


Age-Proof Your Brain


Dr. Marc Milstein





This session is eligible for 1 Continuing Education Hour

For these hours to appear on your certificate, you must:

- Scan your badge at the door
- Attend 90% of the session
- Fill out the online evaluation





Age-Proof Your Brain:

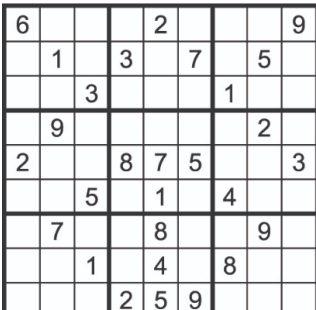
Maximize Productivity,
Boost Memory,
Slow Aging and Protect Your Brain

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This Week's Crossword Puzzle



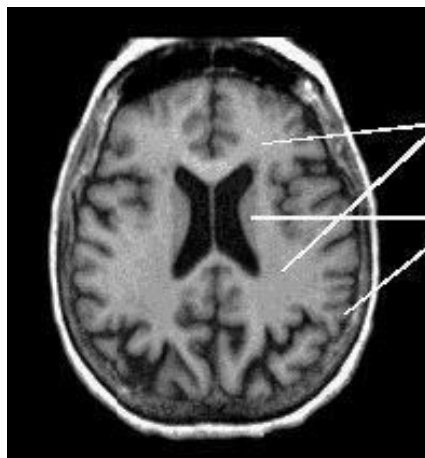


Sudoku? Crossword Puzzles?

Surprising Things That Really Make A Difference?

How Old Is Your Brain?

Brain Age

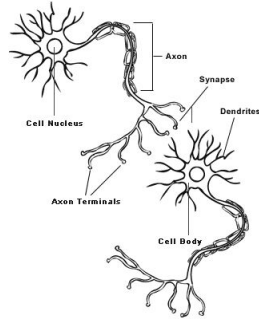
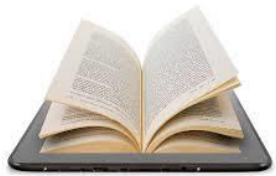


H Cole, S J Ritchie, M E Bastin, M C Valdés Hernández, S Muñoz Maniega, N Royle, J Corley, A Pattie, S E Harris, Q Zhang, N R Wray, P Redmond, R E Marioni, J M Starr, S R Cox, J M Wardlaw, D J Sharp, I J Deary. **Brain age predicts mortality.** *Molecular Psychiatry*, 2017;

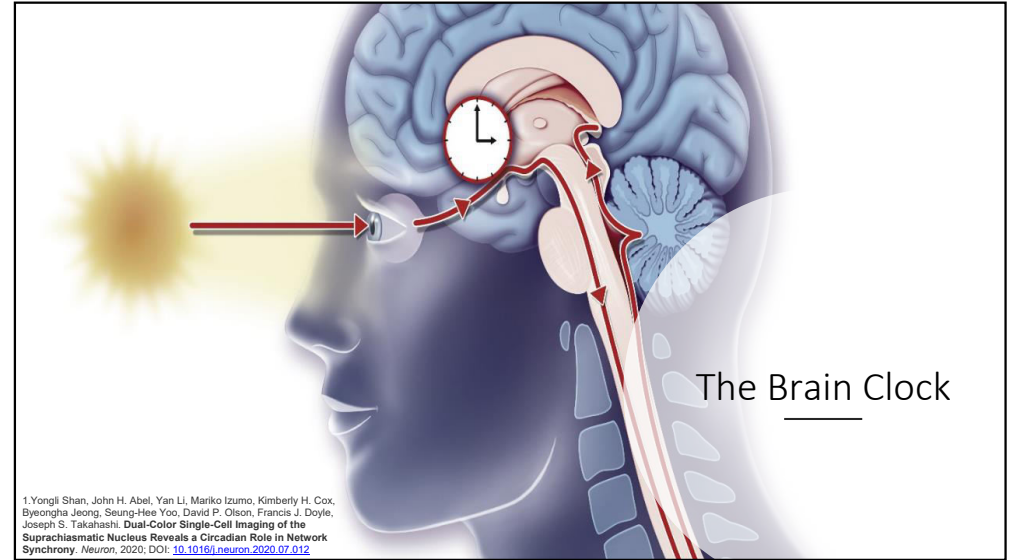
Claudia L. Satizabal, Alexa S. Beiser, Evan Fletcher, Sudha Seshadri, Charles DeCarli. **A novel neuroimaging signature for ADRD risk stratification in the community.** *Alzheimer's & Dementia*, 2023; DOI: [10.1002/alz.13620](https://doi.org/10.1002/alz.13620)

