you want guiding your behavior patterns and determining your quality of life.**

Be aggressive.

Create an unstoppable juggernaut.

Standardize excellence.

You are powerful. You are in this world to discover that, to overcome the distractions from it, to grow into living it, and to help others do the same.

## National Association Of Cognitive Behavioral Therapy [CBT]

find a certified CBT counselor in your area  
<http://nacbt.org/searchfortherapists.aspx>

----- **Online counseling in Cognitive Behavioral Therapy**  
<http://www.onlinecbtcounseling.com/default.aspx>

"The evidence base for cognitive behavioral therapy (CBT) for depression is discussed.....identifies the need to deliver evidence-based psychosocial interventions and identifies cognitive behavioral therapy as having the strongest research base for effectiveness...."

G.Whitefield, et al  
**The evidence base for cognitive-behavioural therapy in depression: delivery in busy clinical settings**  
**Advances in Psychiatric Treatment....Volume 9....2003.....page 21 - 30**

"The difference between the effect of a placebo and the effect of an anti-depressant is minimal for most people."  
"People get better when they take the drug, but its not the chemical ingredients in the drug that are making them better, its largely the placebo effect."

Irving Kirsch [Associate Director Placebo Studies, Harvard Medical School]

CBS 60 Minutes segment....Treating Depression: Is there a placebo effect?  
<http://www.youtube.com/watch?v=Zihdr36WVi4>

CBS 60 Minutes segment....The placebo phenomenona  
<http://www.youtube.com/watch?v=7fG4AXXMPXc>

"Depression is one of the most prevalent and debilitating of the psychiatric disorders. Studies have shown that cognitive therapy is as efficacious as antidepressant medications at treating depression, and it seems to reduce the risk of relapse even after its discontinuation."

R.J.DeRubeis  
Cognitive therapy vs. medications for depression: Treatment outcomes and neural mechanisms  
Nature Reviews Neuroscience.....Volume 9 #10....October 2008....page 788 - 796

"Many studies have confirmed the efficacy of cognitive behavioral therapy (CBT) as a treatment for depression. This study explored the mechanism of cognitive behavioral therapy from the perspective of individuals' problem-solving appraisal."

"Findings supported the research hypothesis that the more individuals improved their problem-solving appraisal, the more their depression decreased."

"Additionally, it was discovered that the poorer individuals' problem-solving appraisal before the cognitive behavioral therapy, the more improvement they had on depression and problem solving appraisal after the cognitive behavioral therapy ."

"In sum, findings suggested that problem-solving appraisal might play an important part in cognitive behavioral therapy for depression reduction....."

Szu.Y.Chen et al  
**The Effect of Cognitive Behavioral Therapy (CBT) on Depression: The Role of Problem-Solving Appraisal**  
**Research on Social Work Practice.....Volume 16 #5.....September 2006.....page 500 - 510**

"Cognitive rehabilitation has shown efficacy in improving cognition in patients with schizophrenia...."

".....examine differential changes in brain morphology in early course schizophrenia during cognitive rehabilitation vs supportive therapy"

"A 2-year trial with annual structural magnetic resonance imaging and cognitive assessments."

"Cognitive enhancement therapy is an integrated approach to the remediation of cognitive impairment in schizophrenia that uses computer-assisted neurocognitive training and group-based social-cognitive exercises."

"Patients who received cognitive enhancement therapy demonstrated significantly greater preservation of gray matter volume over 2 years in the left hippocampus, parahippocampal gyrus, and fusiform gyrus, and significantly greater gray matter increases in the left amygdala...."

"Less gray matter loss in the left parahippocampal and fusiform gyrus and greater gray matter increases in the left amygdala were significantly related to improved cognition and mediated the beneficial cognitive effects of cognitive enhancement therapy."

"Cognitive enhancement therapy may offer neurobiologic protective and enhancing effects in early schizophrenia that are associated with improved long-term cognitive outcomes."

S.M.Eack, et al

Neuroprotective effects of cognitive enhancement therapy against gray matter loss in early schizophrenia: results from a 2-year randomized controlled trial

Archives Of General Psychiatry.....Volume 67 #7.....May 2010.....page 674 - 682

### **Exercise --vs-- Antidepressants.....**

"Depression is common in patients with cardiac disease, especially in patients with heart failure, and is associated with increased risk of adverse health outcomes. Some evidence suggests that aerobic exercise may reduce depressive symptoms....."

"Objective --- To determine whether exercise training will result in greater improvements in depressive symptoms compared with usual care....."

"randomized controlled trial involving 2322 stable patients treated for heart failure at 82 medical clinical centers...."

"The exercise group also adhered to their program better and had relatively large decreases in depressive symptoms....."

"The more depressed a person was, the more they seemed to improve with exercise. After the one year point, depressed patient scores were about 1.5 points better in the exercise group compared to those assigned to usual care."

"The results show that exercise 'is in the same ballpark' as other established treatments, particularly antidepressant medications...."

"We're talking about three, 30-minute sessions for an accumulated 90 minutes a week. And the results are significant improvements in mental health, reduced hospitalization."

J.A. Blumenthal, et al

Effects of Exercise Training on Depressive Symptoms in Patients With Chronic Heart FailureThe HF-ACTION Randomized Trial  
Journal of the American Medical Association.....Volume 308 #5....August 1, 2012.....page 465 - 474

# THE “Non-Medication” Ways

## To Permanently Improve Your Mental Functioning

### 1. Self-Mastery -- Live a principle oriented life style focused on developing self-mastery.

Develop the major life skills of being **solution, logic, and mastery** oriented. Establish rational thought and proactivity as major values in life. These skills **remove and prevent** destructive aspects of stress rather than simply managing it. They produce high levels of **self-competence** and **self-efficacy**, which lead to **self-mastery**. This reduces chronic exposure of brain cells and body tissues to elevated levels of glutamate, cortisol, and adrenaline, which induce brain cell destruction, immune system suppression, and tumor growth.

-- Deal with **all major "inner-child" wounds** (see John Bradshaw's book "Homecoming") and issues thus creating changes in brain cell function and basal stress levels which directly affect immune cell function.

### 2. Brain & Nervous System -- Increase & maintain Neurotrophin & Anti-oxidant levels.

Neurotrophins are brain and nervous system substances that have positive effects on cell **antioxidant levels** (Glutathione and Superoxide Dismutase) that **directly affect human aging**. They cause improved **brain cell maintenance and survival** by protecting them from oxidant induced damage. A **productively active Nervous System** produces neurotrophins in abundance. This is the mechanism by which intellectual pursuits, high intensity exercise and strength training, giving and receiving love, being touched/massaged in a gentle manner, etc collectively maintain health and slow aging. Play games of **logic and skill throughout your life** (ie. Chess, battleship, etc.). Play games of **hand/eye coordination** throughout your life (ie. Throwing stones at targets, video games, etc). -- Establish **down time** during the day for engaging in autogenic relaxation, meditation, napping, massage, prayer, or hot bath/Jacuzzi. -- Take in Anti-oxidants [Vitamin C = 500mg, Vitamin E = 400IU, Beta Carotene = 25,000IU, Selenium = 250mcg].

