The Latest Insights Into Keeping Your Brain Young & Lowering Risk For Dementia

Dr. Marc Milstein

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Pop Quiz!

Six Random Things

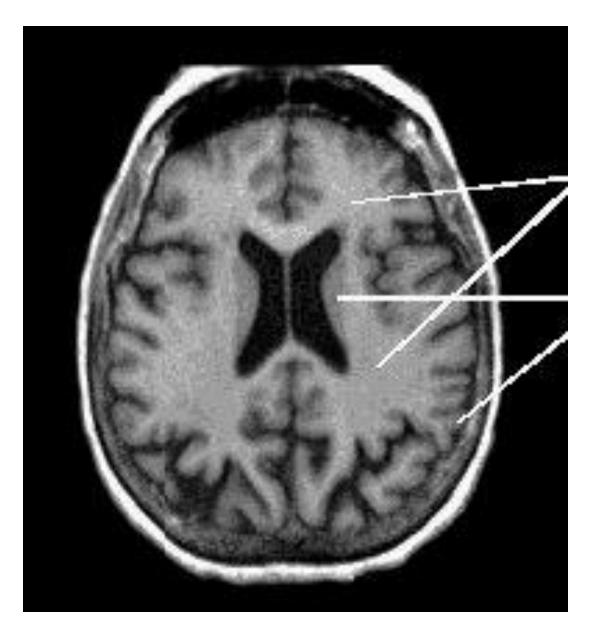
- •1. Magnet
- •2. Chocolate
- •3. Blanket
- •4. Chapstick
- •5. Apple
- •6. Pants

Memory of Loci

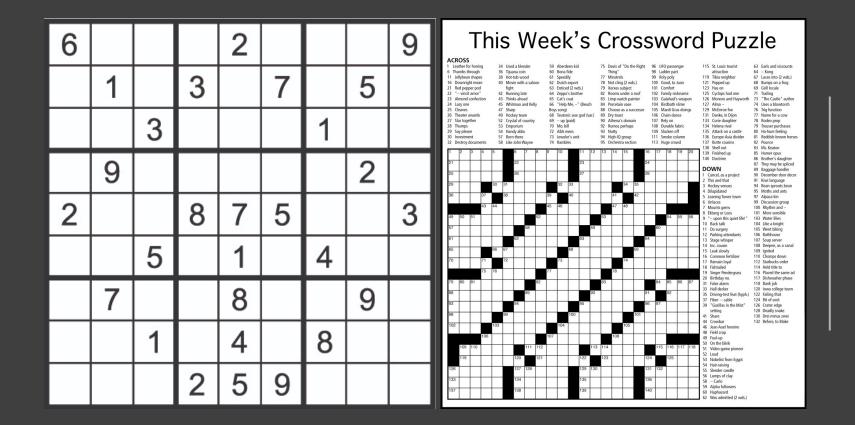
How Old Is Your Brain?



Brain Age

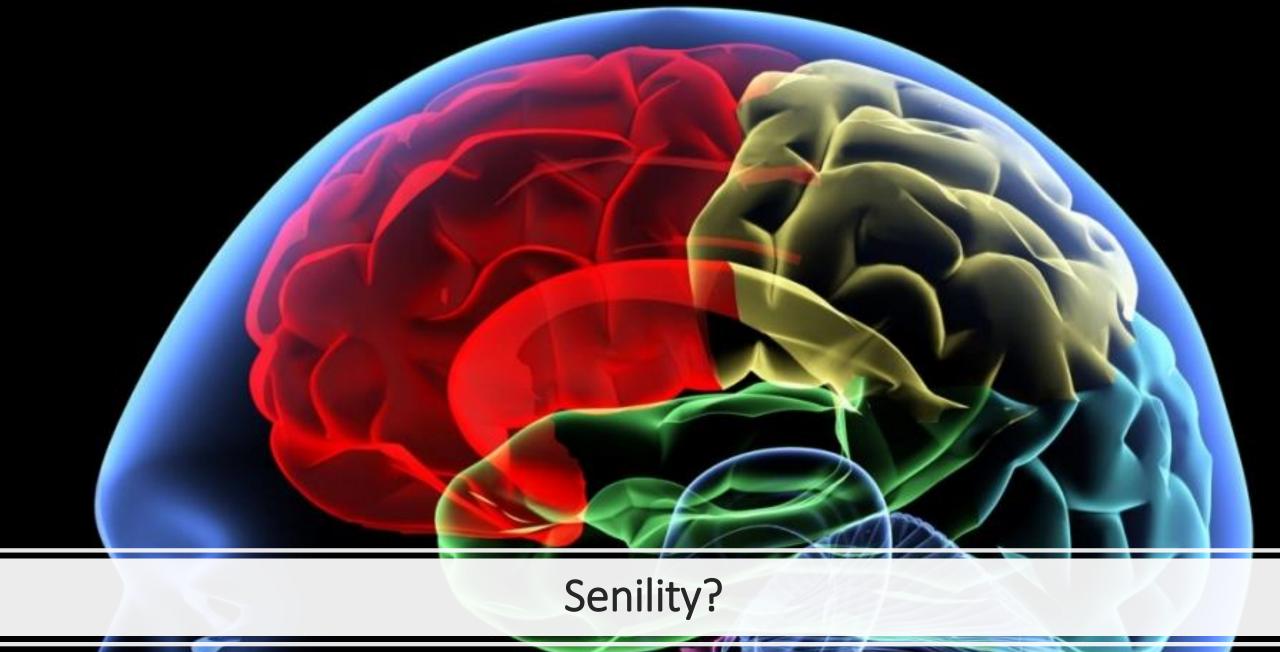


H Cole, S J Ritchie, M E Bastin, M C Valdés Hernández, S Muñoz Maniega, N Royle, J Corley, A Pattie, S E Harris, Q Zhang, N R Wray, P Redmond, R E Marioni, J M Starr, S R Cox, J M Wardlaw, D J Sharp, J Deary. Brain age predicts mortality. *Molecular Psychiatry*, 2017;

