





Vitamin D3 and Dementia

by
Dr. David Ajibade



BRAIN AND BODY
FOUNDATION

C.A.R.E For All




NOTES:

Vitamin D3

and


The Brain,

with Dr. David Ajibade



NOTES:

Outline



NOTES:

What We Will Be Discussing:

1. *My journey: The Importance of Vitamin D3*
2. *What Vitamin D3 does for your body*
3. *What Vitamin D3 does for your brain*
4. *What Deficiency of Vitamin D3 Results in*
5. *How to Get it*
6. *What You Must Do*
7. *The Challenge Before You*



NOTES:

***My Journey
and
Vitamin D3...***



NOTES:


***An Absolutely
Remarkable Compound***



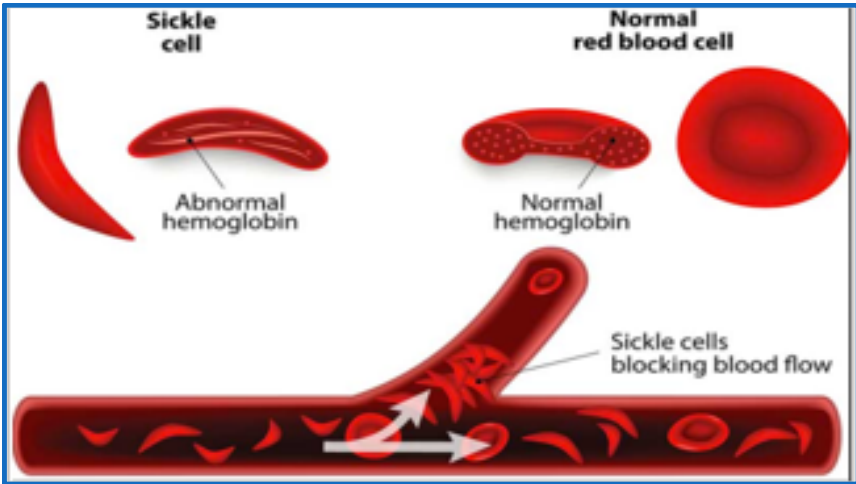
NOTES:

Vitamin D3 and Diseases:

1. *Rickets, Osteomalacia and Osteoporosis*
2. *Vitamin D3 and Autism*
3. *Vitamin D3 and Asthma*
4. *Vitamin D3 and Sickle Cell Disease*
5. *The COVID-19 Pandemic*



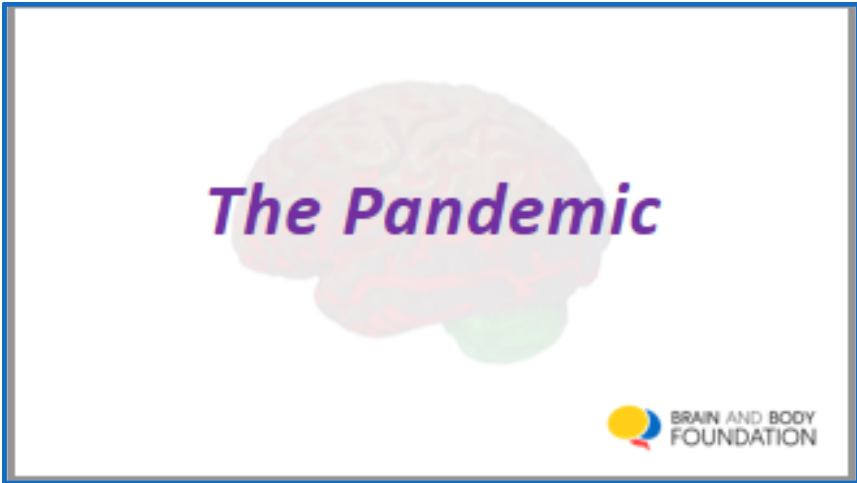
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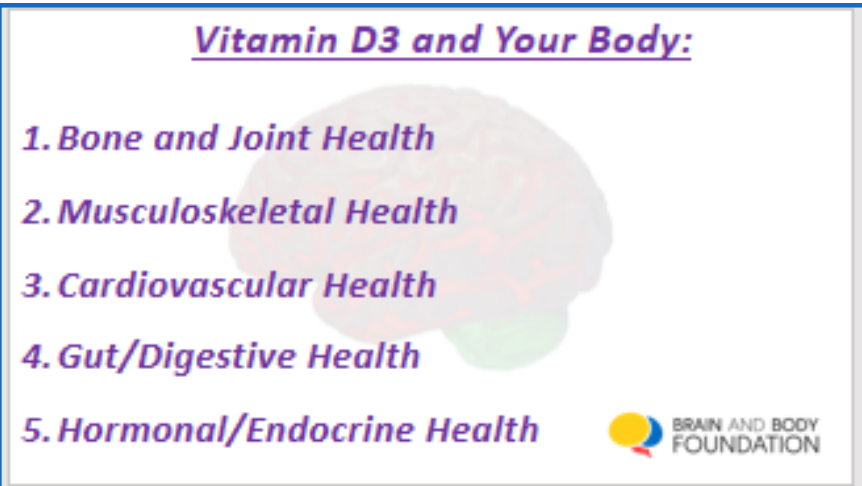




