



Age-Proof Your Brain:

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

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This Week's Crossword Puzzle

ACROSS

1. English language	31. Dried chicken	61. Absorbent	91. Dried fruit	121. Mashed	151. Thick liquid
2. British English	32. Frying oil	62. Spawls	92. Spawls	122. Mashed	152. Thick liquid
3. Spawls	33. Spawls	63. Spawls	93. Spawls	123. Mashed	153. Thick liquid
4. Spawls	34. Spawls	64. Spawls	94. Spawls	124. Mashed	154. Thick liquid
5. Spawls	35. Spawls	65. Spawls	95. Spawls	125. Mashed	155. Thick liquid
6. Spawls	36. Spawls	66. Spawls	96. Spawls	126. Mashed	156. Thick liquid
7. Spawls	37. Spawls	67. Spawls	97. Spawls	127. Mashed	157. Thick liquid
8. Spawls	38. Spawls	68. Spawls	98. Spawls	128. Mashed	158. Thick liquid
9. Spawls	39. Spawls	69. Spawls	99. Spawls	129. Mashed	159. Thick liquid
10. Spawls	40. Spawls	70. Spawls	100. Spawls	130. Mashed	160. Thick liquid

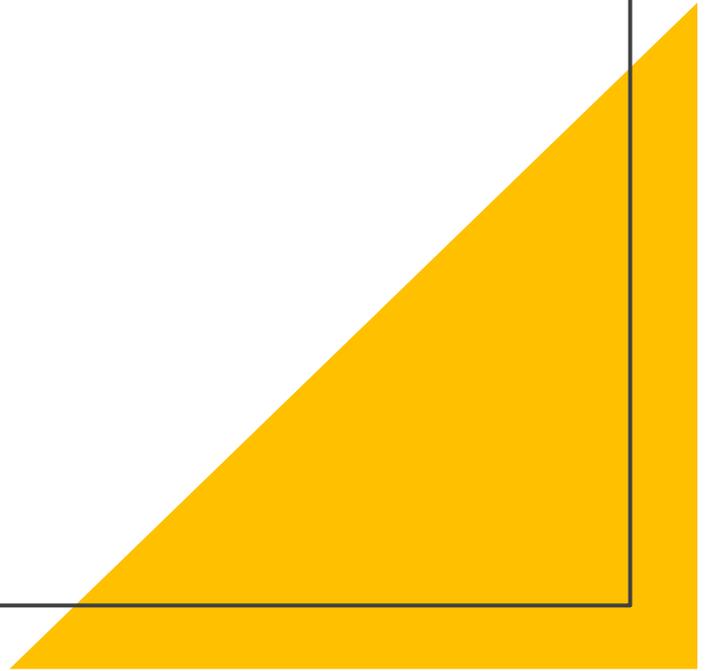
DOWN

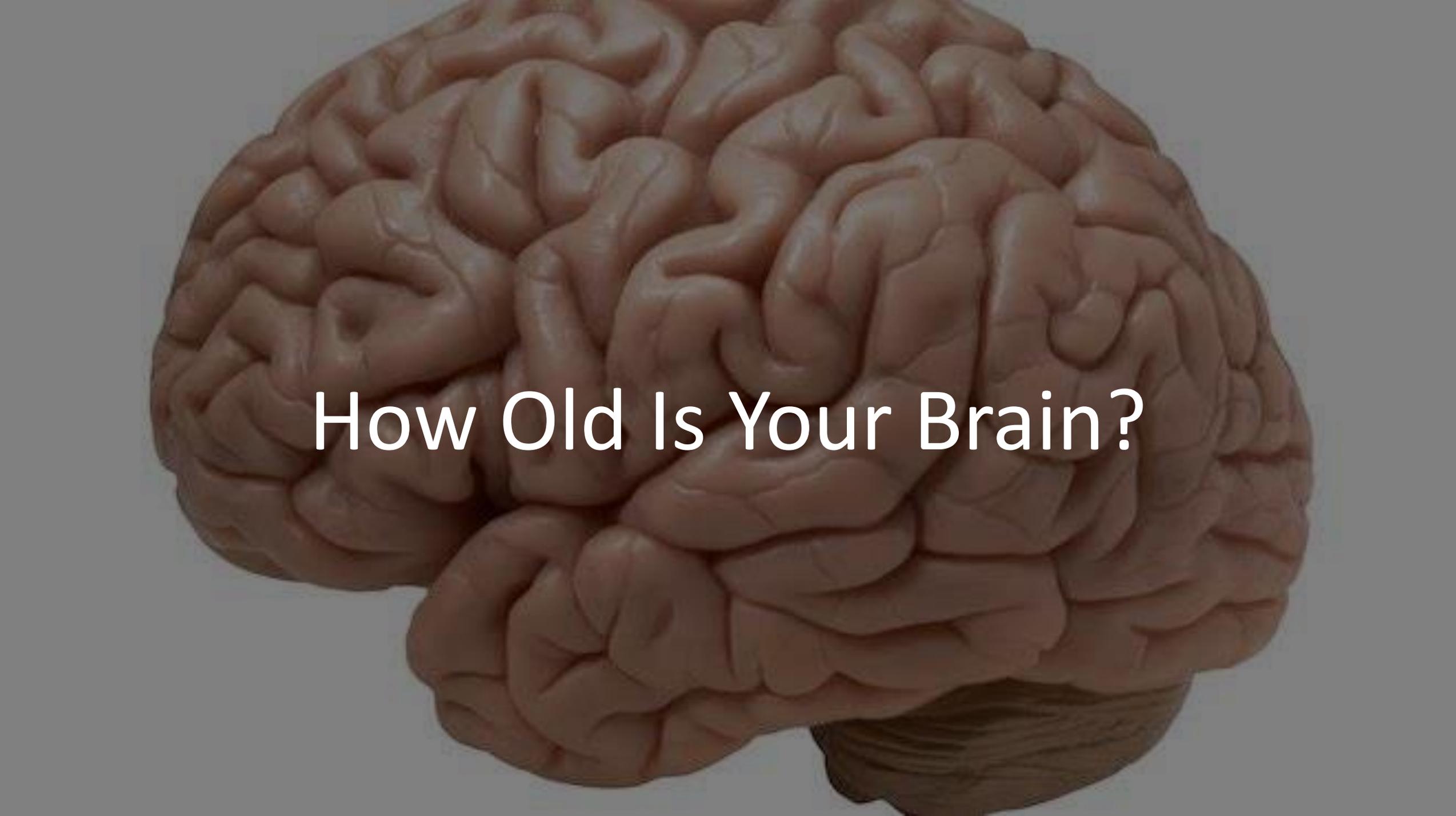
1. Down	31. Down	61. Down	91. Down	121. Down	151. Down
2. Down	32. Down	62. Down	92. Down	122. Down	152. Down
3. Down	33. Down	63. Down	93. Down	123. Down	153. Down
4. Down	34. Down	64. Down	94. Down	124. Down	154. Down
5. Down	35. Down	65. Down	95. Down	125. Down	155. Down
6. Down	36. Down	66. Down	96. Down	126. Down	156. Down
7. Down	37. Down	67. Down	97. Down	127. Down	157. Down
8. Down	38. Down	68. Down	98. Down	128. Down	158. Down
9. Down	39. Down	69. Down	99. Down	129. Down	159. Down
10. Down	40. Down	70. Down	100. Down	130. Down	160. Down

6				2				9
	1		3		7			5
		3					1	
	9							2
2				8	7	5		
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	7				8			9
		1			4		8	
				2	5	9		

Sudoku? Crossword Puzzles?