### 3. Immune System -- Do things that improve/maintain high level immune function.

-- Watch standup comedy live or on TV, often.  
-- Engage in high intensity, low volume, aerobic exercise.  
-- Establish **down time** during the day for engaging in autogenic relaxation, meditation, napping, massage, prayer, or hot bath/Jacuzzi.  
-- Take in Anti-oxidants [Vitamin C = 500mg, Vitamin E = 400IU, Beta Carotene = 25,000IU, Selenium = 250mcg]

-- "Enriched" physical and social environments improve immune function.  
**Colorful** furniture - mobiles - plants - walls - posters, as well as music, lamps w/dimmer switches, extracts from **aroma** therapy shops, post **affirmations/goals** on a wall.  
-- Establish a strong **support group** of "functional" friends to spend time with in all major areas of your life.  
-- Get a well mannered, lovable, **huggable** pet.

#### The Cause Of Accelerated Aging & Preventable Disease In Humans

- psychological stress (high cortisol--the stress hormone, high glutamate--a brain chemical, and/or high adrenalin)
- sedentary life style (low glutathione -- an antioxidant produced in the body)
- long term intake of "pro-oxidants" & immune cell suppressors (caffeine, alcohol, cigarette smoke) that destroy brain cells

**"You can narcoticize your body, you can distract your brain,  
but one day your body will present it's bill".**

Alice Miller

#### Self-improvement is....

- a process of improving one's thoughts, choices, actions, and behaviors, a method of being a competent and effective person
- a mechanism of increased self-esteem, a pathway to an improved self-image, a demonstration of self-worth,
- a way to become a powerful human being, a display of love for oneself, a major act of kindness to others, a way of life

# Autogenic Relaxation

## **Mind-body Connections**

Things you can use to your advantage in life, business, sport, etc, etc.

From slowing cellular aging and reducing likelihood of heart attack...to improving workout recovery and adaptations to training in athletes and weekend warriors.

Can improve everything from worker productivity on the job, to student learning in the classroom, to child and toddler behavior and brain development, to stay-at-home mom stress reduction in the household.

If you have a brain and nervous system, mind-body connections are your friends.

I first began using Autogenic relaxation sometime in the early 1980's. As a coach of distance runners I began teaching it to my athletes in the mid-1980's to help both in sport and in their academics, test preparation, etc. Many of them still use it today in daily lives as do I.

## **Autogenic Relaxation**

Auto-genics works directly through the brain, the principal regulator of all body systems. The brain can put into practice, verbal instructions and imagined feelings oriented toward operation of internal organ systems such as blood flow, heart rate, nervous system relaxation, etc.

## **Purpose**

-- reduce brain and peripheral nervous system activity, reduce stress hormone [cortisol] levels and/or effects, increase blood flow and oxygenation, increase or normalize levels of substances and growth factors [nerve growth factors, neuro-trophic factors, anabolic hormones, etc] that promote regeneration and recovery functions in brain, nerve, immune system, and muscle.

## **Duration**

-- 20 seconds to 20 minutes

### **Autogenic Relaxation: Stage 1**

-- Oxygenation [diaphragmatic breathing].....lay on floor or sit, place one hand on stomach. During inhale, make your stomach rise prior to your chest rising.

### **Autogenic Relaxation: Stage 2**

-- Brain and nervous system activity reduction.....close your eyes, let go of thoughts related to daily activities. Repeat affirmations several times...."This is my down-time, I am calming and quieting all cells of my body. I am resting."

### **Autogenic Relaxation: Stage 3**

-- Blood flow.....create relaxation, warmth and heaviness in limbs and torso. Repeat the affirmations....."my hands and arms are becoming warmer and heavier. My feet and legs are becoming warmer and heavier. My chest and torso is becoming warmer and heavier. I am feeling more and more quiet, calm, and relaxed."

# Eyes closed bed-rest [and/or Napping]

Laying down on a bed, floor, ground and close your eyes.

## **Purpose**

Split-up the amount of "up-time" and/or awake-time on a given day by inserting some down-time. Reduce the cumulative total amount of daily activity and stress loads on brain, nervous system, and immune system.

## **Duration**

-- 10 minutes to 2 hours

# Hot Jacuzzi or hot bath

Sit in a hot Jacuzzi or bath tub.

## **Purpose**

-- Provide temperature and relaxation related stimuli for production of growth and regeneration oriented substances in the brain and body [nerve growth factor, growth hormone, etc]. Increase blood flow and oxygenation in order to promote regeneration and recovery functions in brain, nerve, immune system, and muscle.

## **Temperature**

F = 98 - 105 degrees

C = 37 - 40

## **Duration**

-- 5 to 10 minutes

**Access to information and the ability to apply it** is the major mechanism of success in human performance in track & field, in medicine, in health and wellness. As you continue to acquire and apply more information you continue **to expand the area of what is possible**.

To be a good track coach one must -first- be a good physiologist.

To be a good medical doctor one must -first- be a good physiologist.

To be a good physiologist one must -first- be willing to.....

-- put data ahead of dogma

-- put science ahead of indoctrinated tradition

-- put logic and reason ahead of faulty assumptions

-- put mechanisms ahead of correlations and "risk factors"

-- put critical thinking and clinical reasoning ahead of memorized "if-then" statements

-- aggressively keep up with, read, and apply large amounts of published research

-- accept outcomes as the judge and jury of your work

## 2. Aggressively Engage In Positive Re-Programming

**Implement the process of purposefully programming yourself with the beliefs, philosophy, and values, that you want directing your behavior patterns, and determining your quality of life.**

Cerebral Training For Positive Re-Programming -----

-- Develop your Mission Statement

-- Goal Setting

Goal Setting -----

Goal = experiences that you would like to have. Goal Requirements;

- set a positive goal = what do you want to do (rather than the goal being that you want to stop or avoid doing something).
- set a measurable goal = you must be able to know when you've achieved it.
- be specific = define it (ie. how fast do you want to run, for what distance)
- it must be controllable = achieving the goal is within your own control rather than dependent upon how someone else performs.
- set a goal that is meaningful to you = you set the goal, rather than your coach, parents, etc.. Internalize it, make it personal.
- focus on mastery = set goals oriented toward personal achievement, improvement of ability, mastering your event.
- set process goals = goals that focus on achieving the process necessary to achieve your overall goals.
- set intermediate goals = step by step goals you will accomplish along the way that give "psychological momentum".

Avoid focusing solely on competitive goals that would require that you have control over someone else's performance in order to accomplish your goal. Success is something that is experienced rather than something which is achieved. You can never achieve success, you can experience it. Goals are experiences that you would like to have. Focus on achieving the process that creates the desired experiences.

1. post goals where they can be seen everyday.
2. determine your needs—research your goal to find out what knowledge of how to train, what finances, and other resources are necessary for you to experience your goal.
3. make plans—plan what you will need to do to get these things.
4. take action—implement the plan of action.