How Are Sleep and Memory Related?

cottage / swiss / cake
cream / skate / water
show / life / row



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



Clock Reset



Every Morning

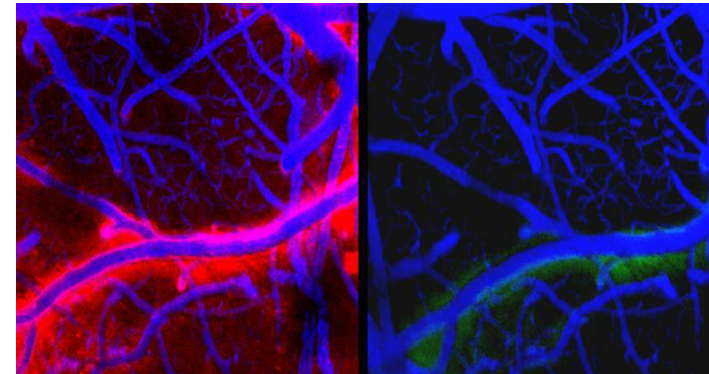
Brain Cells Are Like Factories



When Does
Your Brain
Take Out The
Trash?



Brain Wash



1. Jeffrey J. Iliff, Minghuan Wang, Yonghong Liao, Benjamin A. Plogg, Weiguo Peng, Georg A. Gundersen, Helene Benveniste, G. Edward Vates, Rashid Deane, Steven A. Goldman, Erlend A. Nagelhus, and Maiken Nedergaard. **A Perivascular Pathway Facilitates CSF Flow Through the Brain Parenchyma and the Clearance of Interstitial Solutes, Including Amyloid β .** *Science Translational Medicine*, 2012; DOI: [10.1126/scitranslmed.3003748](https://doi.org/10.1126/scitranslmed.3003748)
2. Erin A. Yamamoto, Jacob H. Bagley, Mathew Geltzer, Olabisi R. Sanusi, Aclan Dogan, Jesse J. Liu, Juan Piantino. **The perivascular space is a conduit for cerebrospinal fluid flow in humans: A proof-of-principle report.** *Proceedings of the National Academy of Sciences*, 2024; 121 (42) DOI: [10.1073/pnas.2407246121](https://doi.org/10.1073/pnas.2407246121)

Over The Counter Sleep Aids

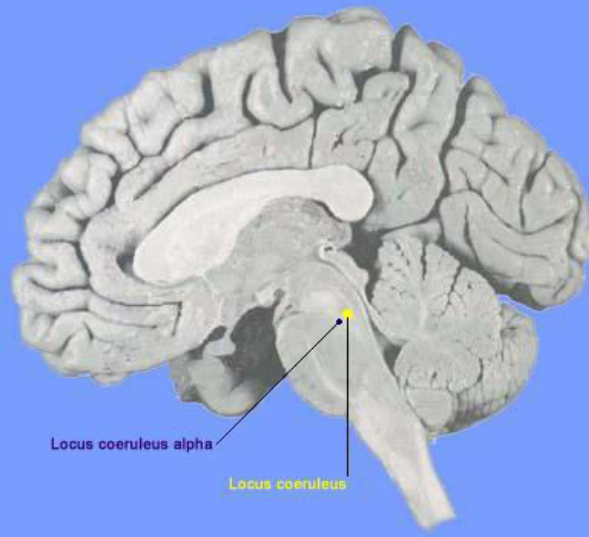


1. Chelsea Herrante, et al. Evaluation of Tricyclic Antidepressant Deprescribing in the Treatment of Diabetic Peripheral Neuropathy within Federally Qualified Health Centers. *Journal of the American Pharmacists Association*, 2024
 2. Shelly L. Gray, Melissa L. Anderson, Sascha Dublin, Joseph T. Hanlon, 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](https://doi.org/10.1001/jamainternmed.2014.7663)