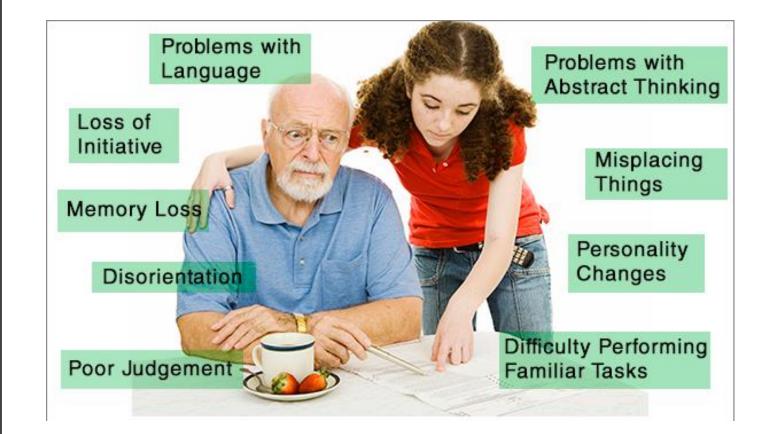


Sudoku or Puzzles??? Brain Games??

The 8 Surprising Things That Will Really Make A Difference



What Is Dementia?





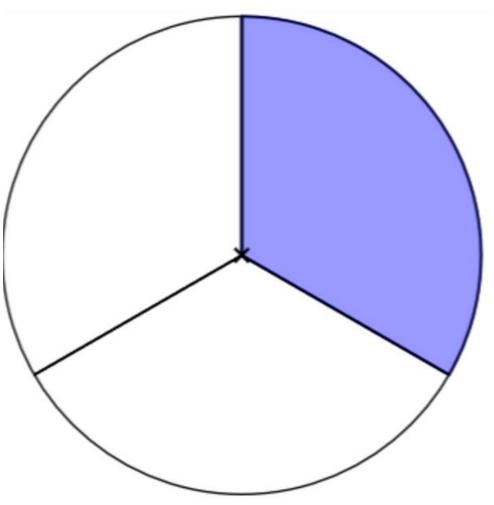
Dementia Is Like A Wave....

1/3 of All Dementia Is Preventable

• 47 million people have dementia worldwide

• 115 million by 2050.

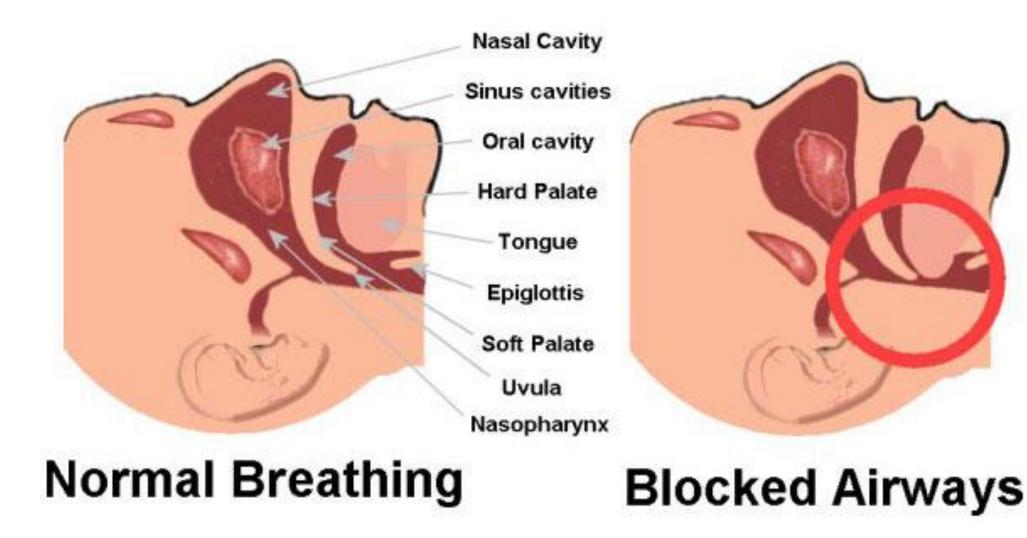
 What are key factors in preventing dementia and brain aging?



1.Gill Livingston, Andrew Sommerlad, Vasiliki Orgeta, Sergi G Costafreda, Jonathan Huntley, David Ames, Clive Ballard, Sube Banerjee, Alistair Burns, Jiska Cohen-Mansfield, Claudia Cooper, Nick Fox, Laura N Gitlin, Robert Howard, Helen C Kales, Eric B Larson, Karen Ritchie, Kenneth Rockwood, Elizabeth L Sampson, Quincy Samus, Lon S Schneider, Geir Selbæk, Linda Teri, Naaheed Mukadam. **Dementia prevention, intervention, and care**. *The Lancet*, 2017; DOI: <u>10.1016/S0140-6736(17)31363-6</u>

If Someone Is Having Memory Issues

Do You Have Sleep Apnea?