-- Make an affirmation tape/list.

The format of the affirmation tape—

Begin with goal/mission statements. Express everything in present rather than future tense. Make process statements identifying actions being taken, behaviors that you value, or character traits being developed, etc.. At the end of these statements, restate the goals/mission. Use I, or I am in statements in present tense throughout.... I am, I always, I no longer, I never. Never use statements like I don't, I can't, I won't. Always follow or precede a "I never, or I no longer" statements with statements of what you do instead.

**example of Affirmations.....**

I pursue Self-Mastery as a way of life. I am growing to be perfect. I implement the principles of logic, reason, and rationality as a way of life. I am a powerful, empowering person. I seek to inspire people by the way I live my life, and the way I treat others. I am a leader and role model by living my life by the principle that there is no misunderstanding how I act and how I live.

I am programmed to make positive choices. I am solution oriented. I am proactive, always begin with the end in mind in all things in life. I am centered and patient. I create a peaceful presence.

I show love to all people in my life, unconditionally. I Never repay evil for evil. I always say and do what is good for building up myself and others. I am responsible for the choices I make, and the actions I take. I am accountable to people's feelings, and responsible for my own.

I never allow hurt to consume my feelings, behavior, or belief system. I am emotionally independent, response-able, and empathic. I seek first to understand. Then I seek to be understood.

I am a great friend. I make constant deposits into all relationships. I am sincere and trustworthy always. I never betray a friend's trust.

The person I am with pursues Self-Mastery as a way of life. This person is "there" for me intellectually, emotionally, and physically. This person makes constant deposits into me and our relationship, and actively seeks to build emotional security.

Affirmations for Pre-race Anxiety Problems.....

I invest no energy into worrying about performing poorly because I am able to use all of my race outcomes to help me to become more powerful within myself, and to develop greater levels of control over how well I do.

This helps me grow more and more confident and relaxed prior to all of my races. I am programmed to do the best that I can.

I am programmed to go into all of my races having no fear of performing poorly, knowing that I can live with the outcome, and use it to my advantage in future races.

## Cerebral Training For Positive Re-Programming -----

### -- Visualizations

Develop a detailed script consisting of response propositions. These are statements made one uses one's senses and elicit physiological responses and provide clear and controllable, moving images which make the visualization "real", thus optimizing the effectiveness of cerebral training session. During the visualization, focus on creating a movie, moving pictures, avoid still pictures. Apply the concept of "The me I see, is the me I'll be". Internal Visualization is from the perspective of being within yourself. External Visualization is from the perspective of being outside yourself, watching yourself as if watching yourself on a movie screen. Avoid Negative visualizations.

### -- Positive Actions Exercise...invest three weeks, at the end of each day list the positive actions you engaged in that day that involved the implementation of some of the things in your affirmations.

Improve your behavioral programming environment by creating a functional support group, thus enriching the environment in which you live and spend most of your time.

### Get Into Or Create A Functional Support Group -----

Establish and develop a functional support group. The role of members of the support group is to offer encouragement, provide recognition of effort, and to applaud achievement. Everyone helps everyone. Create an environment where failure is not fatal, where goals and expectations can be shared openly without fear of evaluation. Everyone can be themselves—unconditional acceptance. Keep the environment non-competitive.

Establish a functional Support Group consisting of teammates, friends, and/or family members who offer unconditional love, attention, and affection, provide encouragement and recognition of effort, and who recognize and applaud your achievements. Establish a strong, positive, and supportive clique of friends to spend time with at home, at work, in all major areas and roles of your life.

A person entrenched in dysfunction will change in a functional environment. He/she is impeded from growing while in a dysfunctional environment, because healing of toxic shame has no way to occur while one is being shamed. Behavioral norms within a dysfunctional environment gain acceptance as being "normal", and go unchallenged by those entrenched in them. The person must be empowered by their environment, to change.

There is no way to be around a functional person(s), who create a functional environment, and fail to be influenced to the point of choosing to change behavior. People are either wind in our sails, or anchors on our tails. Stay around positive people.

### Characteristics of a Functional Support Group -----

- logic and rationality are of major importance, and adherence to them is viewed as a necessary way of life - encouraged verbal expression of feelings and emotions
- separation between thoughts and emotions, rationality more important than emotionality
- high development of conflict resolution skills
- low value placed on rigid conformity to traditional behaviors and norms
- low value placed on dependent behaviors
- encouraged interpersonal involvement, and social support
- highest value placed on mastery rather than competitiveness

Provide loving support by giving attention, appreciation, and affection to the people in your support group. Make deposits into other peoples emotional bank account, and keep withdrawals to a minimum.

### Create An Enriched Environment -----

The environment you create in your home, dorm room, bedroom, office, etc., can affect long term programming, day to day mood, brain cell wellness and aging. Environmental enrichment can be achieved by color of furniture, music, colorful mobiles, colorful plants, Lamps with dimmer switches, extracts from Aromatherapy shops, adding colors to the walls, adding colorful posters or poster boards with pictures, affirmations, goals.

## **Awareness of The Process Of Personal Change**

To implement significant changes in one's behavior all of the following must be acquired.....

1. A desire to change
2. Aggressiveness in overcoming past programming which will seek to sabotage change.
3. Aggressiveness in consciously making new positive choices, avoidance of going on "automatic pilot" which allows old programming to take over.
4. Create an environment that facilitates and supports change. Post goals and positive affirmations all around you, in your home, in your bedroom, at your desk.

## **Awareness Of The Stages Of Personal Change**

1. Pre-contemplation = Not intending to change
2. Contemplation = Thinking about making changes
3. Preparation = Making small changes
4. Action = Initiating behavior change
5. Maintenance = Sustained behavior change

1. Where are you in these stages of personal change?
2. List what changes will you commit to making?
3. What will you implement in your life by end of this year?

## **ETG Cerebral Training: Read the books on the ETG Book List**

- 1 -- What To Say When You Talk To Yourself ---- [Shad Helmstetter].
- 2 -- Choices ----- [Shad Helmstetter]
- 3 -- 7 Habits Of Highly Effective People ---- [Stephen Covey]
- 4 -- Life Strategies ----- [Phil McGraw]

- 1 --- Write down what you learned or got out of each book
- 2 --- What ideas and changes in thoughts and behaviors has these books contributed to
- 3 --- What will you implement in your life by end of this year?

"A mental disorder is a thinking disorder".

"The neurotic can blank out the reality of his objectionable actions;  
he can repress his unresolved conflicts;  
he can disown his guilt feelings;  
he can deny or rationalize his fear;  
he can seek to distract himself by the frenzied pursuit of various activities;  
he can shrink the sphere of his concerns and commitments so as to avoid the challenge of the unfamiliar;  
he can elaborate a fantasized self-image to protect him from a self-evaluation he dreads to acknowledge".