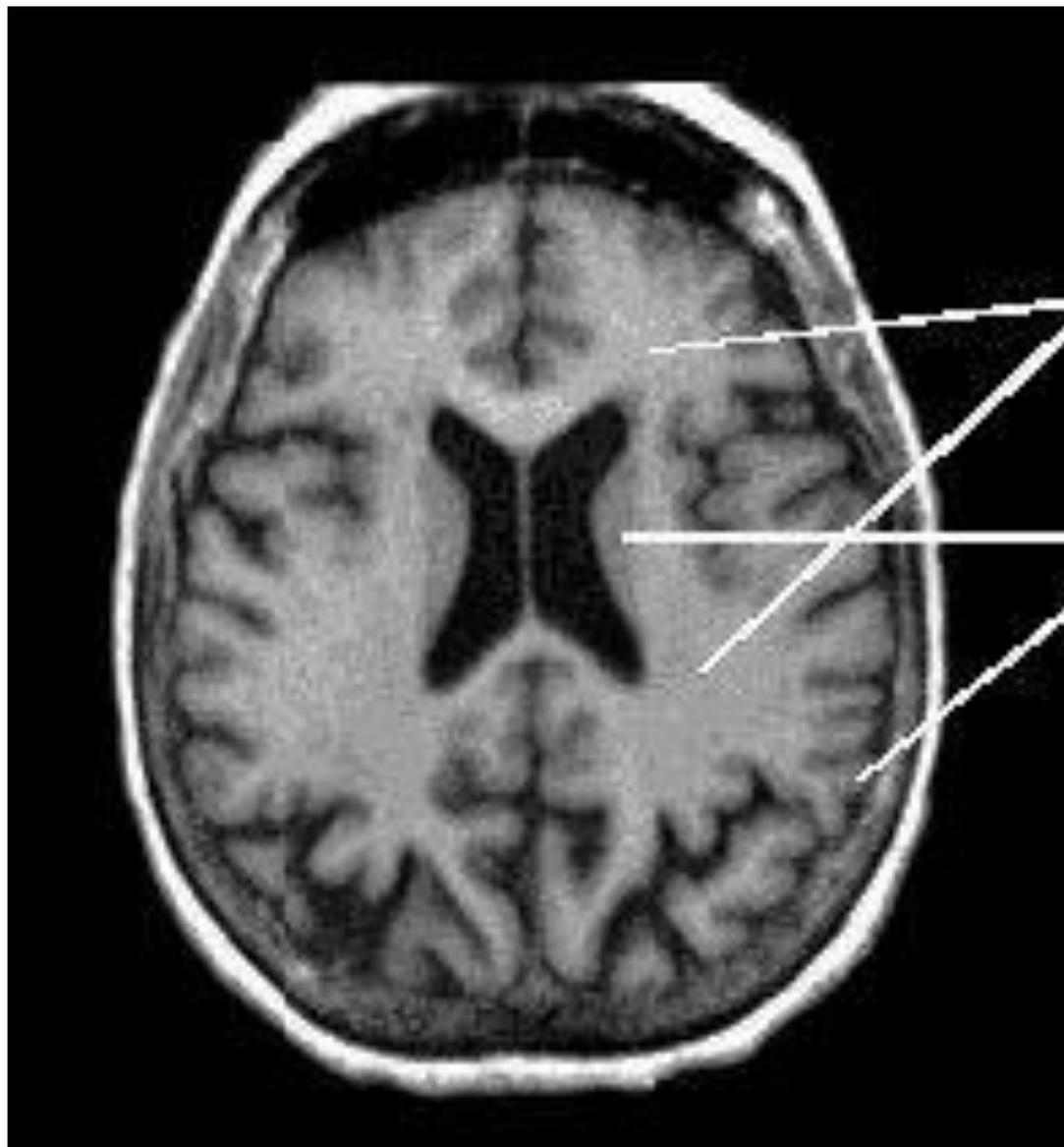
Surprising Things
That Really Make A
Difference?





How Old Is Your Brain?

Brain Age

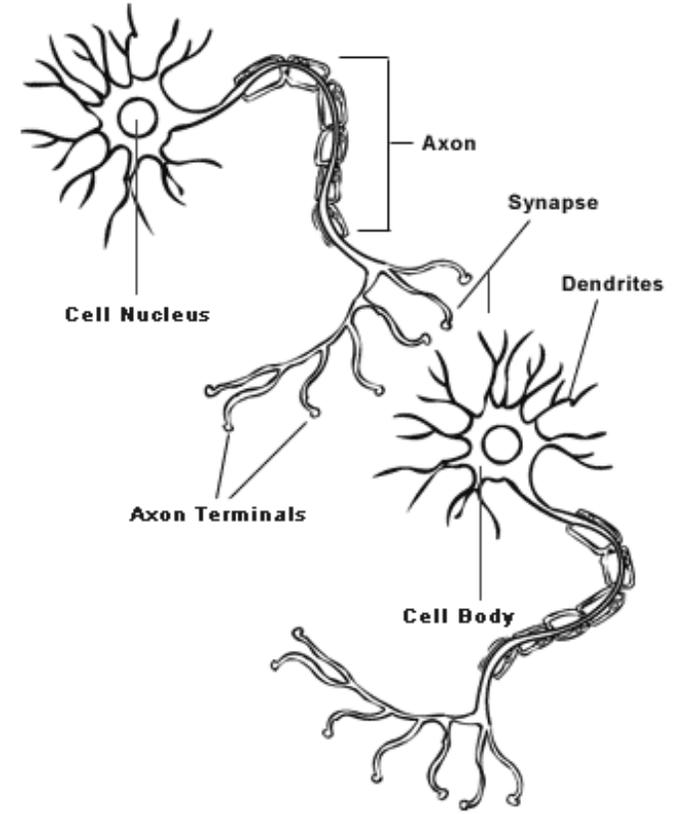
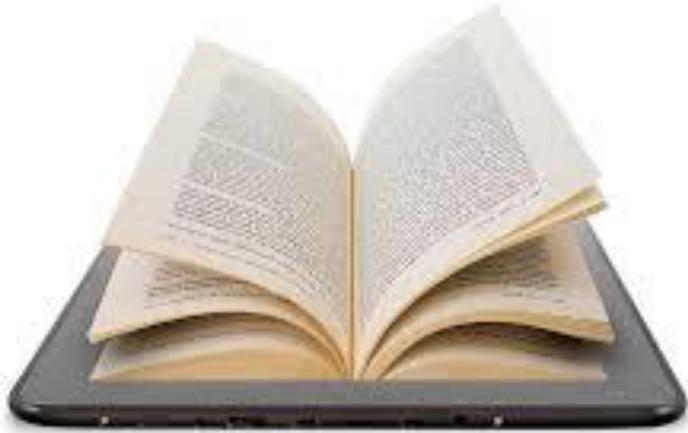