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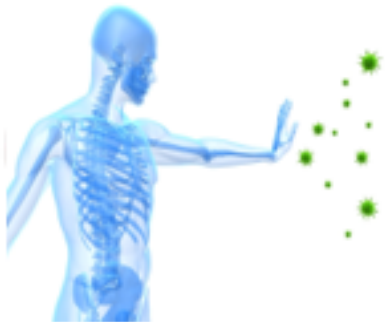
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Cardiovascular System

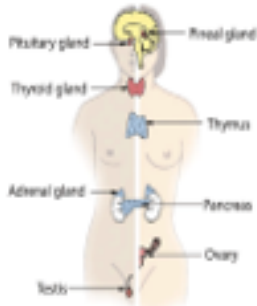


NOTES:

Immune System



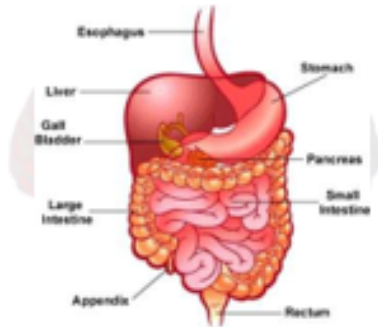
Endocrine System



NOTES:



Digestive System



NOTES:

*~ 2000 Genes
Influenced by
1,25 Dihydroxy D3*



NOTES:

*A Rising Tide Lifts
ALL Ships...*



NOTES:



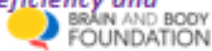
What Vitamin D3 Does for Your Brain



NOTES:

What Vitamin D3 Does for the Brain:

1. Neuroprotection
2. Production and regulation of neurotransmitters
3. Production and regulation of hormones
4. Improves and maintains memory and cognitive function
5. Brain development and plasticity
6. Regulates mood and sense of well-being (mental health - there is a strong link between vitamin D deficiency and depression...)



NOTES:

What Does Your Brain Need the Most?



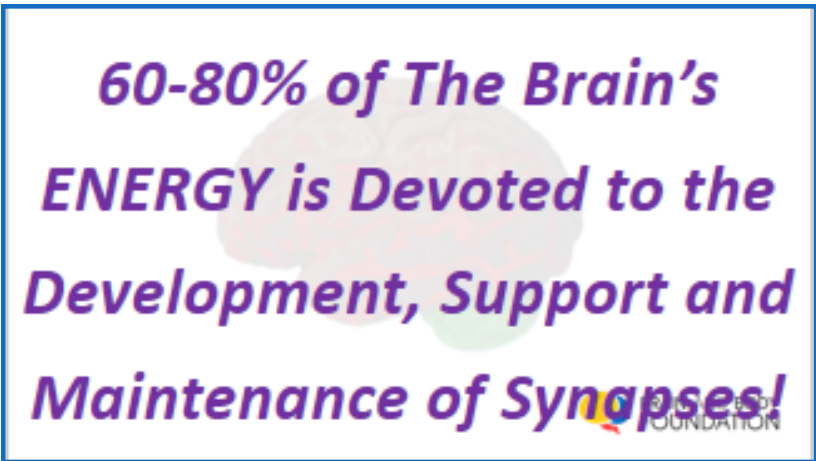
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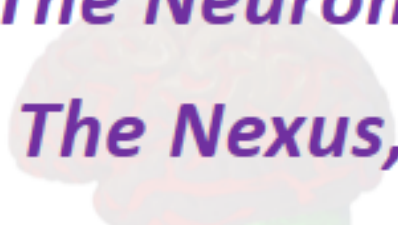