One More Sleep Tip:



Another Way To Clean Your Brain



Mara Mather, Carolyn W. Harley. The Locus Coeruleus: Essential for Maintaining Cognitive Function and the Aging Brain. *Trends in Cognitive Sciences*, February 2016

Exercise Your Brain & Learn New Things

- Hearing
- Something you enjoy!



1. Manuella Lech Cantuaria, Ellen Raben Pedersen, Frans Boch Waldorff, Lene Wermuth, Kjeld Møller Pedersen, Aslak Harbo Poulsen, Ole Raaschou-Nielsen, Mette Sørensen, Jesper Hvass Schmidt. Hearing Loss, Hearing Aid Use, and Risk of Dementia in Older Adults. *JAMA Otolaryngology–Head & Neck Surgery*, 2024; DOI: [10.1001/jamaoto.2023.3509](https://doi.org/10.1001/jamaoto.2023.3509)

Isolated and Loss of Social Contact



Martina Luchetti, Damaris Aschwanden, Amanda A. Sesker, Xianghe Zhu, Pádraic S. O'Súilleabháin, Yannick Stephan, Antonio Terracciano, Angelina R. Sutin. **A meta-analysis of loneliness and risk of dementia using longitudinal data from >600,000 individuals.** *Nature Mental Health*, 2024

Chun Shen, Edmund Rolls, Wei Cheng, Juijiao Kang, Guiying Dong, Chao Xie, Xing-Ming Zhao, Barbara Sahakian, Jianfeng Feng. **Associations of Social Isolation and Loneliness With Later Dementia.** *Neurology*, 2022

Third Way To Clean Your Brain



Anna Flury et al. **A neurodegenerative cellular stress response linked to dark microglia and toxic lipid secretion.** *Neuron*, 2024 DOI: [10.1016/j.neuron.2024.11.018](https://doi.org/10.1016/j.neuron.2024.11.018)

What Do Microglia Do?



Keep Inflammation Low

1. Effectively treat diseases that cause inflammation.
2. Ask your personal doctor about checking inflammation. (CRP markers)
3. What else?



Does Diet Matter?

1. Puja Agarwal, Sue E. Leurgans, Sonali Agrawal, Neelum Aggarwal, Laurel J. Cherian, Bryan D. James, Klodian Dhana, Lisa L. Barnes, David A. Bennett, Julie A. Schneider. *Association of Mediterranean-DASH Intervention for Neurodegenerative Delay and Mediterranean Diets With Alzheimer Disease Pathology*. *Neurology*. 2023.

The Mind Diet

- MIND diet lowered Alzheimer's risk by about 35 percent for people who followed it moderately well.
- Up to 53 percent for those who adhered to it rigorously.

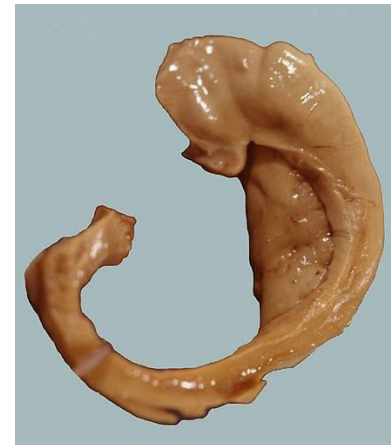
Include These

- **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

Have You
Had This
Happen?



What Does The Hippocampus Do?



What is
Happening to Your
Hippocampus???