H Cole, S J Ritchie, M E Bastin, M C Valdés Hernández, S Muñoz Maniega, N Royle, J Corley, A Pattie, S E Harris, Q Zhang, N R Wray, P Redmond, R E Marioni, J M Starr, S R Cox, J M Wardlaw, D J Sharp, I J Deary. **Brain age predicts mortality.** *Molecular Psychiatry*, 2017;

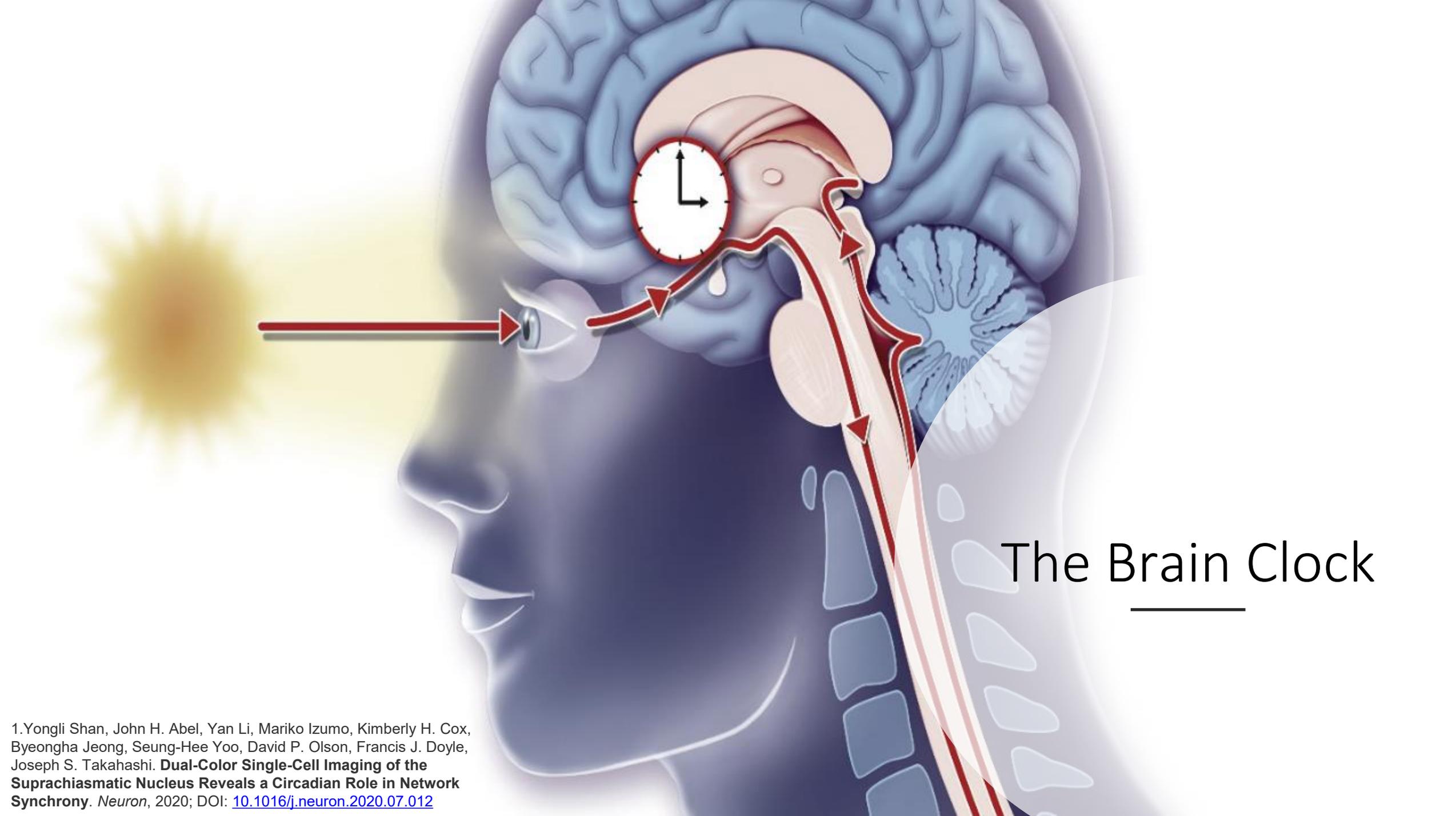
Claudia L. Satizabal, Alexa S. Beiser, Evan Fletcher, Sudha Seshadri, Charles DeCarli. **A novel neuroimaging signature for ADRD risk stratification in the community.** *Alzheimer's & Dementia*, 2023; DOI: [10.1002/alz.13600](https://doi.org/10.1002/alz.13600)

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.....



The Brain Clock

1. Yongli Shan, John H. Abel, Yan Li, Mariko Izumo, Kimberly H. Cox, Byeongha Jeong, Seung-Hee Yoo, David P. Olson, Francis J. Doyle, Joseph S. Takahashi. **Dual-Color Single-Cell Imaging of the Suprachiasmatic Nucleus Reveals a Circadian Role in Network Synchrony.** *Neuron*, 2020; DOI: [10.1016/j.neuron.2020.07.012](https://doi.org/10.1016/j.neuron.2020.07.012)