NOTES:



NOTES:

*The Neuron,
The Nexus,
and The Network*



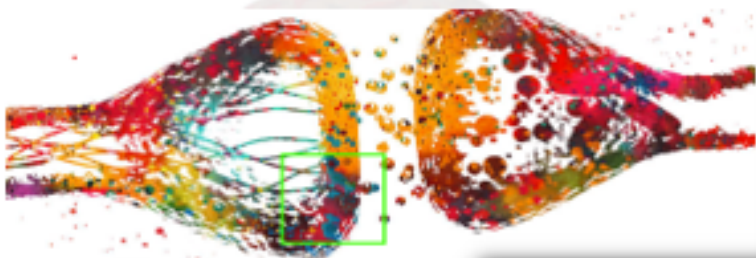
 **BRAIN AND BODY
FOUNDATION**


NOTES:



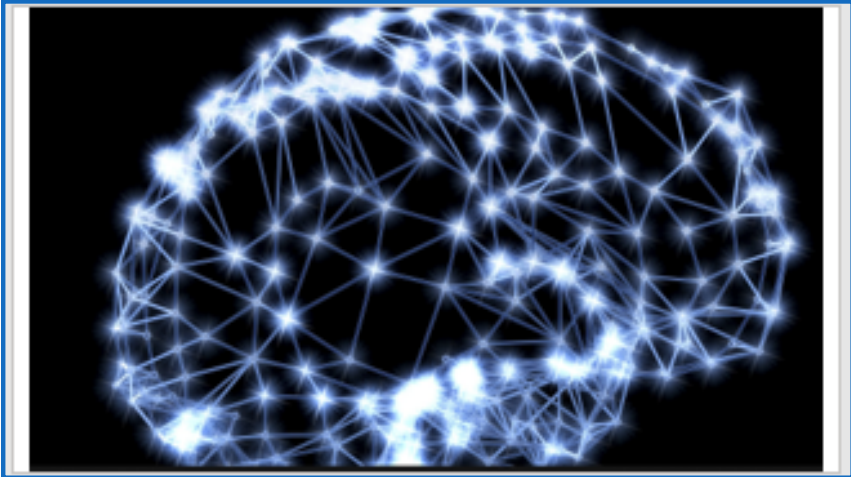
NOTES:

Brain Function Basics



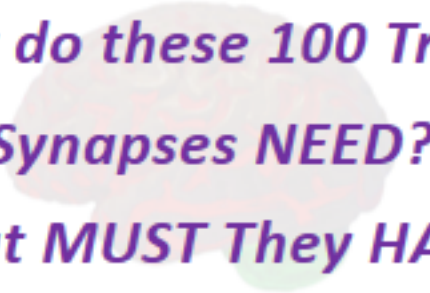

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FOUNDATION**

NOTES:



NOTES:

***What do these 100 Trillion Synapses NEED?
What MUST They HAVE?***

NOTES:

What Synapses Need:

1. Adequate Oxygen and Nutrient supply
2. Energy from mitochondria
3. Proper neuronal structural integrity
4. Efficient neurotransmitter release and recycling
5. Proper calcium homeostasis
6. Synaptic plasticity mechanisms
7. Antioxidant protection
8. Balanced inflammatory responses.
9. Protein turnover
10. Intact Blood Brain Barrier




NOTES:



Vitamin D3 and the Synapse



NOTES:

What Vitamin D3 Does For the Synapses:

1. *Neurotrophic and Neuroprotective Effects (NGF and BDNF)*
2. *Regulates Synaptic Proteins*
3. *Neurotransmitter synthesis and Metabolism*
4. *Modulation of Neuronal Circuits*