Keep
Hippocampus
Healthy and
Make It Grow



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



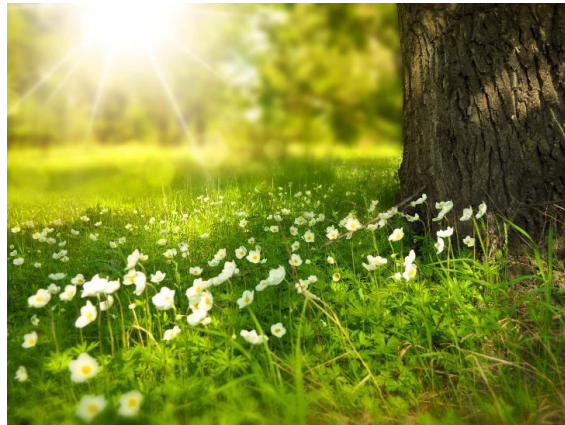
Mindfulness
Is Now a
Medical
Treatment

Is This The
Only Way?



Masha Remskar, Max J. Western, Ben Ainsworth. Mindfulness improves psychological health and supports health behaviour cognitions: Evidence from a pragmatic RCT of a digital mindfulness-based intervention. *British Journal of Health Psychology*, 2024

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: [10.1089/eco.2014.002](https://doi.org/10.1089/eco.2014.002)

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 **30 years**.
- Reduced their risk for cognitive decline and dementia by a **staggering 60%.....**

Peter Elwood and a team from the Cochrane Institute of Primary Care and Public Health at Cardiff University in the U.K.

Junyeon Won, Kristy A. Nielson, J. Carson Smith. *Large-Scale Network Connectivity and Cognitive Function Changes After Exercise Training in Older Adults with Intact Cognition and Mild Cognitive Impairment*. *Journal of Alzheimer's Disease Reports*, 2023

Approximately 30 Minutes Of Walking A Day
Doesn't Need To Be Done All At The Same Time

Exercise Is Medicine For The Brain

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



Takashi Tanami, Heidi Rossetti, Binu P. Thomas, Thomas Harris, Benjamin Y. Tseng, Marcel Turner, Owen Wang, Zohra German, Kristin Martin-Cook, Ann M. Storer, Kyle B. Womack, Dana Mathews, Diana R. Kewen, Linda Hyman, Ramon Diaz-Arnesta, Hanchang Lu, C. Munro Cullum, Rong Zheng. *Exercise Training in Amnesic Mild Cognitive Impairment: A One-Year Randomized Controlled Trial*. *Journal of Alzheimer's Disease*, 2019;1 DOI: [10.3233/JAD-181175](https://doi.org/10.3233/JAD-181175)

Cyrus A. Raj, Somayeh Meykani, Sam Hashemi, Saurabh Garg, Nasrin Akbari, Gouda Ahmed, Yusef Gabriel Chodakiewitz, Thanh Duc Nguyen, Kellyann Nodis, David A. Merrill, Rajpaul Attarwalla. *Exercise-Related Physical Activity Relates to Brain Volumes in 10,125 Individuals*. *Journal of Alzheimer's Disease*, 2023

How Much Exercise?



What About Taking The Stairs?



*The abstract 'Evaluating the cardiovascular benefits of stair climbing: a systematic review and meta-analysis' will be presented during the session 'Optimal exercise modalities for primary and secondary prevention' which takes place on 26 April 2024 at Moderated ePosters 1.
Jason Steffener, Christian Hallock, Deirdre O'Shea, Colamenna Rastigli, Louis Bherer, Yaakov Stern. Differences between chronological and brain age are related to education and self-reported physical activity. *Neurobiology of Aging*. 2016; 40: 138 DOI: [10.1016/j.neurobiaging.2016.01.014](https://doi.org/10.1016/j.neurobiaging.2016.01.014)

What About Taking The Stairs?



We Have This Data

1260 people from across Finland, aged 60-77 years and at risk for dementia.

What was the intervention?