Ricardo S. Osorio, Tyler Gumb, Elizabeth Pirraglia, Andrew W. Varga, Shou-En Lu, Jason Lim, Margaret E. Wohlleber, Emma L. Ducca, Viachaslau Koushyk, Lidia Glodzik, Lisa Mosconi, Indu Ayappa, David M. Rapoport, Mony J. De Leon. Sleep-disordered breathing advances cognitive decline in the elderly. *Neurology*, April 2015

How Are Sleep and Memory Related?

<u>cottage / swiss / cake</u> <u>cream / skate / water</u> <u>show / life / row</u>

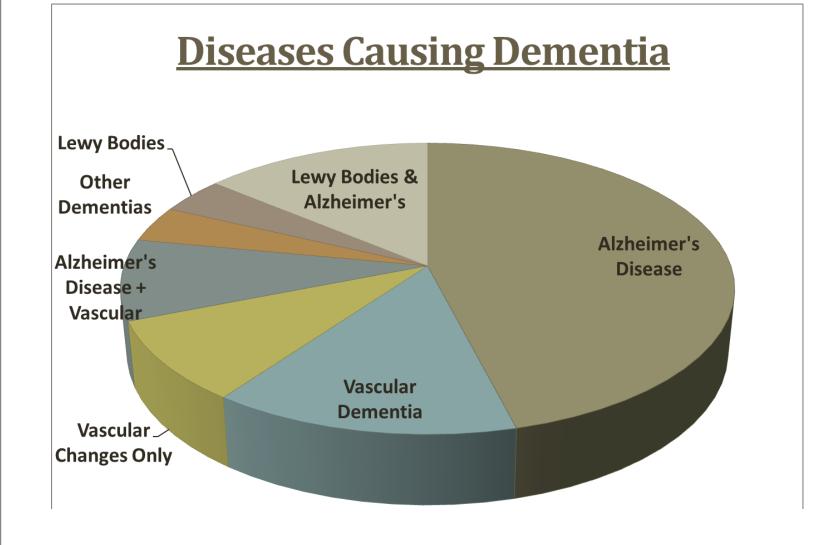
> Study At UCLA, UCSD Remote Association Test



What Happens In Your Brain When You Learn Something During The Day.....

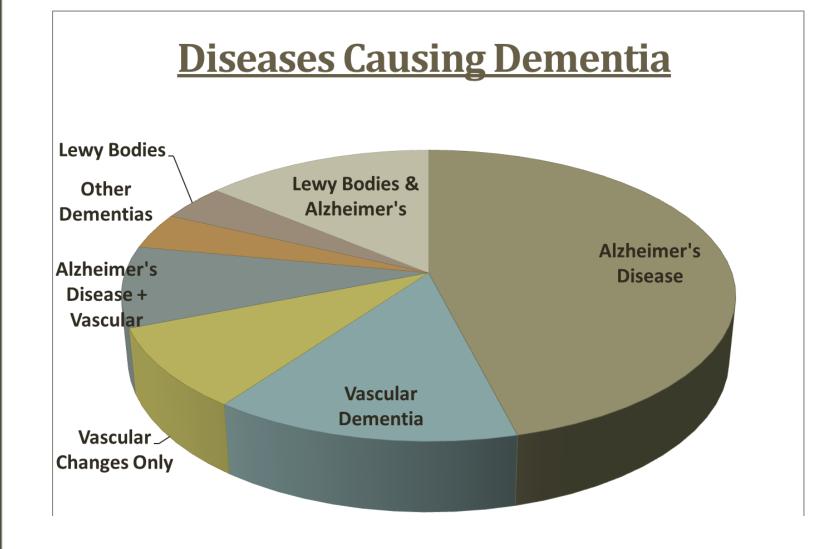
Alzheimer's Disease

• What is the difference between Alzheimer's disease and dementia?



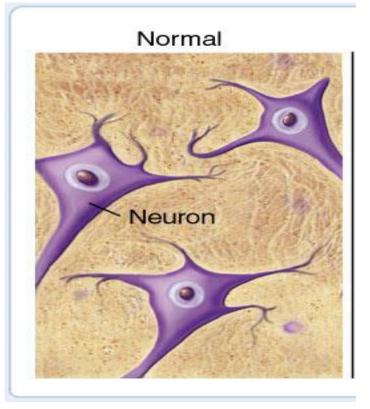
What Can Cause Dementia?

Why Is It Worth Knowing The Underlying Cause?



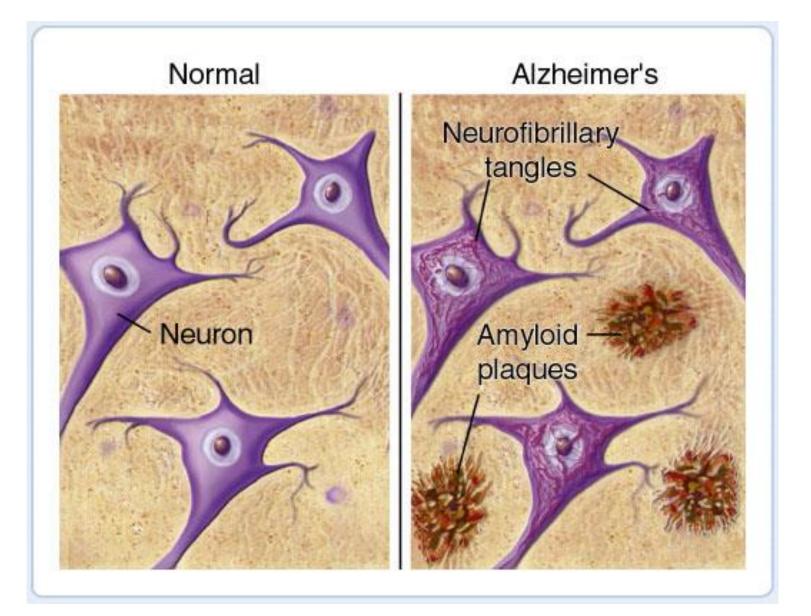
Approximately 20% Of Dementia Is Quickly Treatable







What Can Trash Interfere With?