Nathaniel Brandon  
The Psychology Of Self-Esteem

# ETG Self-Mastery

## Positive Re-Programming

Develop the Life Skills of Self-Mastery, Logic Oriented, and Solution Oriented

### ETG Life Skills

#### 1. The skill of -- Self-Mastery

-- Live a principle oriented life style focused on developing self-mastery.

-- Inner-strength. Apply the belief that there are no set backs or side treks, there are only experiences along the path to where you choose to go. Recognize that you can let go of anything and be ok (ie. aversive situations, difficulty in relationships, bad grade). Accept that when you let go.....you will be ok. Those who surrender themselves, find inner-strength.

-- Inner-calm. Release the need to defend your ego, be defenseless. Display the serenity to accept the things you cannot change. Invest no energy into worry. Learn through meditation/autogenic relaxation to let go of the body...the shell that houses our spirit. Provide down time each day to have silence in the mind. Be Zensational. Apply the concept of timelessness.....we live forever in one form of energy or another.

-- Identify behaviors you value and become a function of them. Accept responsibility to choose your actions, behaviors, and thoughts. Give that priority over your moods, feelings, and emotions. Allow yourself to be held to a set standard of behavior to which you are accountable.

-- Program yourself to engage in self-developing behaviors that are good for building up yourself and others. Hold yourself to behaviors that build and reinforce your own level of competence and trustworthiness.

-- Patience. Patience is a trainable skill to be developed in an intentional manner. It is a value to hold in high esteem and worth. With patience, you can be a more secure person....patience enhances inner-security.

-- Set goals, make plans, and take action. Overcome behaviors that impair proactivity (self-handicapping, fear of success and fear of failure). "Begin with the end in mind" [Stephen Covey]

#### 2. The skill of being -- Logic Oriented

-- Make logic, reason, and rationality a healthfully valued way of life. Implement the process of purposefully programming yourself with the beliefs, philosophy, values, and self-image that you want guiding your behavior patterns, and determining your quality of life.

Develop logical thought processes and apply logic in all problem solving situations by focussing on identifying the underlying mechanisms of a set topic/issue, be vigilant in holding yourself to this in aversive situations.....especially in highly emotional situations.

#### 3. The skill of being – Solution Oriented

-- When problems arise, invest no energy into emotions and reactions.....invest all energy into finding solutions. Train to be responsive, and response - able, rather than reactive. Train to be prepared for the unexpected or undesired. Place a high value on being able to adapt to change quickly, and easily.

-- Focus on planning ahead, actioning ahead, taking prior action rather than procrastination or reaction.

-- Empathic Awareness. Value, and make it a priority, to be aware of other people's needs. Develop the skill of being aware of and decoding non-verbal messages.

-- Communication in Conflict Resolution. Be solution oriented and focus on creating win/win situations. Focus on solving conflicts...fix problem rather than blame. Drop defenses and establish rationality as a set in stone bottom line boundary that neither person is allowed to cross during discussion/argument over a problem.

-- Replace the word "Anger" in your vocabulary with the word hurt, frustrated, or frightened.

"Anger = an offense that is defending something."

"Experience it.....without discharging it, repressing it, or covering it". [Gangaji]

# ETG Self-Mastery

## Positive Re-Programming

Our character strengths create the environment for our friends and romantic partners which can influence their behavior in a positive and productive manner. Our character weaknesses reinforce undesired behaviors in our friends and romantic partners.

Improve your relationships by improving yourself. The underlying mechanism of all broken relationships is conflicting expectations usually having to do with expected behavior, or expected behavior changes.

### - - - - - Develop the Character Strengths - - - - -

#### 1. Integrity To Behaviors Of Value

-- Identify behaviors you value and become a function of them. Accept responsibility to choose your actions, behaviors, and thoughts. Give that priority over your moods, feelings, and emotions. Allow yourself to be held to a set standard of behavior to which you are accountable.

-- Program yourself to engage in self-developing behaviors that are good for building up yourself and others. Hold yourself to behaviors that build and reinforce your own level of competence and trustworthiness.

-- Be proactive rather than reactive, and stay out of the stimulus-response pattern of behavior.

#### 2. Unconditional Kindness

-- When someone “pushes your button”, take it as an opportunity to choose your response based on what you value, and to respond in a manner that is consistent with your value system. Never repay evil for evil.

-- Make constant deposits into all relationships.

-- Increase your level of responsiveness....immediate action make deposits into the other person's “emotional bank account”. Be aware of and limit the number of withdrawals. Acknowledge when you have taken withdrawals and make immediate deposits to cover them.

#### 3. Forgiveness

-- Forgive others.....give to them as before. Grow to value the inner strength and security that comes from letting go of the need for the person to acknowledge that he/she has wronged you, or owes you an apology. Let go of the need for the person to be punished in some way. Never allow bitterness to take root in your behavior towards the person you have “forgiven”. Choose to be controlled by kindness and love, not anger and frustration. “The extent to which we can trust other people is equal to the extent that we trust ourselves with the ability to deal with their fallibility”. [Dr. Phil McGraw] Let go of the need for the past to be different...work on making your present function better with that person by utilizing your 5 Outlets of Power ----- What you are, what you do, what you give, what you say, what you pray. You have power, you are not helpless...there are things within your influence, if not within your control.

-- Direct yourself and never allow yourself to be directed by the behaviors of others, the conditions you're in, or your old programming. Become independent of other people's weaknesses to avoid becoming enmeshed in their dysfunctioning. By avoiding/breaking free from being enmeshed in another person's weaknesses, you empower yourself to improve your situation by taking a new action on your own behalf.

Take all of your major  
**negative life events**  
and turn them into the  
**mass of minor reasons**  
why you have succeeded,

Rather than into a  
**few major excuses**  
as to why you have failed.

# Personal Power

**The most powerful people in this world**, are not those who have power over others, but those who have mastery over themselves. You are not your social status, your bank account, your grades, or your job title. You are.....above all else.....Powerful. You are in this world to discover that, to grow into living it, to overcome the distractions from it, and to help others do the same.

**Love is power. Self-love is the root of Personal Power.** Show kindness and love to yourself and others by aggressively pursuing self-improvement as a way of life. Improving yourself provides more things about yourself for you to value and hold in high esteem.....producing a more powerful self-image and higher levels of mastery over self. Self-improvement is a process of improving one's thoughts, choices, behaviors, and actions. You can never say that you love yourself while you are unwilling or resistant to change and improve yourself.

**The purpose of life** is not to see how many personal problems we can choose to deny or do nothing about, or to see how many limitations we can set or accept for ourselves. The purpose of life is to grow into living your personal power. Fill your life, not with the distractions of substances, things, or shallow relationships, but with the shameless pursuit of self-change, improvement, and growth.

**The true source of abundant happiness**, is not outside yourself, but within. All of your possessions in this world are within you. What you.....choose.....to do with them, is what life is all about. The instruction to "Preach to all nations the message of repentance for the forgiveness of sins", is an instruction of Self-Change through the conscious, intentional, and aggressive pursuit of self-improvement.