And Weill Cornell Study

FINGER Intervention Results

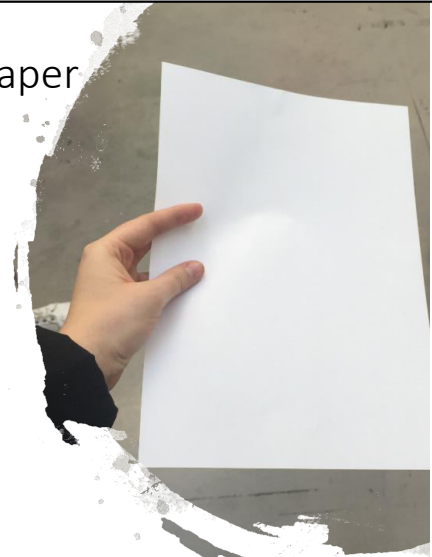
- Overall test scores in the intervention group were **25% higher** than in the control group.
- For executive functioning scores were **83% higher** in the intervention group
- Processing speed was **150% higher**.
- And Weill Cornell Study just published.

Isaacson et al. *Alzheimers Dement*. 2019 Dec;15(12):1588-1602. doi: 10.1016/j.jalz.2019.08.198. Epub 2019 Oct 31.
Individualized clinical management of patients at risk for Alzheimer's dementia

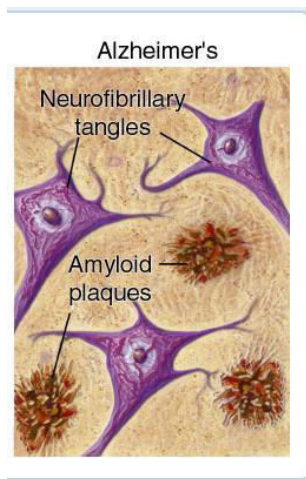
1.Tila Ngandu, et al. A 2 year multidomain intervention of diet, exercise, cognitive training, and vascular risk monitoring versus control to prevent cognitive decline in at-risk elderly people (FINGER): a randomised controlled trial. *The Lancet*. 2015; DOI: [10.1016/S0140-6736\(15\)90461-5](https://doi.org/10.1016/S0140-6736(15)90461-5)

The Important Piece of Paper

- For your personal doctor
- **Inflammation:** (CRP)
- **Heart:** (Homocysteine, Cholesterol and Blood Pressure)
- **Diabetes:** hemoglobin a1c