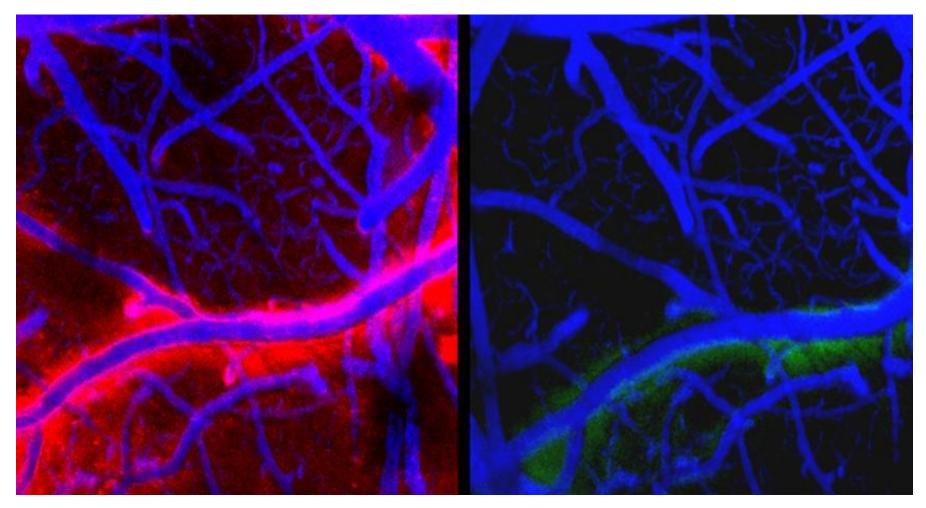
New Insight:

When Does Your Brain Take Out The Trash?

But First, How Much Trash Do We Make?



Brain Wash



While you are sleeping your brain shrinks by 60% and squeezes toxins out of your brain cells and gets a wash!

Over The Counter Sleep Aids





Shelly L. Gray, Melissa L. Anderson, Sascha Dublin, Joseph T. Hanlon, Rebecca Hubbard, Rod Walker, Onchee Yu, Paul K. Crane, Eric B. Larson. **Cumulative Use of Strong Anticholinergics and Incident Dementia**. JAMA Internal Medicine, 2015; DOI: 10.1001/jamainternmed.2014.7663

A Just Published Study

High Cognitive Performance at Age 100.

What's their secret??

Genes???



Exercise Your Brain & Learn <u>New</u> Things



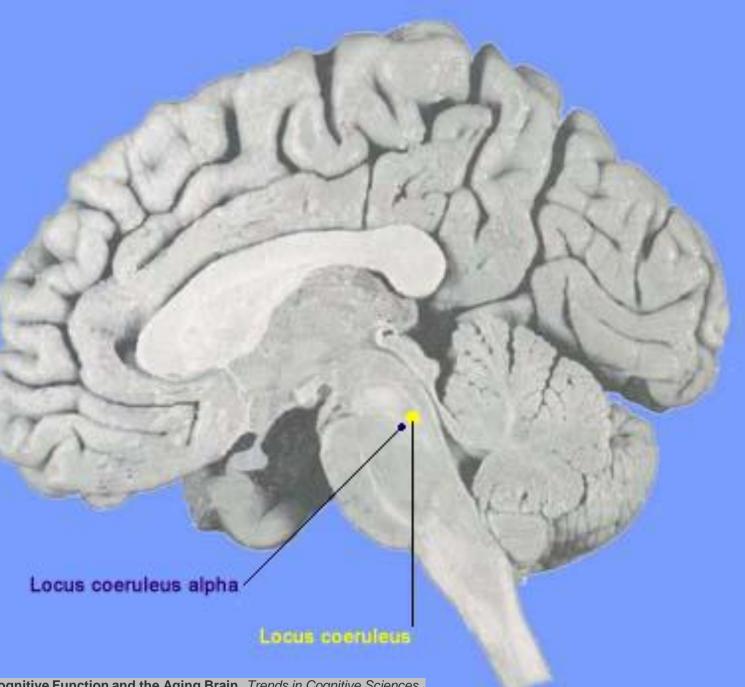


• Challenging

• Something you enjoy!



Scientists identify 'ground zero' for Alzheimer's disease



Mara Mather, Carolyn W. Harley. The Locus Coeruleus: Essential for Maintaining Cognitive Function and the Aging Brain. Trends in Cognitive Sciences,

Isolated and Loss of Social Contact



A Revolution In Our Understanding

Another Way To Get Rid of Brain Trash?

What Do Microglia Do?



Keep Inflammation Low

Effectively treat diseases that cause inflammation.