**"The universal human journey is one of becoming conscious of our power, and how to use that power."**  
Carolyn Myss.....Anatomy of The Spirit

**"The personal power that comes from principle-centered living is the power of a self-aware, knowledgeable, proactive individual, unrestricted by the attitudes, behaviors, and actions of others or by many of the circumstances and environmental influences that limit other people."**  
Stephen Covey [7 Habits Of Highly Effective People...page 123]

**"Not that I have already obtained, or am already perfected, but I pursue."**  
Apostle Paul [Phillipians 3:12]

## Your 5 Outlets Of Power

- What you are
- What you do
- What you say
- What you give
- What you pray

## **essential fatty acids for concussion & brain injury...**

"Traumatic brain injury.....remains a clinical challenge. Clinical studies thus far have failed to identify an effective treatment strategy."

".....controlling aspects of neuroprotection, neuroinflammation, and neuroregeneration is needed."

"Omega-3 fatty acids offer the advantage of this approach."

".....there is a growing body of strong preclinical evidence and clinical experience that suggests that benefits may be possible from aggressively adding substantial amounts of Omega-3 fatty acids to optimize the nutritional foundation of traumatic brain injury, concussion, and postconcussion syndrome patients."

"Early and optimal doses of Omega-3 fatty acids, even in a prophylactic setting, have the potential to improve outcomes from this potentially devastating problem."

"....Omega-3 fatty acids should be considered mainstream, conventional medicine, if conventional medicine can overcome its inherent bias against nutritional, nonpharmacologic therapies."

# depression and intestine bacteria.....

"....we analyzed fecal samples from 46 patients with depression and 30 healthy controls."

".....changes in the fecal microbiota composition in such patients, showing either a predominance of some potentially harmful bacterial groups or a reduction in beneficial bacterial genera."

"Further studies are warranted to elucidate the temporal and causal relationships between gut microbiota and depression and to evaluate the suitability of the microbiome as a biomarker."

H.Jiang, et al  
Altered fecal microbiota composition in patients with major depressive disorder  
Brain, Behavior, and Immunity.....Volume 48.....August 2015.....page 186

".....role of the human microbiota in cognitive and affective functioning...."

".....a multispecies probiotic containing Bifidobacterium bifidum W23, Bifidobacterium lactis W52, Lactobacillus acidophilus W37, Lactobacillus brevis W63, Lactobacillus casei W56, Lactobacillus salivarius W24, and Lactococcus lactis (W19 and W58).....may reduce cognitive reactivity....."

".....triple-blind, placebo-controlled, randomized, pre- and post-intervention assessment design, 20 healthy participants...."

"Compared to participants who received the placebo intervention, participants who received the 4-week multispecies probiotics intervention showed a significantly reduced overall cognitive reactivity to sad mood, which was largely accounted for by reduced rumination and aggressive thoughts."

"These results provide the first evidence that the intake of probiotics may help reduce negative thoughts associated with sad mood. Probiotics supplementation warrants further research as a potential preventive strategy for depression."

L.Steenbergen, et al  
A randomized controlled trial to test the effect of multispecies probiotics on cognitive reactivity to sad mood  
Brain, Behavior, and Immunity.....Volume 48.....August 2015.....page 258

## **low fish oil -vs- PTSD, depression, anxiety.....**

Reduction in dopamine production and/or receptors for dopamine can result in issues in a group of brain cells in a structure called the amygdala. That in turn may result in issues in the cognitive areas a.k.a. the "thinking" related areas of the brain [PTSD, anxiety, depression, bipolar, ADHD, etc]. Studies using 2 to 4 grams in non-degraded fish oil per day for 8 - 12 weeks show reduction in symptoms.

"The change in omega-3 PUFA concentrations in the brain, induced by chronic deficiency in dietary omega-3 PUFAs, could lead to an increase in serotonin 2 and decrease in dopamine 2 receptor density in the frontal cortex."

"The upregulation of 5-HT2A/C receptors and downregulation of dopamine receptors are thought to play a role in the pathophysiology of depression."

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S.Kuan-Pin, et al

Omega-3 Polyunsaturated Fatty Acids in Prevention of Mood and Anxiety Disorders  
Clinical Psychopharmacology Neuroscience -- Volume 13 #2 -- August 2015 -- page 129

"Cognitive rehabilitation has shown efficacy in improving cognition in patients with schizophrenia...."

"A 2-year trial with annual structural magnetic resonance imaging and cognitive assessments."

"Patients who received cognitive enhancement therapy demonstrated significantly greater preservation of gray matter volume over 2 years in the left hippocampus, parahippocampal gyrus, and fusiform gyrus, and significantly greater gray matter increases in the left amygdala...."

"Less gray matter loss in the left parahippocampal and fusiform gyrus and greater gray matter increases in the left amygdala were significantly related to improved cognition and mediated the beneficial cognitive effects of cognitive enhancement therapy."

**S.M.Eack, et al**

**Neuroprotective effects of cognitive enhancement therapy against gray matter loss in early schizophrenia: results from a 2-year randomized controlled trial**

**Archives Of General Psychiatry.....Volume 67 #7.....May 2010.....page 674 - 682**

# Clearing clogged blood vessels 101.....

Blood vessel walls in the brain, beta amyloid plaques

Blood vessel walls in the body, calcified cholesterol plaques

Move away from the quackery based traditions of Traditional Medicine that expensively "treat" disease while allowing it to continue to progress and eventually kill ya. Move toward a research based applied physiology approach that halts and reverses disease.

To be a good doctor one must -first- be a good physiologist. To be a good patient one must -first- be a good consumer, placing outcomes and results ahead of a practitioner's bedside manner, appearance of competence, and your potential need to follow the crowd out of fear or self-esteem//self-sabotage issues.

Follow the data -not- the crowd.

Its the 21rst century. Come join us there.

Obviously a well designed low volume high intensity exercise training program works pretty well, but for those unwilling or unable to go there, one can combine some things for a research based reversal of disease...

--- Resveratrol...dosage 200 - 300mg

\$35 per bottle -not- \$350 for a prescription drug and its side effects to "treat" disease while allowing it to progress.

--- N-acetyl-cysteine...dosage 600 - 1200mg

\$8 per bottle -not- \$80 for a prescription drug and its side effects to "treat" disease while allowing it to progress.

--- Phosphatidyl-serine...dosage 100 - 200mg

\$35 per bottle -not- \$350 for a prescription drug and its side effects to "treat" disease while allowing it to progress.

--- Vitamin K2....dosage 40 - 90 mcg

\$15 per bottle -not- \$150 for a prescription drug and its side effects to "treat" disease while allowing it to progress.

--- Kyolic....dosage 300mg

\$15 per bottle -not- \$150 for a prescription drug and its side effects to "treat" disease while allowing it to progress.

--- Fish oil....dosage 2 grams

\$20 per bottle -not- \$200 for a prescription drug and its side effects to "treat" disease while allowing it to progress.

--- acetyl-L-carnitine....dosage 500mg - 2000mg

\$25 per bottle -not- \$250 for a prescription drug and its side effects to "treat" disease while allowing it to progress.