Clock Reset

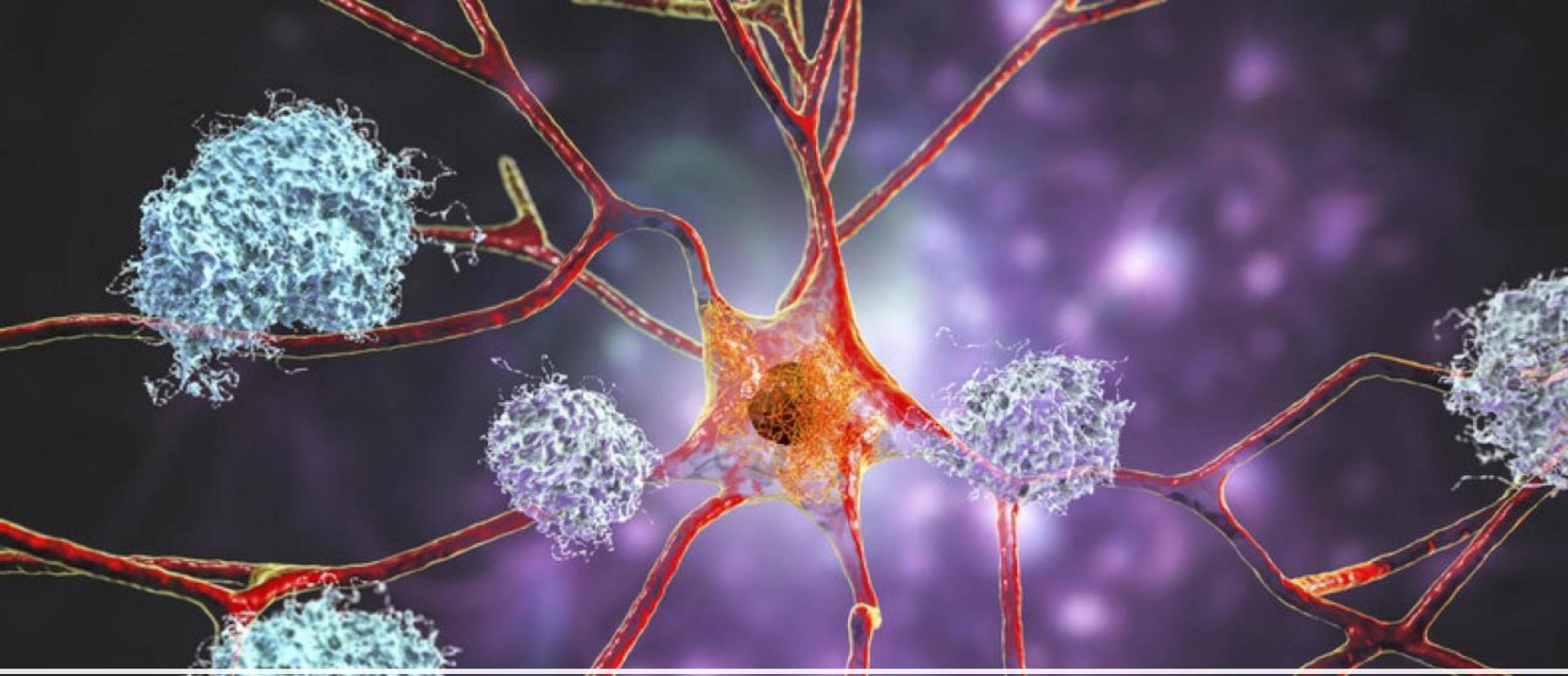


A serene landscape photograph capturing a sunrise over a beach. The sun is low on the horizon, casting a bright, golden glow across the sky and reflecting on the wet sand. A lone figure is walking along the shoreline, their silhouette dark against the light. In the background, a large, dark mountain range stretches across the horizon. The sky is filled with soft, wispy clouds, some catching the light of the rising sun. The overall mood is peaceful and contemplative.

Every Morning

Brain Cells Are Like Factories



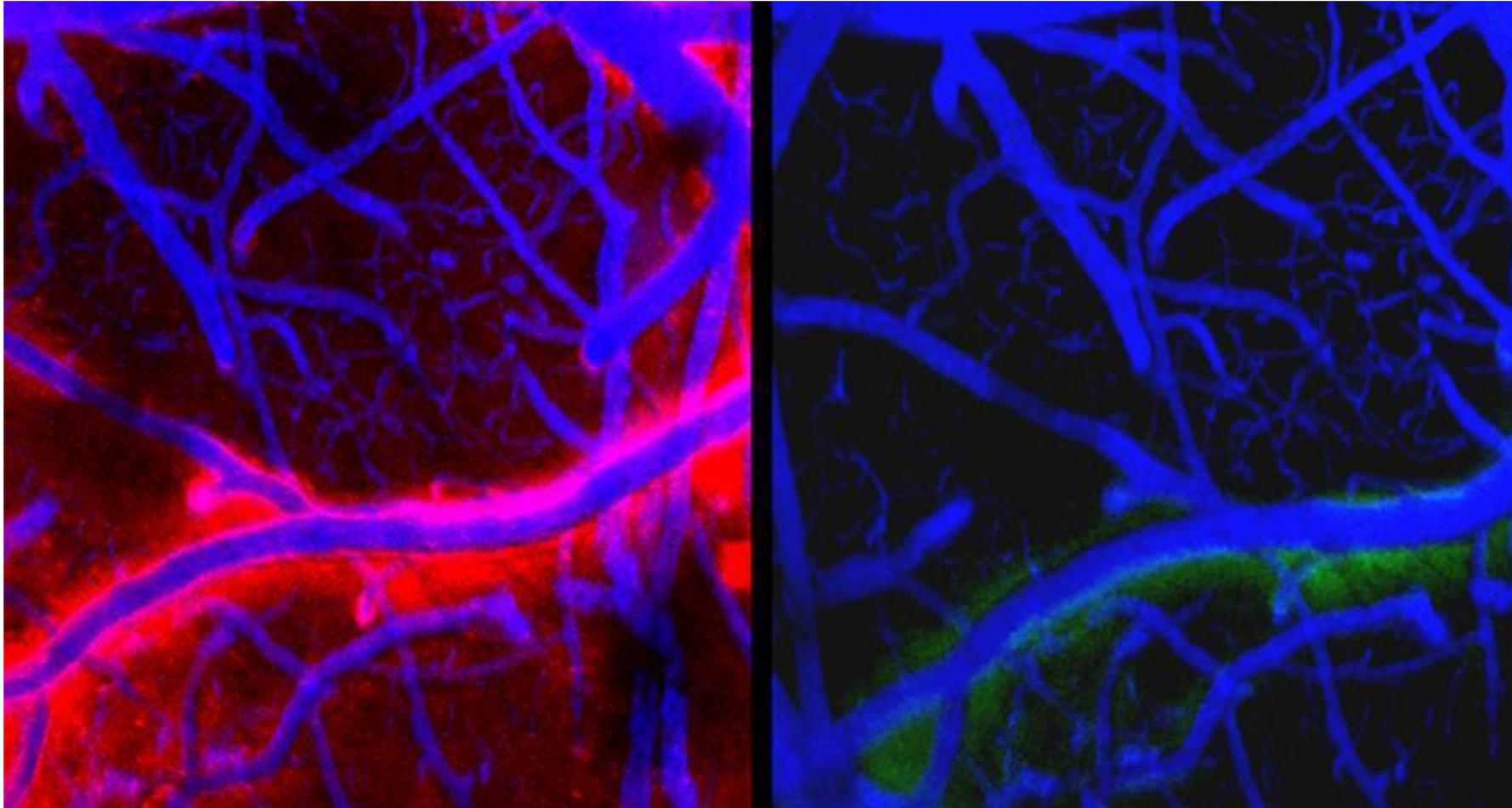


What Can Trash Interfere With?