Ask your personal Doctor about checking inflammation. (CRP markers)

3. What else?

Brush Your Teeth (Gingivitis)

- The bacteria produces a protein that destroys nerve cells in the brain, which in turn leads to loss of memory and ultimately, Alzheimer's.
- Take home message?



1.Stephen S. Dominy, Casey Lynch, Florian Ermini, Malgorzata Benedyk, Agata Marczyk, Andrei Konradi, Mai Nguyen, Ursula Haditsch, Debasish Raha, Christina Griffin, Leslie J. Holsinger, Shirin Arastu-Kapur, Samer Kaba, Alexander Lee, Mark I. Ryder, Barbara Potempa, Piotr Mydel, Annelie Hellvard, Karina Adamowicz, Hatice Hasturk, Glenn D. Walker, Eric C. Reynolds, Richard L. M. Faull, Maurice A. Curtis, Mike Dragunow, Jan Potempa. **Porphyromonas gingivalis in Alzheimer's disease brains: Evidence for disease causation and treatment with small-molecule inhibitors**. *Science Advances*, 2019; 5 (1): eaau3333



Does Diet Matter?

Martha Clare Morris, Christy C. Tangney, Yamin Wang, Frank M. Sacks, David A. Bennett, Neelum T. Aggarwal. MIND diet associated with reduced incidence of Alzheimer's disease. Alzheimer's & Dementia, 2015

The Mind Diet

Include These

- Green leafy vegetables: every day
- Other vegetables: at least once per day
- Nuts: every day
- Berries: at least twice per week
- Beans: every other day
- Whole grains: three times per day
- Fish: at least once per week
- Poultry: at least twice per week
- Olive oil
- Wine: one glass per day
- MIND diet lowered Alzheimer's risk by about 35 percent for people who followed it moderately well and up to 53 percent for those who adhered to it rigorously.

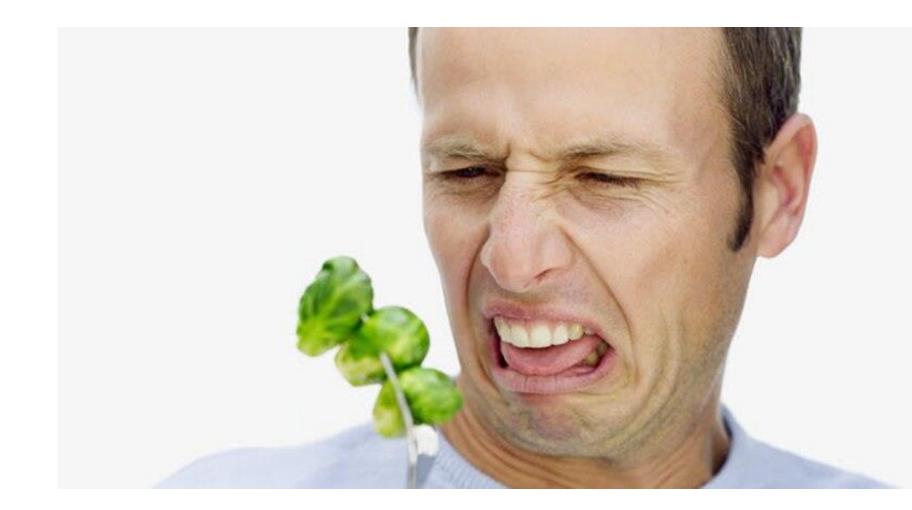
Fructose Causes Inflammation (2021 Study)

 Fructose is commonly found in sugary drinks, sweets and processed foods and is used widely in food production. 0% • Vitamin E 25% • Thiamin 25% • Riboflavi 1 25% • Pantothenic Acid 25% • Phosphorus 20 20 25%

DGE (CORN SYRUP, INVERT SUGAR, PEANUT BUTTER [PEANUTS AROB SEED GUM, BETA-CAROTENE), CHOCOLATE FLAVORED CO A FLAVOR), CORN SYRUP, ACACIA GUM, FRUCTOSE SYRUP, PEA PHOSPHATE, SALT, **VITAMIN AND MINERAL BLEND** (CALCIUN ROUS FUMARATE, PYRIDOXINE HYDROCHLORIDE, VITAMIN A PAL LAMIN). ES EGGS, TREE NUTS AND WHEAT.

1.Nicholas Jones, Julianna Blagih, Fabio Zani, April Rees, David G. Hill, Benjamin J. Jenkins, Caroline J. Bull, Diana Moreira, Azari I. M. Bantan, James G. Cronin, Daniele Avancini, Gareth W. Jones, David K. Finlay, Karen H. Vousden, Emma E. Vincent, Catherine A. Thornton. Fructose reprogrammes glutamine-dependent oxidative metabolism to support LPS-induced inflammation. *Nature Communications*, 2021; 12 (1) DOI: <u>10.1038/s41467-021-21461-4</u>

Just Published: How Many Servings of Fruits and Vegetables?