--- b12, b6, folic acid.....dosage 1000mcg, 2mg, 800mcg respectively

\$13 per bottle -not- \$130 for a prescription drug and its side effects to "treat" disease while allowing it to progress.

n-acetyl-cysteine and L-carnitine..... shown to address the front end, back end, and middle of beta amyloid plaques in Alzheimer's and cholesterol plaques in heart disease.

-- On the front end they interfere with production of beta amyloid and cholesterol plaques.

-- On the back end they lower the toxicity and other issues caused by beta amyloid and cholesterol plaques.

-- And in the middle they contribute to the destruction of already existing beta amyloid and cholesterol plaques.

**studies and clinical trials are underway to expand on the information shown below.....**

"The main component of the characteristic amyloid plaques in brains of Alzheimer's patients are Abeta peptides, derivatives of the amyloid precursor protein APP."

"APP.....increased secretion of neurotoxic Abeta peptides..."

"We report here.....N-Acetyl-L-Cysteine downregulates APP gene transcription...."

"These results open up new possibilities for the development of therapeutic agents that intervene at the transcriptional level."

**R.Studer, et al**

**N-Acetyl-L-Cysteine downregulates beta-amyloid precursor protein gene transcription in human neuroblastoma cells**

**Biogerontology.....Volume 2 #1...2001....page 55 – 60**

"Acetyl-L-carnitine [500 mg, twice daily] exhibits to help prevent the formation of brain tangles that are the hallmark of Alzheimer's disease."

"Although tau proteins are a normal part of nerve cell construction, they can accumulate in a hyperactive fashion that results in cognitive decline and memory loss. Acetyl-L carnitine helps tau proteins behave normally by intervening at the gene and molecular level so preventing dementia/memory decline."

"Supplementation of acetyl-L-carnitine also suppressed the phosphorylation of beta-amyloid precursor proteins, which may underlie the reduction of beta amyloid.

**P Zhou**

**Acetyl-L-carnitine attenuates homocysteine-induced Alzheimer-like histopathological and behavioral abnormalities**

**Rejuvenation Research.....Volume 14 #6.....December 2011....page 669 - 679**

## Vegetables and your genes.....

"Shorter telomeres have been associated with poor health behaviors, age-related diseases, and early mortality."

"Telomere length is regulated by the enzyme telomerase, and is linked to exposure to proinflammatory cytokines and oxidative stress."

"In our recent randomized controlled trial, omega-3 polyunsaturated fatty acid supplementation lowered the concentration of serum proinflammatory cytokines. This study assessed whether omega-3 polyunsaturated fatty acid supplementation also affected leukocyte telomere length, telomerase, and oxidative stress."

"Supplementation significantly lowered oxidative stress...."

"....telomere length increased with decreasing omega-6 to omega-3 ratios..."

"The data suggest that lower omega-6 to omega-3 polyunsaturated fatty acid ratios can impact cell aging."

"The triad of inflammation, oxidative stress, and immune cell aging represents important pre-disease mechanisms that may be ameliorated through nutritional interventions. This translational research broadens our understanding of the potential impact of the omega-6 to omega-3 polyunsaturated fatty acid balance."

J. K. Kiecolt-Glasera, et al  
Omega-3 fatty acids, oxidative stress, and leukocyte telomere length: A randomized controlled trial  
Brain, Behavior, and Immunity.....Volume 28.....February 2013.....pages 16 – 24

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Long term health wise, combining certain vegetables in a meal by themselves may be the most effective method of consumption. A combo of 4 vegetables may prove to be of the greatest benefit.....broccoli, tomato, cucumber, carrot.

"When tomatoes and broccoli are eaten together, we see an additive effect. We think it's because different bioactive compounds in each food work on different anti-cancer pathways..."

[John Erdman]  
[Professor of Food Science, University of Illinois]

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Green leaf vegetables contain substances called iso-thio-cya-nates.

Green leaf vegetables contain one of the most important isothiocyanates, called Sul-for a-phane.

These substances can activate specific genes in our cells. Those specific genes are for anti-oxidant enzymes and detoxifying enzymes, most of them referred to collectively as Phase 2 enzymes.

The substance has the ability to bind to the promoter area of anti-oxidant genes, causing production of anti-oxidant and detoxifying enzymes. This is believed to be among the main mechanisms by which certain vegetables have the ability to prevent cancer and heart disease.

Aside from supplying anti-oxidants in the vegetables themselves they have this ability to cause cells in our body to produce other anti-oxidants as well.

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"Sulforaphane, one of the most important isothiocyanates in the human diet, present in cruciferous vegetables, is known to have chemopreventive activities in different tissues."

"The observed Sulforaphane-induced upregulation of phase II enzymes was accompanied by a significant increase in nuclear erythroid 2 p45-related factor 2 expression and correlated with a significant increase in total antioxidant capacity...."

M.Malaguti, et al  
Sulforaphane treatment protects skeletal muscle against damage induced by exhaustive exercise in rats  
Journal Of Applied Physiology.....Volume 107.....August 2009.....page1028

**Journal Of Nutrition....Volume 136....March 2006.....page 810S-812S**

**C.Borek**

**Garlic Reduces Dementia and Heart-Disease Risk1,2**

"Risk factors for cardiovascular disease, including high cholesterol, high homocysteine, hypertension and inflammation, increase the risk of dementia, including its most common form, Alzheimer's disease. High cholesterol is also associated with elevated  $\beta$ -amyloid, the hallmark of Alzheimer's disease."

"**Garlic, extracted and aged** to form antioxidant-rich aged garlic extract (AGE or Kyolic), may help reduce the risk of these diseases."

"Inhibition of cholesterol, LDL oxidation, and platelet aggregation by AGE, inhibits arterial plaque formation."

"....ompelling evidence supports the beneficial health effects attributed to AGE in helping prevent cardiovascular and cerebrovascular diseases and lowering the risk of dementia and Alzheimer's disease."

"In clinical and preclinical studies, AGE, an odorless form of garlic that is rich in bioavailable water-soluble organosulfur compound, and has a higher antioxidant activity than fresh garlic with none of its adverse effects, has been found to protect against a wide range of risk factors that are common to cardiovascular disease and dementia."

"....available evidence supports the potential benefits of garlic in the form of Kyolic AGE in helping to reduce risk factors for cardiovascular and cerebrovascular diseases and dementia, including Alzheimer's disease."

[from "Health Market Place"]

"....Journal Nutrition Research (1987, 7:139-49) showed that a liquid garlic extract made by Kyolic caused a 12 to 31% reduction in cholesterol levels in the majority of test subjects after 6 months. "

"The study showed that 73% of the subjects given the Kyolic garlic experienced a greater than 10% reduction in cholesterol, compared with only 17% of the subjects in the placebo group showing the same improvement."

"A study published in Atherosclerosis (1999, 144:237-49) shows an actual reduction in buildup of fatty plaque in arteries in garlic-supplement users."

