



Age-Proof Your Brain 2.0

www.drmarcmilstein.com



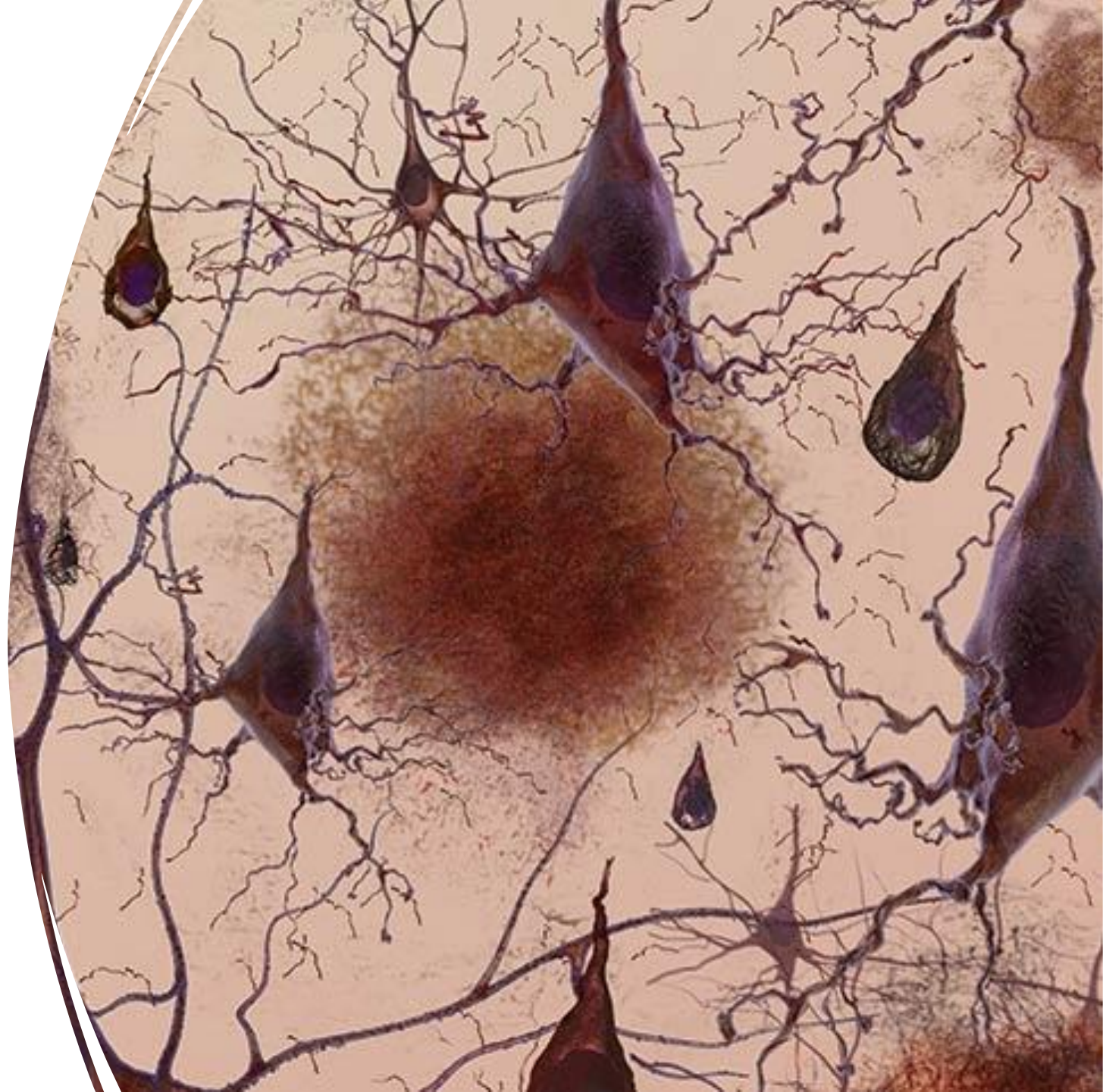
What Do
You See?