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 Paravascular 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 Geltzeiler, 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 Herrarte, 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;

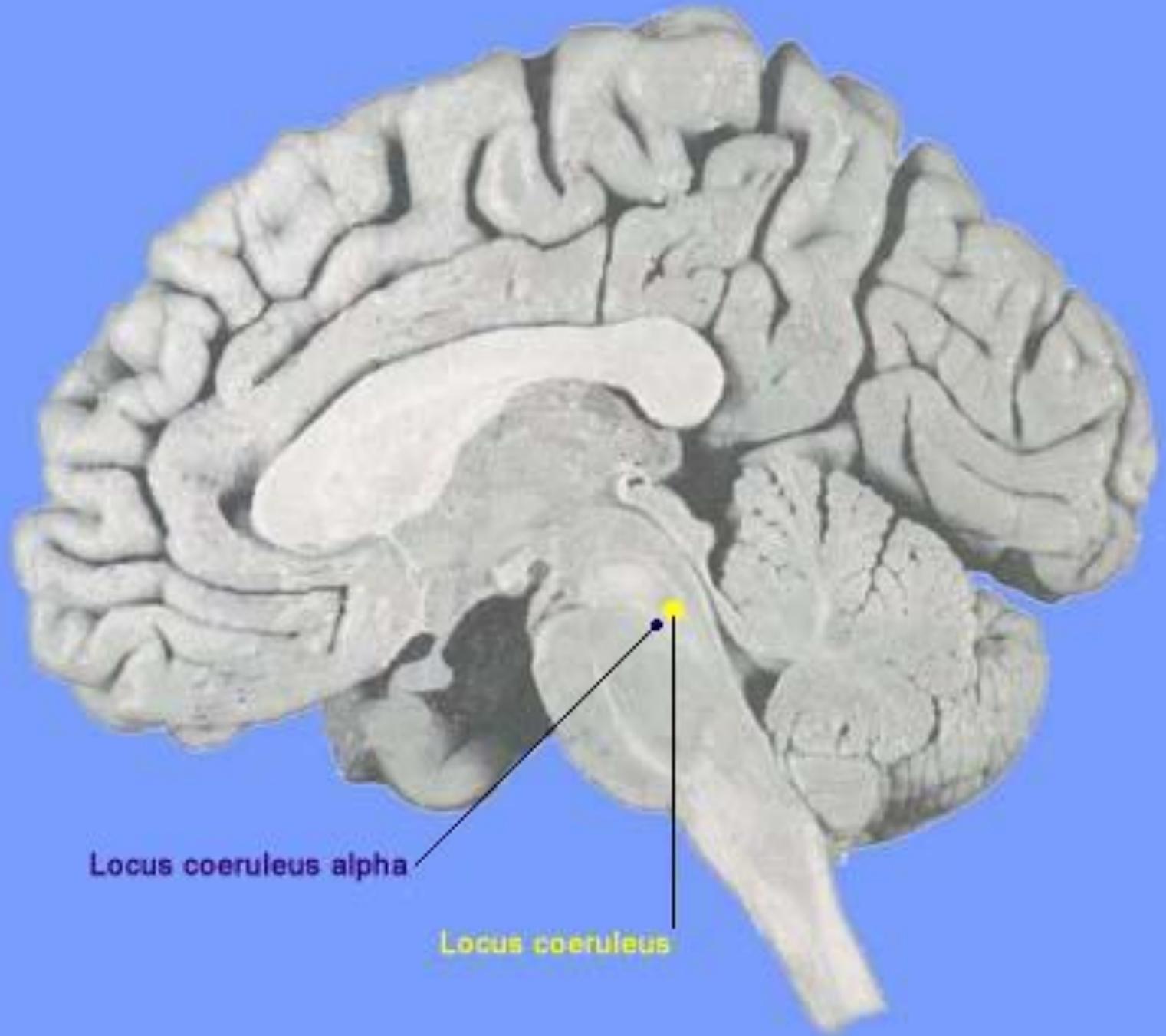
DOI: [10.1001/jamainternmed.2014.7663](https://doi.org/10.1001/jamainternmed.2014.7663)



One More
Sleep Tip:



Another Way To Clean Your Brain



Exercise Your Brain & Learn New Things



- Hearing
- Something you enjoy!