" In a study of 280 adults, German researchers reported that participants who took 900 mg of garlic powder a day had up to 18% less plaque in their arteries than those who took a placebo, or "dummy," powder. "

"Human patients fed a daily dose of Kyolic ("Aged Garlic Extract") over a 10-month study showed that "adhesion to fibrinogen was reduced by 30%-compared to placebo . . . and that . . . the beneficial effect of garlic preparations on lipids and blood pressure extends also to platelet function" (Journal of Cardiovascular Pharmacology [United States], 1998, 31[6]:904-8)."

**Nutrition Medicine.....**

## **Curcumin vs Alzheimer's**

Curcumin = stuff in turmeric plant, tumeric is used in curry in India

Over 5 years ago, several human clinical trials at medical schools in the United States have shown.....

- Curcumin inhibits accumulation of beta-amyloid plaques in Alzheimer's
- promotes destruction of existing beta-amyloid plaques in Alzheimer's
- reverses nerve tangles around beta-amyloid plaques in Alzheimer's

As with several areas of nutrition medicine....unfortunately, the delay in proliferating the use of curcumin in Alzheimer's patients is largely due to Traditional Medicine's focus on trying to isolate the specific active substance in curcumin in an attempt to make a patent drug for profit. Unless you go to an Alzheimer's center in the U.S. that practices Nutrition Medicine you may not be offered or told about curcumin, but will be given the usual standard drug therapies in vogue today.

**Vitamin D** is a major player in the function of the immune system. Generally speaking, having low levels tends to lead to out of control immune cells attacking some part of the body that you'd prefer to be left alone. Called a "vitamin", it is a hormone that regulates lots of stuff in the body, the immune system being one of them.

As Americans, our excessive use of sun screens is creating problems, since sun light causes the skin to produce vitamin D.

The study shown below focuses on its role in Multiple Sclerosis, which is a situation where out of control immune system cells attack the nervous system, gradually killing off your cells along your nerve fibers, reducing and/or destroying nerve function.

The study was published in 2006, so a lot has been learned since then. The question is no longer "can low vitamin D levels lead to something bad". The answer is yes. The question now is, how come some people get MS, while others get rheumatoid arthritis, while yet others get some other immune system related malady.

Like all issues related to problems involving immune system function, there is a chronic stress component to these issues that go along with and/or lead to the nutrient deficiency issues that may exacerbate a problem.

Vitamin D supplements should be in the form of D3 [ie. vitamin D3].

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**Journal Of The American Medical Association.....Volume 296 #23....December 20, 2006**

K.L.Munger, et al

Serum 25-Hydroxyvitamin D Levels and Risk Of Multiple Sclerosis

"Epidemiological and experimental evidence suggests that high levels of vitamin D, a potent immunomodulator, may decrease the risk of multiple sclerosis."

"....the risk of multiple sclerosis significantly decreased with increasing levels of 25-hydroxyvitamin D...."

"The results of our study suggest that high circulating levels of vitamin D are associated with a lower risk of multiple sclerosis."

"Prevailing thought is that MS is an autoimmune disorder whereby an unknown agent or agents triggers a T cell-mediated inflammatory attack, causing demyelination of central nervous system tissue. A striking feature of the global distribution of MS is a multifold increase in incidence with increasing latitude, both north and south of the equator."

".....the change in MS risk with migration among people of common ancestry strongly supports a role for environmental factors. One potential factor may be vitamin D, a potent immunomodulator that in its hormonal form can prevent experimental autoimmune encephalomyelitis (EAE), an animal model of MS."

"Because food provides little vitamin D, the major source for most people is through skin exposure to sunlight. At latitudes of 42° or more (eg, Boston, Mass), in winter most UV-B radiation is absorbed by the atmosphere, and even prolonged sun exposure is insufficient to generate vitamin D. As a result, seasonal vitamin D deficiency is common."

"A protective effect of vitamin D on MS is supported by the reduced MS risk associated with sun exposure and use of vitamin D supplements...."

"In this large prospective study, we found that the risk of MS decreased with increasing serum levels of 25-hydroxyvitamin D."

"Although this association was not seen among blacks, their smaller sample size and substantially lower 25-hydroxyvitamin D levels may have reduced the power to detect an association in this group."

"Our results converge with a growing body of evidence supporting a protective role for vitamin D in MS development."

"Of interest, regulatory T cells have been shown to be suppressed in individuals with MS."

"If sufficient 1,25-dihydroxyvitamin D is produced, it may exert paracrine effects on surrounding T lymphocytes, thereby regulating the tissue-specific immune responses. Some support for this hypothesis comes from recent experiments showing that mice fed diets high in vitamin D had significantly fewer clinical and pathological signs of EAE than mice fed a vitamin D-deficient diet. Central nervous system levels of 1,25-dihydroxyvitamin D, but not blood levels, were higher in supplemented mice than in vitamin D-deficient mice and correlated inversely with disease severity."

"....our previous finding of a lower MS risk among women taking vitamin D supplements supports a specific role for vitamin D."

"These results suggest that vitamin D levels earlier in life may be critical in conferring protection for MS and our finding of a strong protective effect of 25-hydroxyvitamin D levels of 100 nmol/L or higher before age 20 years supports this view. Vitamin D supplementation in infancy seems to exert a strong protective effect against the autoimmune disease type 1 diabetes, and vitamin D levels in early childhood could also have an impact on the risk of MS. Although there are no data on vitamin D levels earlier in life and risk of MS, the strong inverse association between MS risk and 25-hydroxyvitamin D levels at ages 16 to 19 years suggests that levels in late adolescence are likely to be important."

"Almost half of white and two thirds of black adults in the United States have 25-hydroxyvitamin D levels below 70 nmol/L.<sup>28</sup> Although levels above 25 nmol/L have traditionally been considered normal and almost everyone in this study had measurements above this level, much higher levels may be required for bone mineralization and prevention of fractures. According to a recent review, the best serum 25-hydroxyvitamin D concentrations are between 90 and 100 nmol/L. Adolescents have somewhat higher levels than adults, but few have levels higher than that associated with a reduced risk of MS in our study. If the association reported here reflects a true protective effect of vitamin D, increasing the vitamin D levels of adolescents and young adults could result in an important reduction in MS incidence."

"Such an increase could be achieved by using vitamin D supplements. Although the current Institute of Medicine adequate intake of vitamin D is 200 U/d for adults younger than 50 years, and the highest dose that is considered safe is 2000 U/d, adverse effects have been reported only at intakes several-fold higher."

## Artificial Sweetners & Brain Cell Death

It has been known for some time that the sweetners (nutrasweet, aspartane) commonly used in diet soft drinks have caused seizers in many people, especially in those who have consumed the sodas on the recommendation of their doctor in an attempt to lose weight.

Sweetners such as nutrasweet and aspartane are comprised of mono-sodium glutamate, and/or aspartane. Many people are over weight because they "eat their emotions"....a disordered eating pattern of using food as a stress reducer or outlet. These people already have elevated levels of glutamate and aspartate, thus they already have accelerated brain cell loss which dramatically accelerates aging.