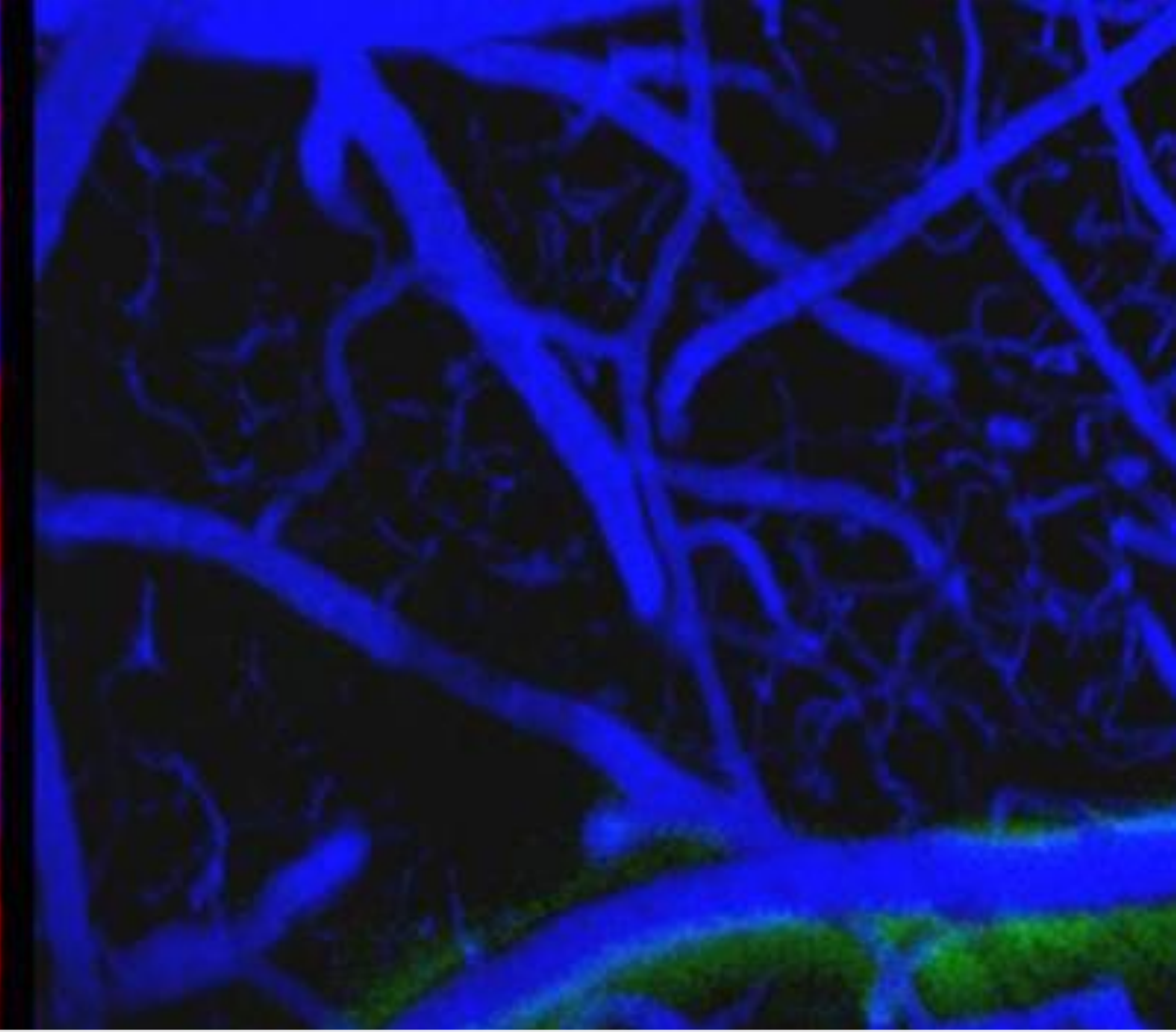
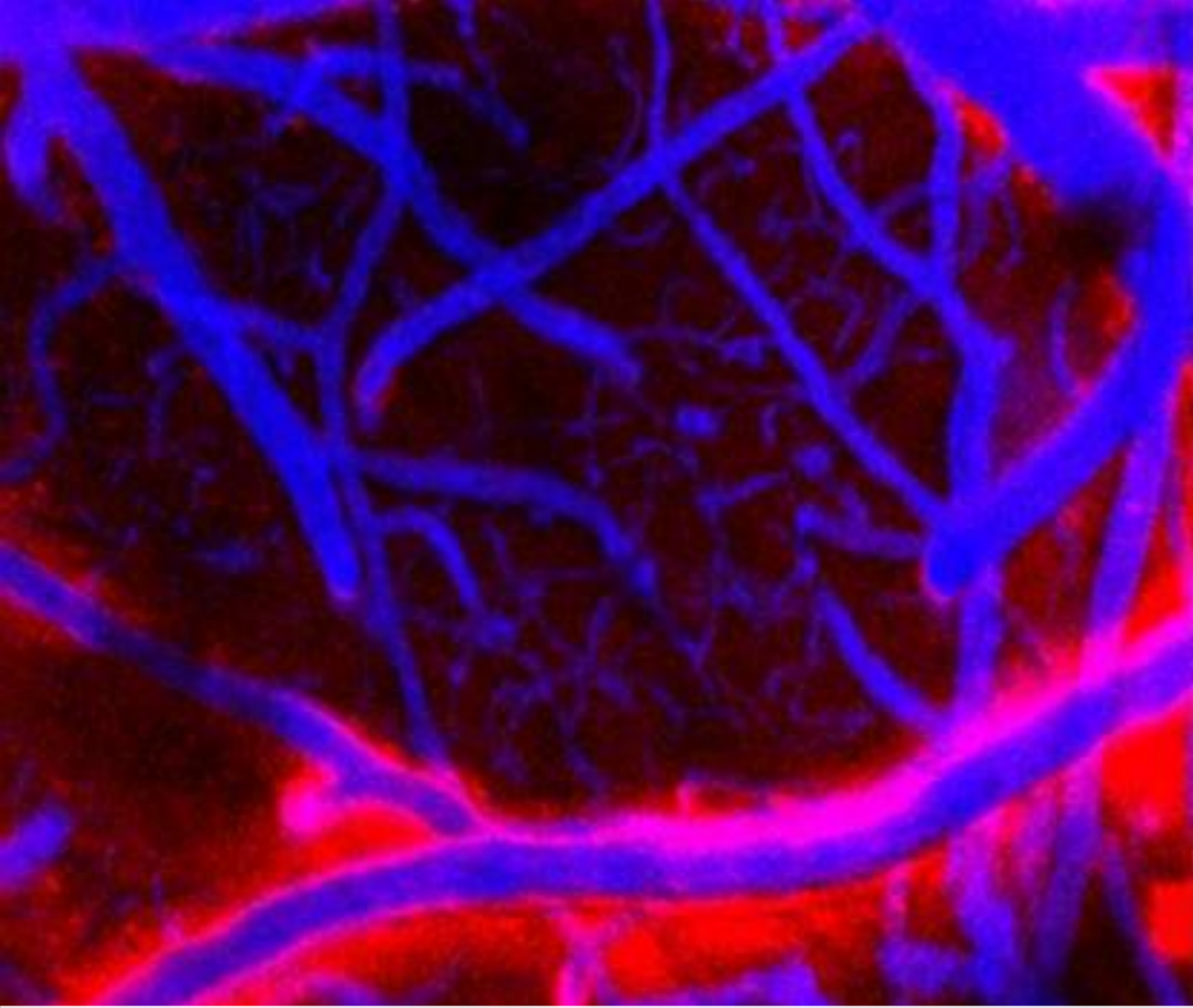
New Study: 16 Factors: How Many In Our Control?