NOTES:

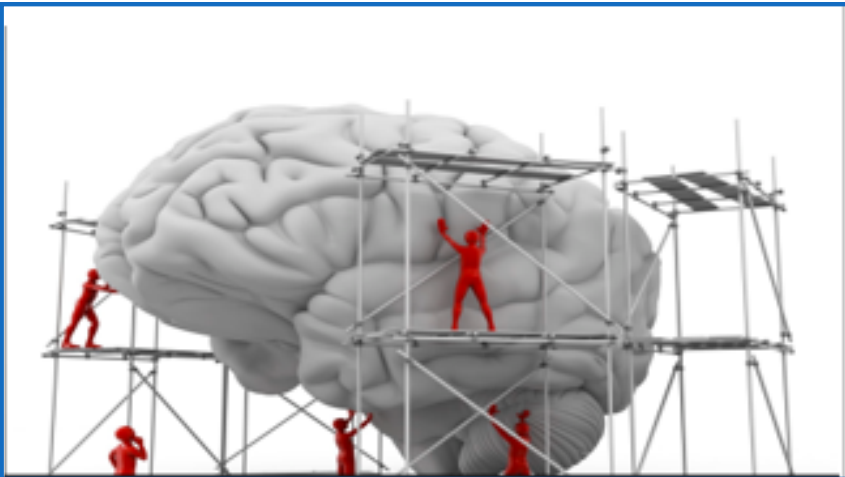
Perineural Nets: Your Brain's "Scaffolding"



NOTES:



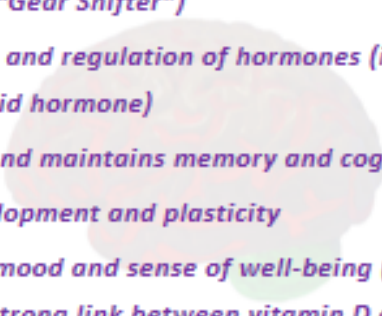
NOTES:




NOTES:



NOTES:




1. *Sleep (the "Gear Shifter")*
2. *Production and regulation of hormones (itself a neurosteroid hormone)*
3. *Improves and maintains memory and cognitive function*
4. *Brain development and plasticity*
5. *Regulates mood and sense of well-being (mental health - there is a strong link between vitamin D deficiency and depression.)*




NOTES:

THERE IS A WELL-ESTABLISHED LINK BETWEEN VITAMIN D DEFICIENCY AND IMPAIRED COGNITION



NOTES:

This is all well and good...but what does it all have to do with Alzheimer's disease?



NOTES:



Vitamin D3

and

Alzheimer's Disease



NOTES:

**REDUCES THE RISK
OF DEMENTIA BY AS
MUCH AS 40%!!!**



NOTES:

Vitamin D3 and Amyloid Plaques and Neurofibrillary Tangles:

Vitamin D is known to participate in **the clearance of amyloid beta (A β) aggregates**, one of the hallmarks of Alzheimer's disease (AD), and may **provide neuroprotection against A β -induced tau hyperphosphorylation (neurofibrillary tangles)**



NOTES:



Vitamin D supplementation and incident dementia: Effects of sex, APOE, and baseline cognitive status

Mayeen Shrivastava, Eric C. Smith, Hong Yu Chen, Byron-Cristian Zafra-Gonzalez, Zahoor Ismail

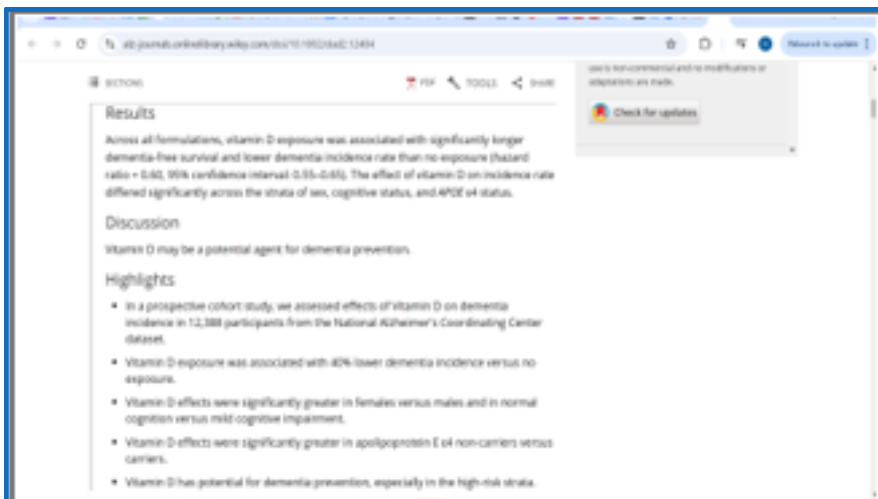
First published: 31 March 2023 | <https://doi.org/10.1002/dad2.12484> | Citations: 4