Brain cells are called neurons , thus these chemicals are also known as neuro-toxins. Ingesting neurotoxins in diet drinks accelerates brain cell death.

Studies now show that these sweetners are "excitotoxins", meaning they act similar to excitatory chemicals in the brain. Excitory brain chemicals activate channels on brain cells through which calcium passes into the cell, which has a cell activating (excitory) effect. Excitory amino acids, such as glutamate and aspartate are normal brain chemicals that brain cells use to communicate with one another.

Stress and anxiety increase the levels of glutamate and aspartate. This causes over activation of calcium channels, allowing too much calcium into the cells, which results in brain cell necrosis (cell destruction/death). This is the manner by which these excitatory amino acids become excitotoxins.



# TheETG Exercise Program

Begin this exercise program at where-ever your fitness level happens to be today, progress from there!

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Workout #1		Workout #2		Workout #3		

Tuesdays/Thursdays/Saturdays = walk 100 yards, jog 100 yards. Do 8 repetitions of this, walking faster and jogging faster as you go.

## Workout #1 = Fast walk or run up a large hill

The distance.....1/2 mile split into uphill repetitions of 100 yards to 200 yards in length.

Where.....a very- large hill

The workout.....run or walk uphill at a pace that is fast for you. At the top of the hill, do a slow walk rest period to the bottom of the hill.

## Workout #2 = Strength Day & Stretch Day

**Strength Day**.....start conservatively in weight you lift in each exercise.

Progress over time to working with weights you can't lift more than 6 repetitions.

For all exercises do 4 repetitions.

jump exercise.....stand on a stool, stair, bench, etc....jump down from that height to the floor, then immediately jump up in the air.

strength exercise.....do a squat [go no more than one-quarter of the way down]

strength exercise.....do a calf raise

strength exercise.....do a arm curl [hold a weight in your hand, curl it upward toward your shoulder]

strength exercise.....do one-leg jumping [lift one leg off the ground, then jump up.....or jump onto a small box, stair,etc]

strength exercise.....do a pull-up [go up as far as you can. Over time as you get stronger, go up further until you can get all the way up.

strength exercise.....do a wall handstand [push-up in a hand-stand position]

[put your back to a wall, put your hands on the floor and walk your feet up the wall, then do a push-ups. Over time as you get stronger, walk your feet further up the wall. When you can go close to vertical, turn around facing the wall, use the wall as a backstop and do a pushup in the full hand-stand position]

### Stretch Day

pictures of the stretches.....see the next page

Hold each stretch.....for 4 minutes

The stretches.....hip flexor muscles, hamstrings muscles, calf muscles

## Workout #3 = Fast walk or run on a track

The distance.....1 mile split into 4 repetitions of 1/4 mile [400 meters], 1 lap of the track in length.

Where.....on a track [perhaps at a high school or middle school track in your area]

The workout.....walk or run at a pace that is fast for you. Take lots of rest in between each.

### Optional Supplement Exercises a couple days each week

#### 1 ---- Repetitive motion exercise for the neck

-- start with your head in a level position

-- motion = tilt the head back to look straight up at the ceiling, then return to being level

-- do 20 repetitions of that tilting your head back to look at the ceiling

#### 2 ---- Retraction of shoulder girdle

-- start with your arms straight and out in front of you, elbows locked

-- motion = pull your shoulders back, then return

-- do 20 repetitions of that pulling your shoulders back

#### 3 ---- Floor press-ups

-- start with laying face down on the floor, hands under your shoulders like a "push-up" position

-- motion = push --only-- your chest off the floor, then return to the ground

-- do 20 repetitions of that pushing your chest off the floor

## So called "performance enhancing drugs" are prescription drugs.

### Some examples of the effectiveness of prescription drugs in sport.....

"The drug erythropoietin, often called EPO.....a new systemic review of existing research reveals that there is no scientific evidence that it does enhance performance, but there is evidence that using it in sport could place a user's health and life at risk."  
EPO [erythropoietin] doping in elite cycling: No evidence of benefit, but risk of harm  
Science Daily.....December 5, 2012.

"....there is no scientific basis from which to conclude that rHuEPO has performance-enhancing properties in elite cyclists. "The use of rHuEPO in cycling is rife but scientifically unsupported by evidence, and its use in sports is medical malpractice."  
J.A.Heuberger, et al  
Erythropoietin doping in cycling: lack of evidence for efficacy and a negative risk-benefit.  
British Journal Of Clinical Pharmacology.....Volume 75 #6....June 2013...page 1406

"The over-exaggeration of the effects of growth hormone in muscle building is effectively promoting its abuse...."  
"....there is the question of disinformation on rhGH....Part of this problem may, paradoxically, derive from the anti-doping authorities themselves. By ignoring the evidence the rhGH does not work in normal healthy subjects, the athletic establishment could be accused of effectively promoting its use."  
"We must tell athletes the truth: growth hormone does not 'work' or at least not as they think it does and that its is associated with all kinds of immediate and long term hazards----everything from decreased performance to cancer."  
"....none of us scientists, doctors, coaches, or sports bodies should continue to suggest that this dangerous doping practice works."  
M.J. Rennie  
British Journal Of Sports Medicine.....Volume 37 #2....April 2003...pages 100-103

"**Testosterone prohormones** such as androstenedione, androstanediol, and dehydroepiandrosterone (DHEA) have been heavily marketed as testosterone-enhancing and muscle-building nutritional supplements for the past decade."  
"Contrary to marketing claims, research to date indicates that the use of prohormone nutritional supplements (DHEA, androstenedione, androstanediol, and other steroid hormone supplements) does not produce either anabolic or ergogenic effects in men. Moreover, the use of prohormone nutritional supplements may raise the risk for negative health consequences."  
G.A.Brown, et al  
Testosterone Prohormone Supplements.  
Medicine & Science in Sports & Exercise.....Volume 38 #8....August 2006.....pg 1367-1537

## So called "performance enhancing drugs" are prescription drugs.

### Some examples of the effectiveness of prescription drugs in American medicine & health care.....

"Most drugs are only effective for a small percentage of people who take them."  
Michael Leavitt [U.S. Secretary of Health & Human Services 2005 - 2009]

".....the benefits that US health care currently deliver may not outweigh the aggregate health harm it imparts."  
Journal Of The American Medical Association.....Volume 302 #1..July 1, 2009...page 89 - 91

"It is estimated that more than 700,000 individuals are seen in hospital emergency departments for adverse drug events each year in the United States."  
[Centers For Disease Control....2015]

"106,000 deaths/year from non-error, adverse effects of medications"  
B. Starfield  
Is US Health Really the Best in the World  
Journal of The American Medical Association.....Volume 284 #4....July 26, 2000....page 483 - 485

".....1.5 million U.S. residents are harmed or killed each year because of medication errors, according to an Institute of Medicine report."  
Nature Medicine.....Volume 12 #9....September 2006.....pg 984 - 985....News In Brief

Pursue becoming a

Master Of  
Sport