9% of US adults eat the suggested servings of vegetables

12% eat the recommended amount of fruit

1.Dong D. Wang, Yanping Li, Shilpa N. Bhupathiraju, Bernard A. Rosner, Qi Sun, Edward L. Giovannucci, Eric B. Rimm, JoAnn E. Manson, Walter C. Willett, Meir J. Stampfer, Frank B. Hu. Fruit and Vegetable Intake and Mortality: Results From 2 Prospective Cohort Studies of US Men and Women and a Meta-Analysis of 26 Cohort Studies. *Circulation*, 2021; DOI: <u>10.1161/CIRCULATIONAHA.120.048996</u>

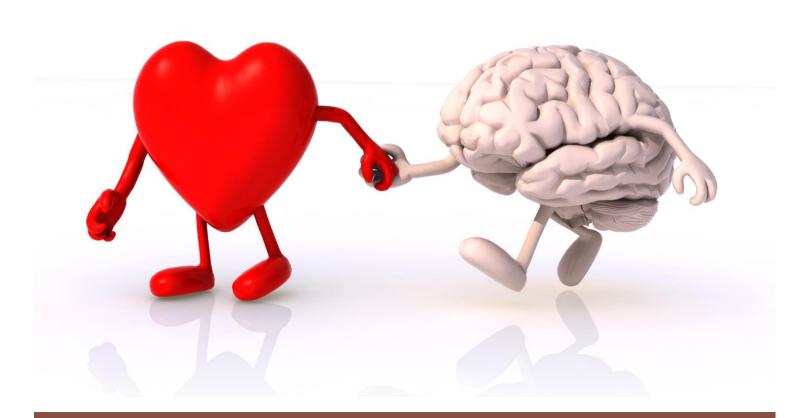


Benefits Found in Green leafy vegetables rich in beta carotene and vitamin C

- Spinach
- Leafy green lettuce
- Kale
- Carrots



Berries, Apples and Citrus (Vitamin C)

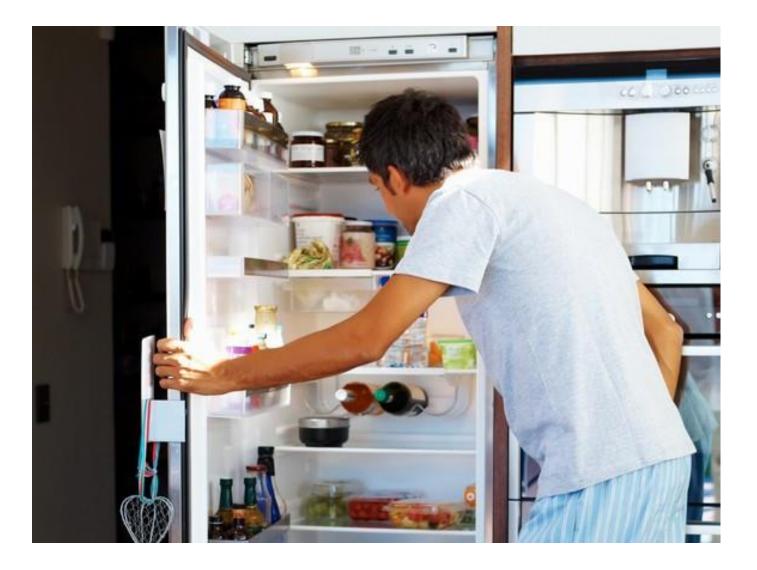


1. High or Low Blood Pressure
2. Obesity
3. Smoking

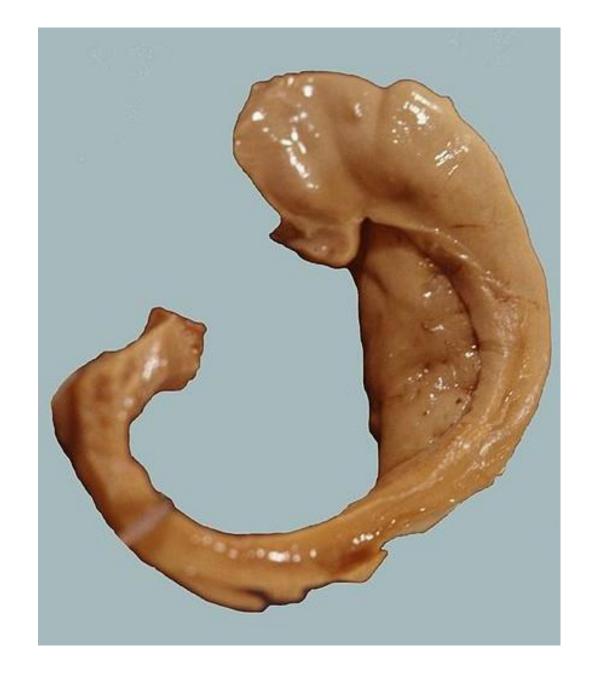
All Things Heart Health Impact Brain Aging.....

1. Gill Livingston, Andrew Sommerlad, Vasiliki Orgeta, Sergi G Costafreda, Jonathan Huntley, David Ames, Clive Ballard, Sube Banerjee, Alistair Burns, Jiska Cohen-Mansfield, Claudia Cooper, Nick Fox, Laura N Gitlin, Robert Howard, Helen C Kales, Eric B Larson, Karen Ritchie, Kenneth Rockwood, Elizabeth L Sampson, Quincy Samus, Lon S Schneider, Geir Selbæk, Linda Teri, Naaheed Mukadam. **Dementia prevention, intervention, and care**. *The Lancet*, 2017; DOI: 10.1016/S0140-6736(17)31363-6

Have You Had This Happen?



What Does Hippocampus Do?