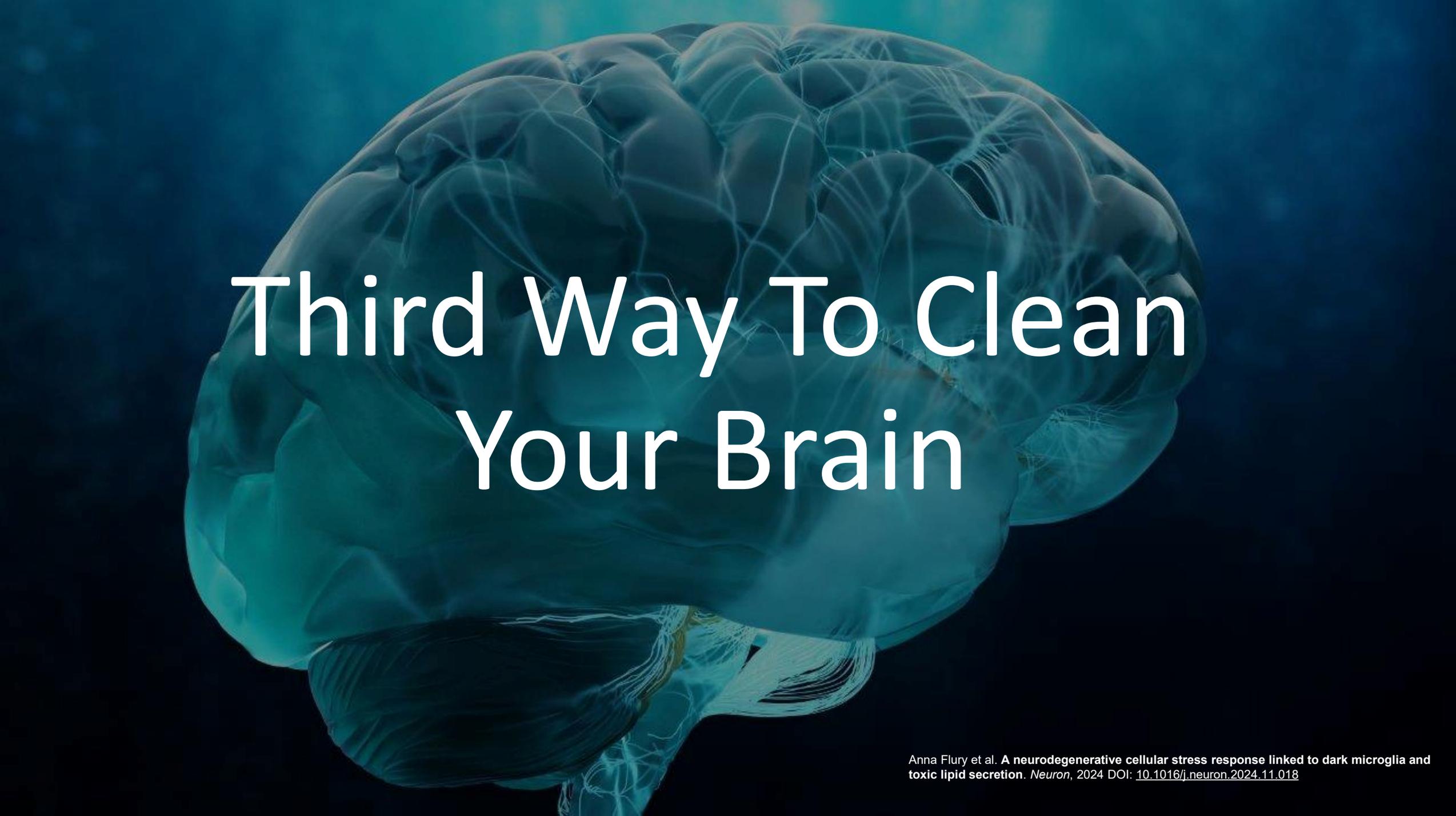
1. Manuella Lech Cantuaria, Ellen Raben Pedersen, Frans Boch Waldorff, Lene Wermuth, Kjeld Møller Pedersen, Aslak Harbo Poulsen, Ole Raaschou-Nielsen, Mette Sørensen, Jesper Hvass Schmidt. **Hearing Loss, Hearing Aid Use, and Risk of Dementia in Older Adults.** *JAMA Otolaryngology–Head & Neck Surgery*, 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, Páraic 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, Jujiao 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

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, Sonal 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?



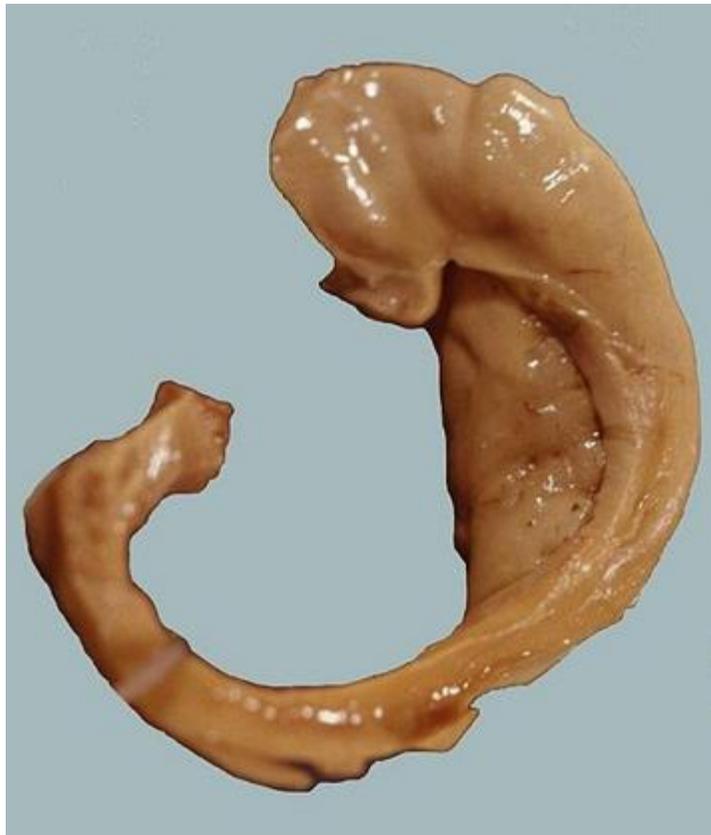
What is
Happening to Your
Hippocampus???



Keep
Hippocampus
Healthy and
Make It Grow



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



Mindfulness Is Now a Medical Treatment

Is This The Only Way?



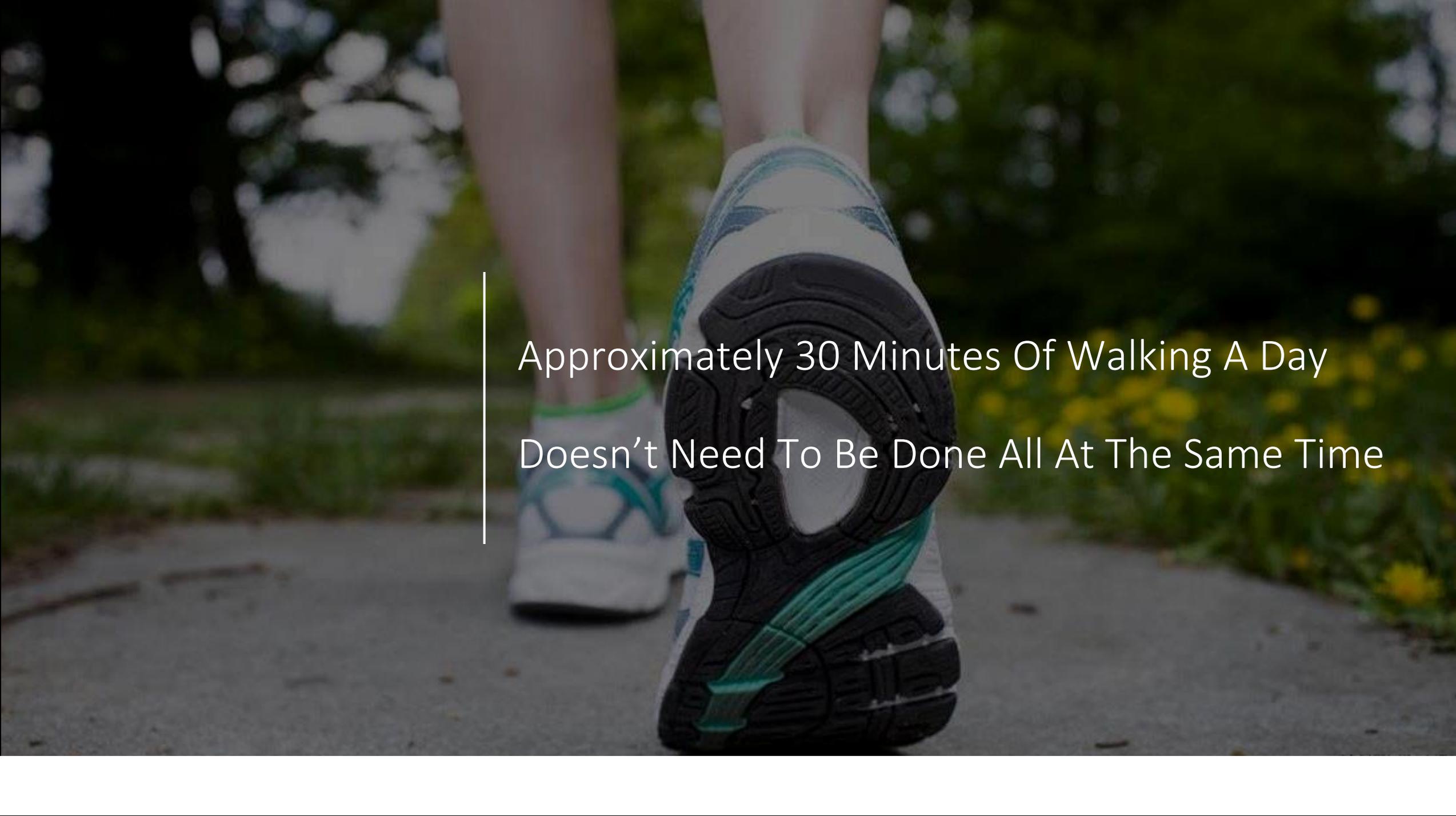
Nature: A Couple Minutes of Green Time:



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%.....

A close-up, low-angle shot of a person's legs and feet as they walk on a paved path. The person is wearing white sneakers with teal accents. The background is a blurred outdoor setting with green foliage and yellow flowers. A vertical white line is positioned to the left of the text.

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 Tarumi, Heidi Rossetti, Binu P. Thomas, Thomas Harris, Benjamin Y. Tseng, Marcel Turner, Ciwen Wang, Zohre German, Kristin Martin-Cook, Ann M. Stowe, Kyle B. Womack, Dana Mathews, Diana R. Kerwin, Linda Hynan, Ramon Diaz-Arrastia, Hanzhang Lu, C. Munro Cullum, Rong Zhang. **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. Raji, Somayeh Meysami, Sam Hashemi, Saurabh Garg, Nasrin Akbari, Gouda Ahmed, Yosef Gavriel Chodakiewitz, Thanh Duc Nguyen, Kellyann Niotis, David A. Merrill, Rajpaul Attariwala. **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?



¹The 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 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; 40: 138 DOI: [10.1016/j.neurobiolaging.2016.01.014](https://doi.org/10.1016/j.neurobiolaging.2016.01.014)

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.

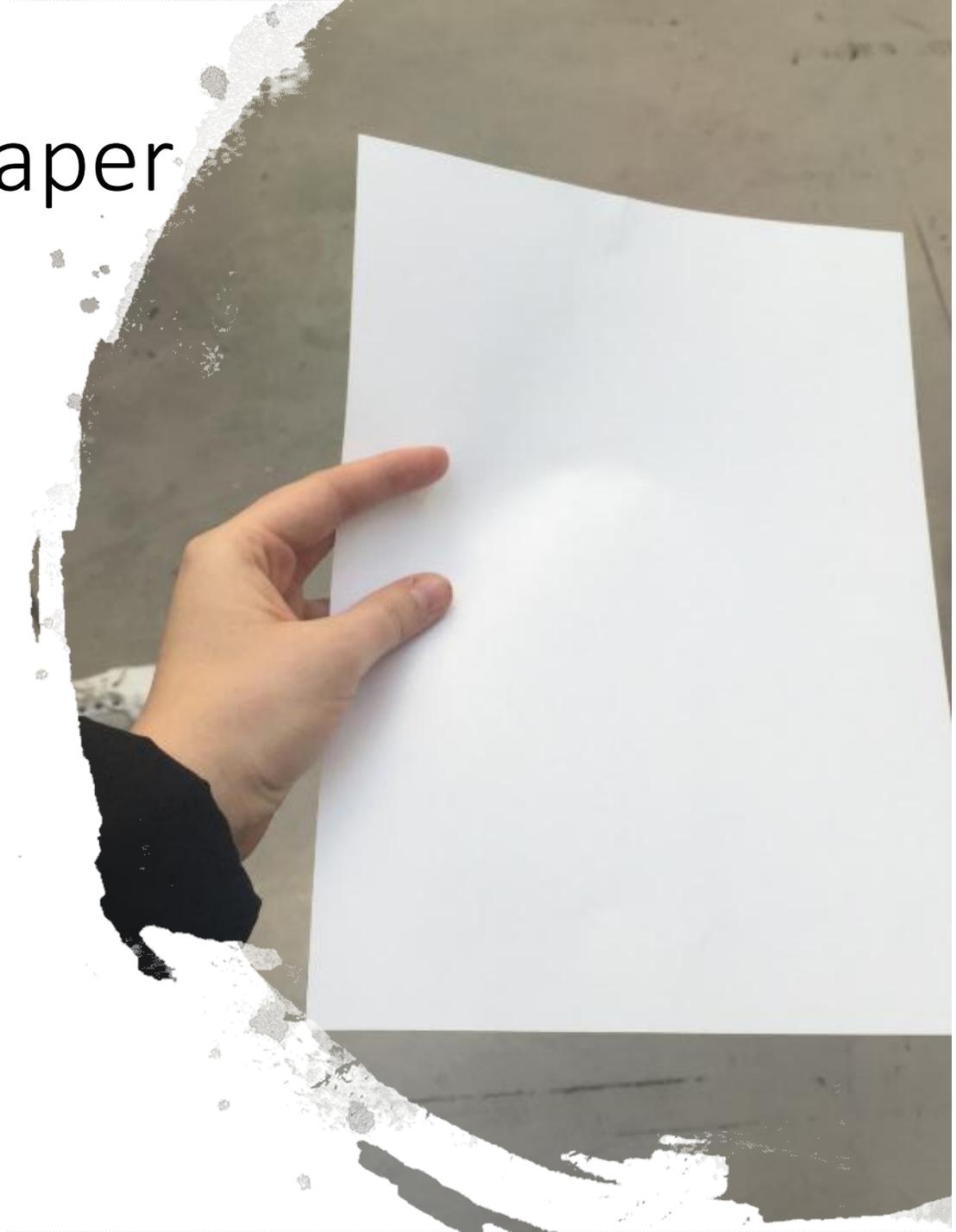
[Isaacson et al. *Alzheimers Dement*. 2019 Dec;15\(12\):1588-1602. doi: 10.1016/j.jalz.2019.08.198. Epub 2019 Oct 31.](#)