Abstract

Introduction

Despite the association of vitamin D deficiency with incident dementia, the role of supplementation is unclear. We prospectively explored associations between vitamin D supplementation and incident dementia in 12,388 dementia-free persons from the National Alzheimer's Coordinating Center.

NOTES:



Results

Across all formulations, vitamin D exposure was associated with significantly longer dementia-free survival and lower dementia incidence rate than no exposure (hazard ratio = 0.60, 95% confidence interval 0.55-0.65). The effect of vitamin D on incidence rate differed significantly across the strata of sex, cognitive status, and APOE ε4 status.

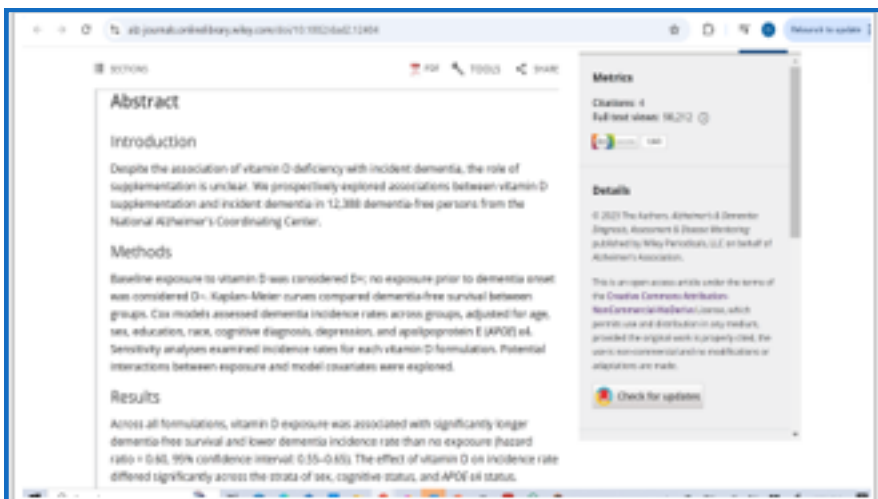
Discussion

Vitamin D may be a potential agent for dementia prevention.

Highlights

- In a prospective cohort study, we assessed effects of vitamin D on dementia incidence in 12,388 participants from the National Alzheimer's Coordinating Center dataset.
- Vitamin D exposure was associated with 40% lower dementia incidence versus no exposure.
- Vitamin D effects were significantly greater in females versus males and in normal cognition versus mild cognitive impairment.
- Vitamin D effects were significantly greater in apolipoprotein E ε4 non-carriers versus carriers.
- Vitamin D has potential for dementia prevention, especially in the high-risk strata.

NOTES:



Abstract

Introduction

Despite the association of vitamin D deficiency with incident dementia, the role of supplementation is unclear. We prospectively explored associations between vitamin D supplementation and incident dementia in 12,388 dementia-free persons from the National Alzheimer's Coordinating Center.

Methods

Baseline exposure to vitamin D was considered D+; no exposure prior to dementia onset was considered D-. Kaplan-Meier curves compared dementia-free survival between groups. Cox models assessed dementia incidence rates across groups, adjusted for age, sex, education, race, cognitive diagnosis, depression, and apolipoprotein E (APOE) ε4. Sensitivity analyses examined incidence rates for each vitamin D formulation. Potential interactions between exposure and model covariates were explored.