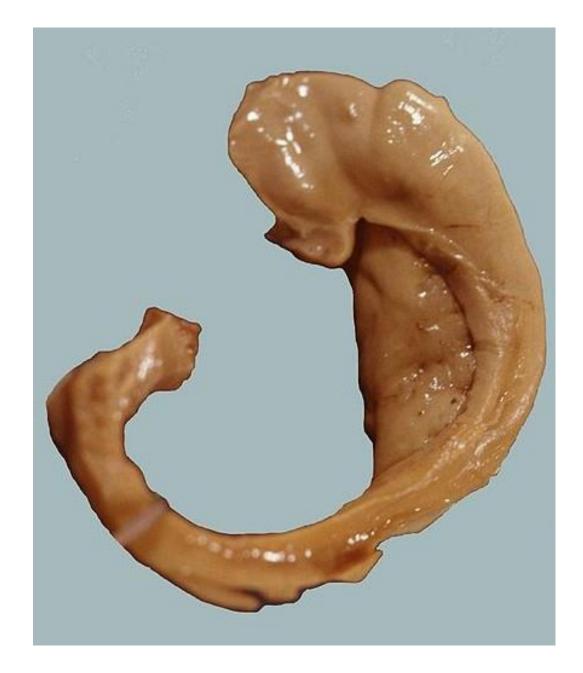
What is happening to your hippocampus???





Multi-tasking Can Be Multi-distracting

Keep Hippocampus Healthy and Make It Grow



The Most **Detailed Study Ever Done On** The Effect of Lifestyle on The **Risk of Getting** Dementia

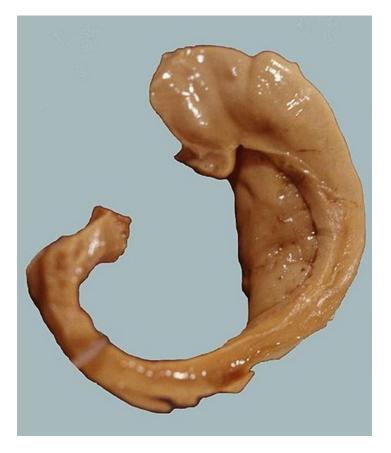
Researchers followed
 2,235 individuals with
 initial ages between 45
 and 59 years old—for <u>30</u>
 years.

 Reduced their risk for cognitive decline and dementia by a <u>staggering</u> <u>60%.....</u>

Approximately 30-40 Minutes Of Walking A Day

Doesn't Need To Done All At The Same Time

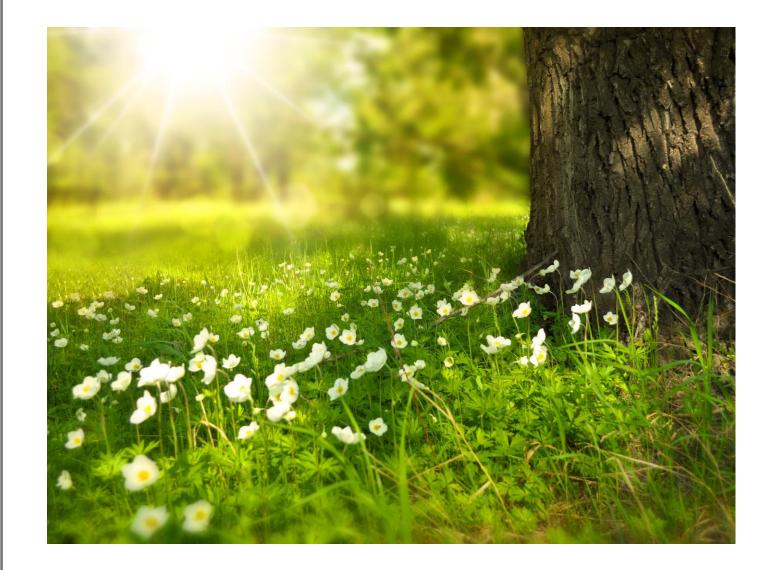
Stress and Brain Aging? The Surprise.....





Stress and Nature:

A Couple Minutes of Green Time:



Marselle Melissa R., Irvine Katherine N., and Warber Sara L. **Examining Group Walks in Nature and Multiple Aspects of Well-Being:** A Large-Scale Study. *Ecopsychology*, September 2014 DOI: <u>10.1089/eco.2014.002</u>

Exercise Is Medicine For The Brain

- Helps blood flow to the brain
- Helps sleep
- Helps balance immune system.
- How much exercise?



1.S Matura, J Fleckenstein, R Deichmann, T Engeroff, E Füzéki, E Hattingen, R Hellweg, B Lienerth, U Pilatus, S Schwarz, V A Tesky,

2. L Vogt, W Banzer, J Pantel. Effects of aerobic exercise on brain metabolism and grey matter volume in older adults: results

3.of the randomised controlled SMART trial. Translational Psychiatry, 2017; 7 (7): e1172 DOI: 10.1038/tp.2017.135

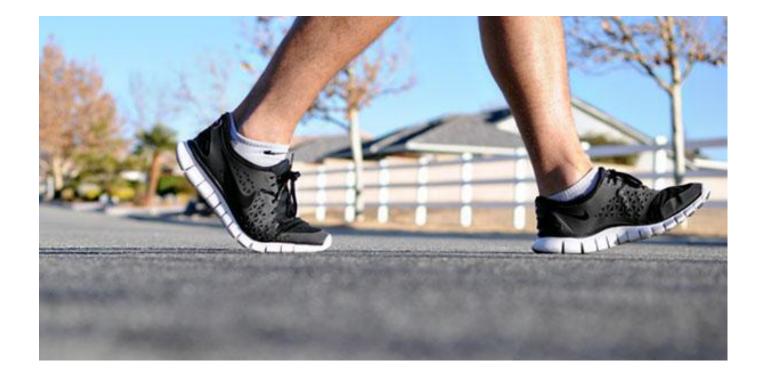
How Much Exercise?