Individualized clinical management of patients at risk for Alzheimer's dementia

1. 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: [10.1016/S0140-6736\(15\)60461-5](#)

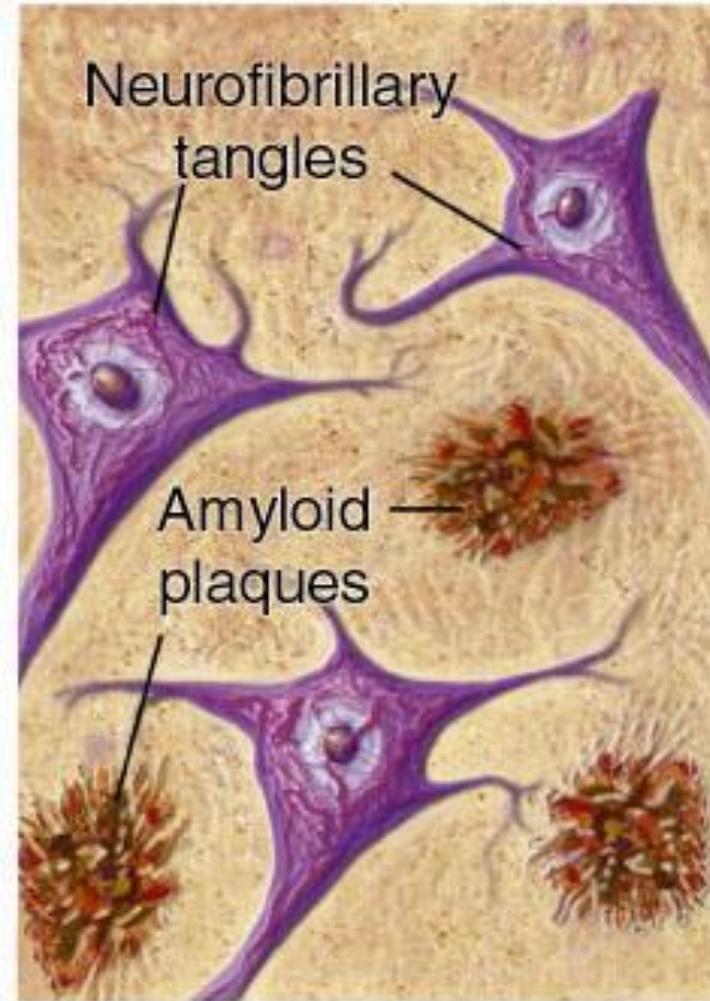
The Important Piece of Paper

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



When Does Trash Form In The Brain?

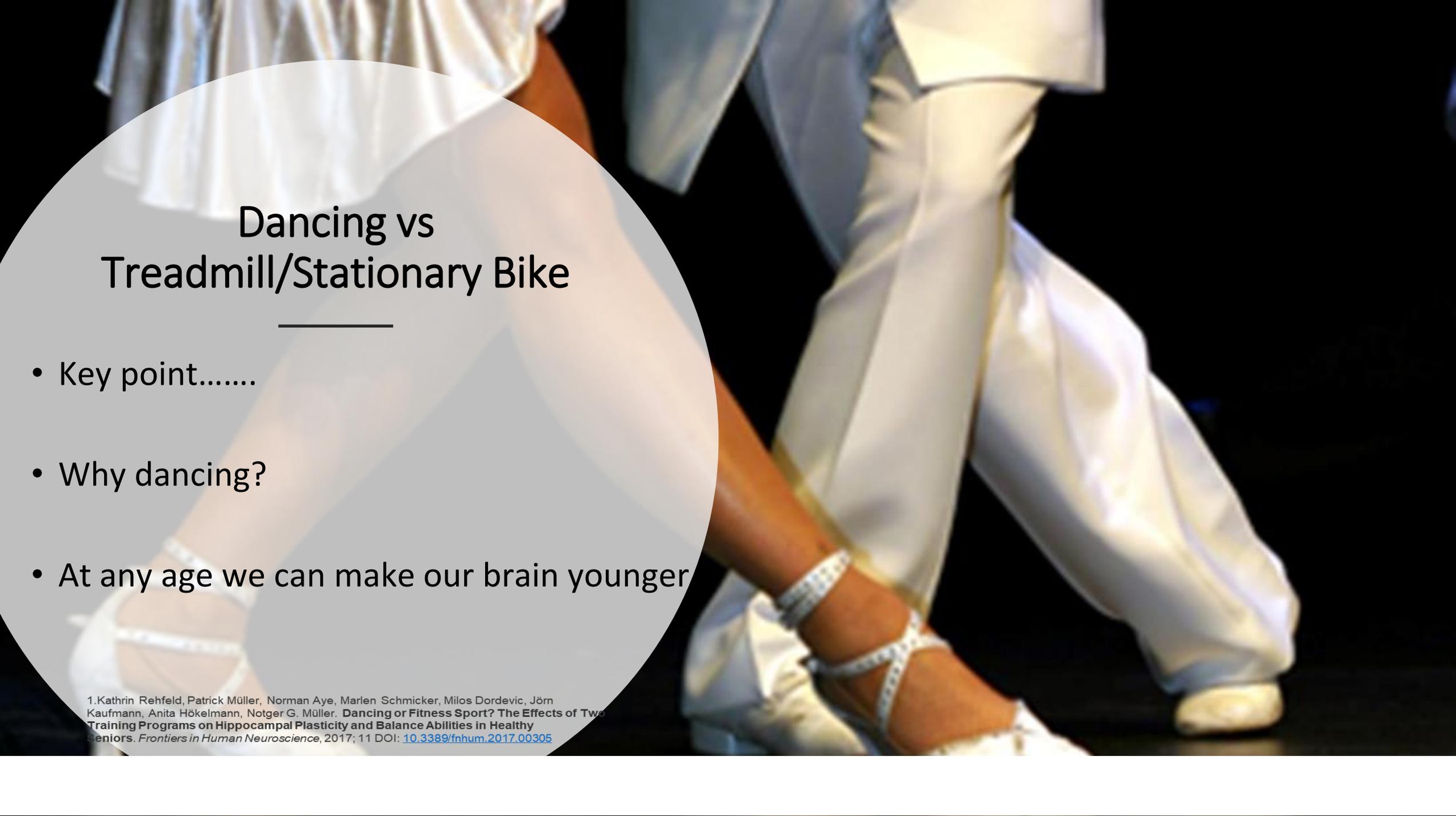
Alzheimer's





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



The Best Things You Can Do For Your Brain

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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