Results

Across all formulations, vitamin D exposure was associated with significantly longer dementia-free survival and lower dementia incidence rate than no exposure (hazard ratio = 0.60, 95% confidence interval 0.55-0.65). The effect of vitamin D on incidence rate differed significantly across the strata of sex, cognitive status, and APOE ε4 status.

NOTES:



Low levels of serum vitamin D have been associated with a greater risk of dementia and Alzheimer's Disease.



NOTES:

Deficiency Results in:

1. *Increased risk of Dementia*
2. *Increased risk of Depression*
3. *Increased risk of Diabetes Mellitus*
4. *Increased risk of permanent disability in offspring of mothers with vitamin D3 deficiency*
5. *Increased risk of neuroinflammation (the kiss of death)*



NOTES:

"We know there are receptors for vitamin D throughout the central nervous system and in the hippocampus," said Robert J. Przybelski, a doctor and research scientist at the University of Wisconsin School of Medicine and Public Health.

"We also know vitamin D activates and deactivates enzymes in the brain and the cerebrospinal fluid that are involved in neurotransmitter synthesis and nerve growth."

In addition, animal and laboratory studies suggest vitamin D protects neurons and reduces inflammation.



NOTES:



Results of Vitamin D Deficiency in The Brain:

The researcher goes on to report that, "There was also a stark reduction in both the number and strength of connections between neurons in [the hippocampus]."

Although the study did not firmly establish this mechanism, the researchers think that vitamin D deficiency makes perineuronal nets more vulnerable to the degrading action of enzymes.

The scientists found that the lower the subjects' vitamin D levels, the more negatively impacted was their performance on a battery of mental tests.

Compared with people with optimum vitamin D levels, those in the lowest quartile were more than twice as likely to be cognitively impaired.

The data show that those people with lower vitamin D levels exhibited slower information-processing speed. This correlation was particularly significant for men older than 60 years



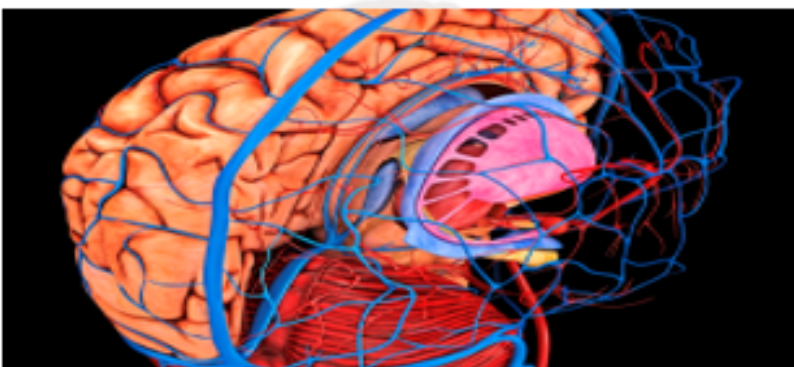
NOTES:

Vitamin D3 and Blood Flow



NOTES:

Blood Flow in The Brain



NOTES:

Blood Flow in The Brain



NOTES:

**>80% of All Dementias
Have A Cardiovascular
Component**




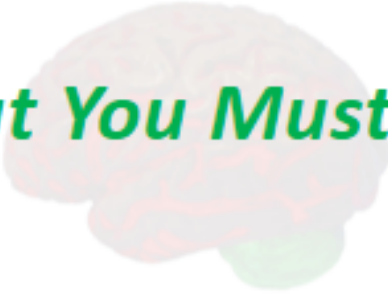
NOTES:

**Blacks are 2-4 TIMES
More Likely to Have
Cardiovascular Disease
than Whites!**




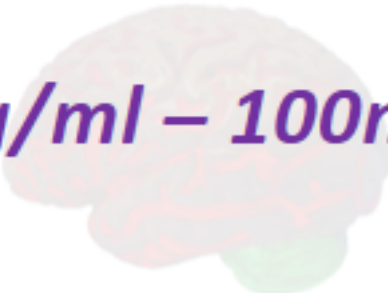
NOTES:

What You Must Do...



NOTES:

30ng/ml – 100ng/ml



NOTES:

Who Is More Likely To Be Deficient?