What About Taking The Stairs?



Jason Steffener, Christian Habeck, Deirdre O'Shea, Qolamreza Razlighi, Louis Bherer, Yaakov Stern. **Differences between chronological and brain age are related to education and self**reported physical activity. *Neurobiology of Aging*, 2016; When Is A Good Time To Take Walks?



Unmanaged Diabetes increases a person's risk of Alzheimer's by 65 percent.

1 Shannon L. Macauley, Molly Stanley, Emily E. Caesar, Steven A. Yamada, Marcus E. Raichle, Ronaldo Perez, Thomas E. Mahan, Courtney L. Sutphen, David M. Holtzman. Hyperglycemia modulates extracellular amyloid-β concentrations and neuronal activity in vivo. *Journal of Clinical Investigation*, 2015; DOI: <u>10.1172/JCI79742</u>

What If **Diabetes Is** Treated? What Happens To AD Risk?



Michael T. Heneka, Anne Fink, Gabriele Doblhammer. Effect of pioglitazone medication on the incidence of dementia. Annals of Neurology, 2015

Intervention Results

 Overall test scores in the intervention group were 25% higher than in the control group.

For executive functioning scores were
 83% higher in the intervention group

• Processing speed was **150% higher**.

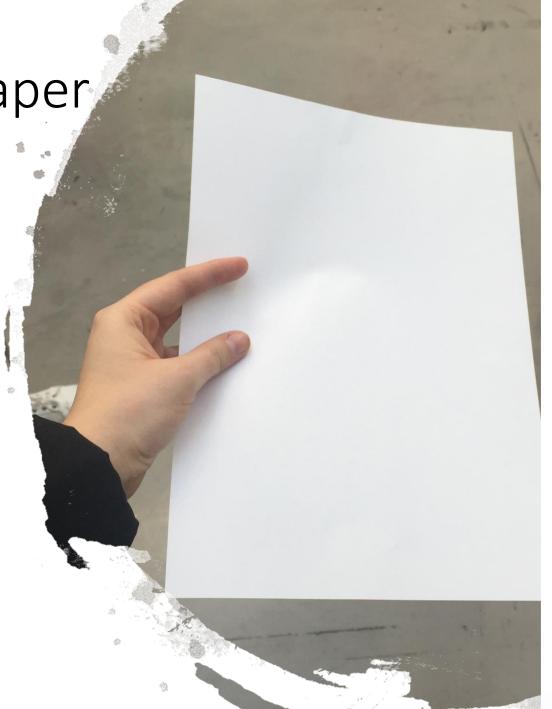
• FINGER and Weill – Cornell Study.

1. Tiia Ngandu, et al. **A 2 year multidomain intervention of diet, exercise, cognitive training, and vascular risk monitoring versus control to prevent cognitive decline in at-risk elderly people (FINGER): a randomised controlled trial. The Lancet, 2015; DOI: <u>10.1016/S0140-6736(15)60461-5</u>**

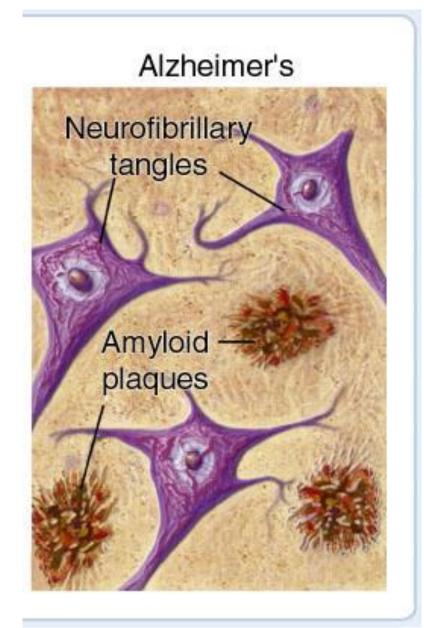
The Important Piece of Paper

- For your personal doctor
- Inflammation: (CRP)

- Heart: (Homocysteine, Cholesterol and Blood Pressure)
- Diabetes: hemoglobin a1c



When Does Trash Form In The Brain?





Dementia Is Like A Wave....



A Surprising Insight

Multi-Hit:

In Most People: Accumulation of Risk Factors



Can We Reverse Aging In The Brain At Any Age?

 Most "Bang For Your Buck" Activities

• Can we beat exercise???

Dancing vs Treadmill/Stationary Bike

- Key point.....
- Why dancing?
- At any age we can make our brain younger.

1.Kathrin Rehfeld, Patrick Müller, Norman Aye, Marlen Schmicker, Milos Dordevic, Jörn Kaufmann, Anita Hökelmann, Notger G. Müller. Dancing or Fitness Sport? The Effects of Two Training Programs on Hippocampal Plasticity and Balance Abilities in Healthy Seniors. Frontiers in Human Neuroscience, 2017; 11 DOI: 10.3389/fnhum.2017.00305

The Best Things You Can Do For Your Brain

We Have <u>8</u> Major Tips

- Sleep
- Be Socially Engaged and Learn New Things
- Keep Inflammation Low
- Manage Stress
- MIND Diet
- Moderate Exercise/Walking
- Treat Diabetes
- Take Care of The Heart

These 4 Make A Big Difference

• Sleep

• Get Regular Physicals (Heart, Inflammation, Diabetes)

• Have Fun Mentally and Physically & Learn New Things

• Eat Real Food