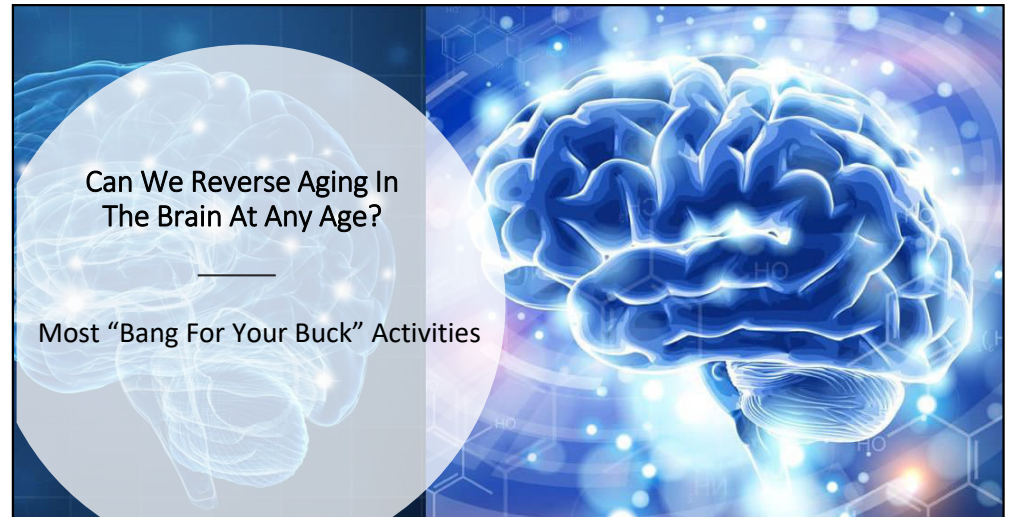


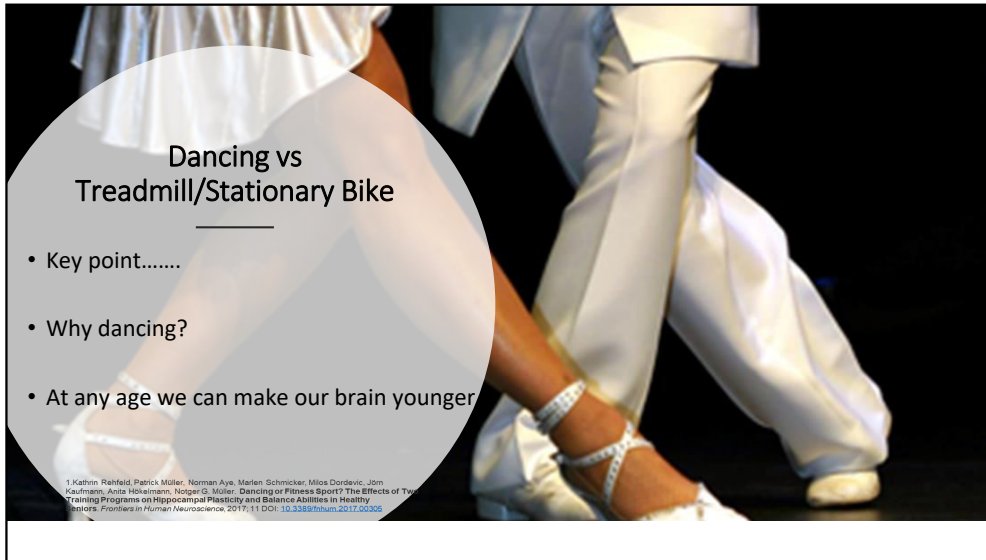
When Does Trash Form In The Brain?



Can We Reverse Aging In The Brain At Any Age?

Most "Bang For Your Buck" Activities





Dancing vs Treadmill/Stationary Bike

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

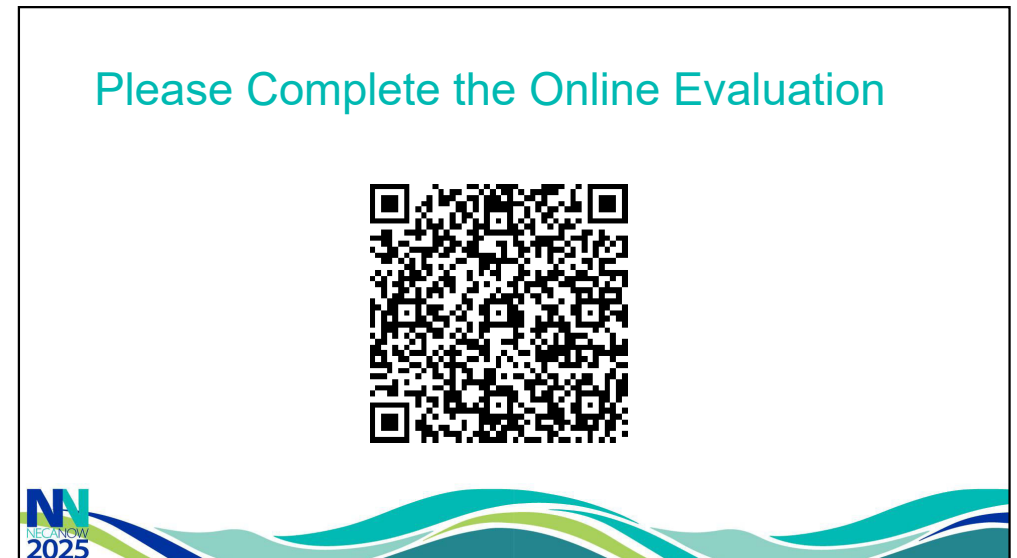
¹ Kathrin Rahfeld, Patrick Müller, Norman Aya, Marlen Schmitter, Milos Dordevic, Jörn Kaufmann, Anja Hölzlmann, Notger G. Müller. Dancing or Fitness Sport? The Effects of Two Training Programs on Hippocampal Plasticity and Balance Abilities in Healthy Seniors. *Frontiers in Human Neuroscience* 2017;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



6 Major Tips

- Sleep
- Learn New Things and Be Socially Engaged
- Manage Stress/Mindfulness
- Moderate Exercise/Walking
- Underlying Conditions
- Eat Real Food

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Please Complete the Online Evaluation