NOTES:



NOTES:

SKIN TYPES AND VITAMIN D ABSORPTION RATE

Skin Type	Skin Colour	Skin Characteristics
I	Very fair; red or blonde hair; blue eyes; freckles.	Always burns, never tans.
II	Fair; sandy or red hair; blue, hazel or green eyes.	Usually burns, tans with difficulty.
III	Fair; with any eye or hair colour; very common.	Sometimes mild burn, gradually tans.
IV	Dark brown hair; green, hazel or brown eyes.	Rarely burns, tans with ease.
V	Dark brown and black hair; brown and dark brown eyes.	Very rarely burns, tans very easily.
VI	Black hair, dark brown eyes.	May never burn, tans very easily.


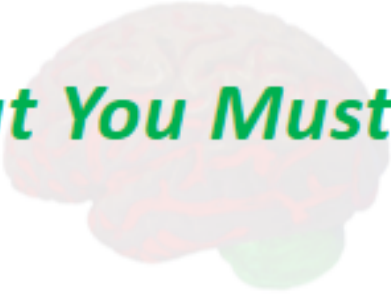
NOTES:

**Blacks are 2-4 TIMES
More Likely to Have
Vitamin D Deficiency
than Whites!**




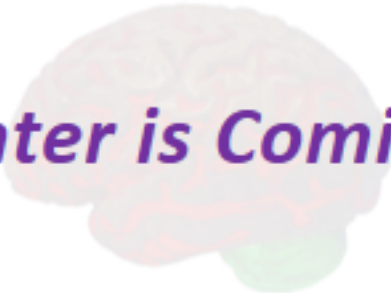
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What You Must Do...




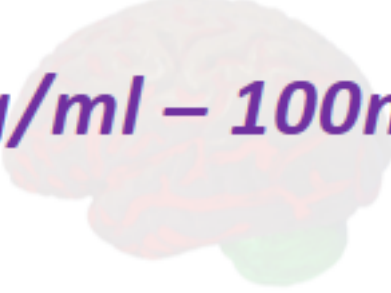
NOTES:

Winter is Coming...




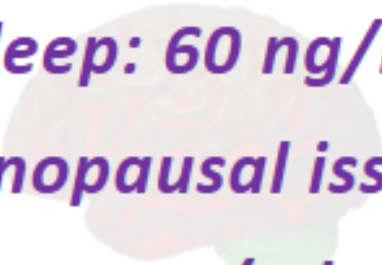
NOTES:

30ng/ml – 100ng/ml




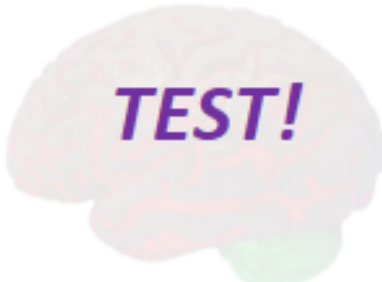
NOTES:

Sleep: 60 ng/ml
Menopausal issues:
70ng/ml.



NOTES:

TEST!



NOTES:

How To Get Vitamin
D3



NOTES:



*Consider D3/K2
Combo*



NOTES:



*Addressing Concerns
About Cancer...*



NOTES:


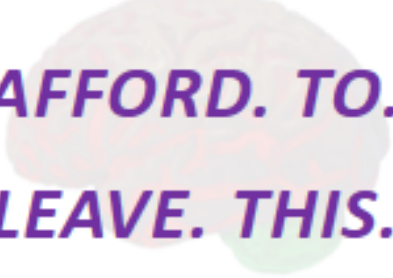


*The Challenge
Before Us...*




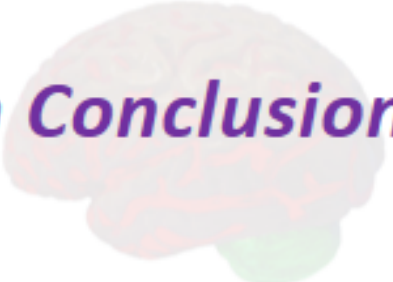
NOTES:

***YOU. CANNOT.
AFFORD. TO.
LEAVE. THIS.
TO CHANCE.***




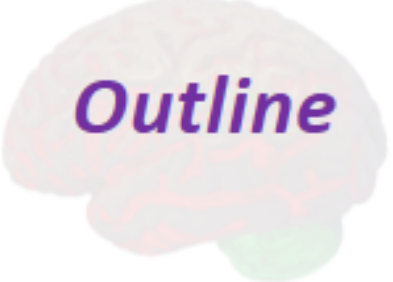
NOTES:

In Conclusion...



NOTES:

Outline



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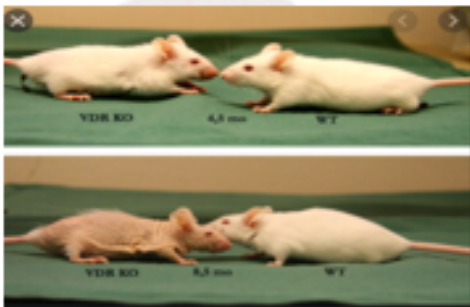
What We Have (hopefully) Discussed:

1. My journey: The Importance of Vitamin D3
2. What Vitamin D3 does for your body
3. What Vitamin D3 does for your brain
4. What Deficiency of Vitamin D3 Results in
5. How to Get it
6. What You Must Do
7. The Challenge Before You



NOTES:

Vitamin D3 and Aging

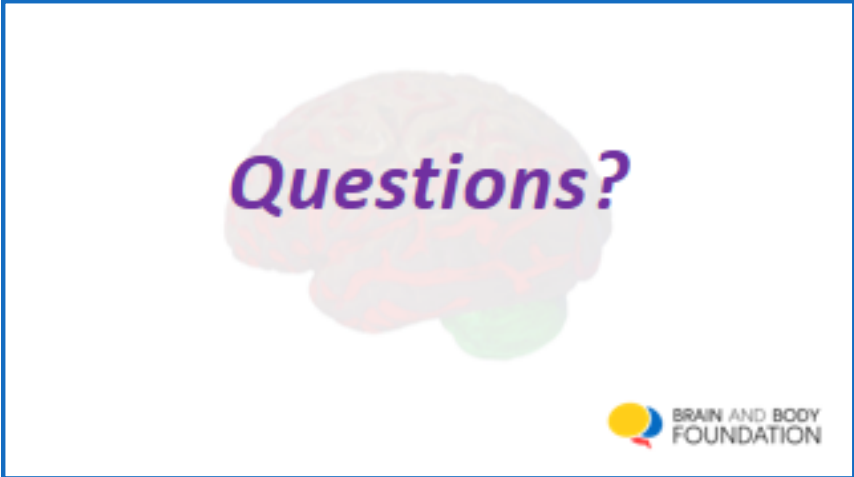


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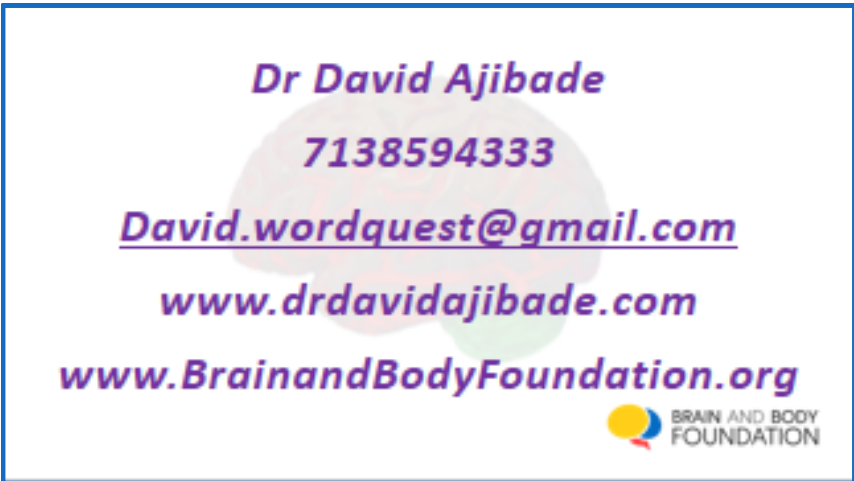
**Thank You For
Listening!**



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