- Hendriks S, Ranson JM, Peetoom K, et al. Risk Factors for Young-Onset Dementia in the UK Biobank. *JAMA Neurol.* 2024;81(2):134–142. doi:10.1001/jamaneurol.2023.4929

A Youthful Brain Looks....

How much waste does a
three-pound brain
make.....





Brain Wash While You Sleep

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)



Sleep Can Impact Lifespan

- **About 8% of deaths from any cause could be attributed to poor sleep patterns.**
- **We talked about Sleep Apnea**

The Sleep Cycle Is:

Light Sleep

Deep Sleep

REM Sleep (Dream)

Repeat

Entire Cycle takes about 90 minutes



You First Enter Light Sleep

Lasts About 20 to 30 Minutes





Is It Easier To Fall Asleep In A Cooler Room Or A Warmer Room?

What else?





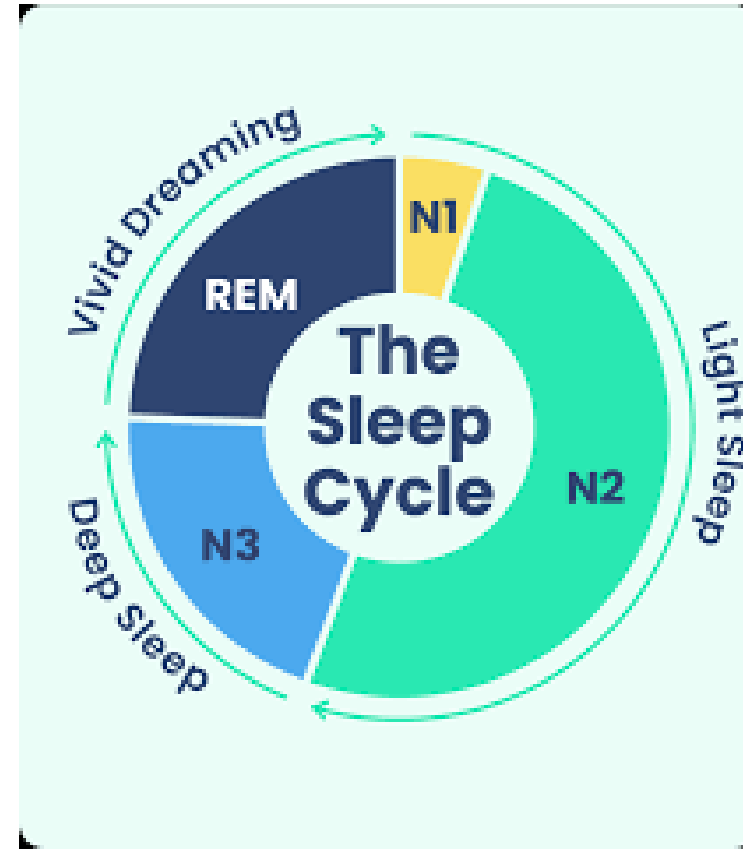
90 Minutes Before Bed?





About 90 Minutes Before Bed

Deep Sleep



Have You Ever Been Woken Up And You Don't Know Where You Are?



What Is Happening In Deep Sleep?

- Immune System Repair
- Blood Supply to Muscles Increases
- Tissue Growth and Repair Occurs
- Energy is Restored
- Hormones are Released, such as: Growth hormone

Deep Sleep
Is
Beauty
Sleep





REM Sleep
and Dreaming

REM Signaling:

Turn Brain On,
Turn Body Off

What Happens if Not
Paralyzed When
Dreaming?

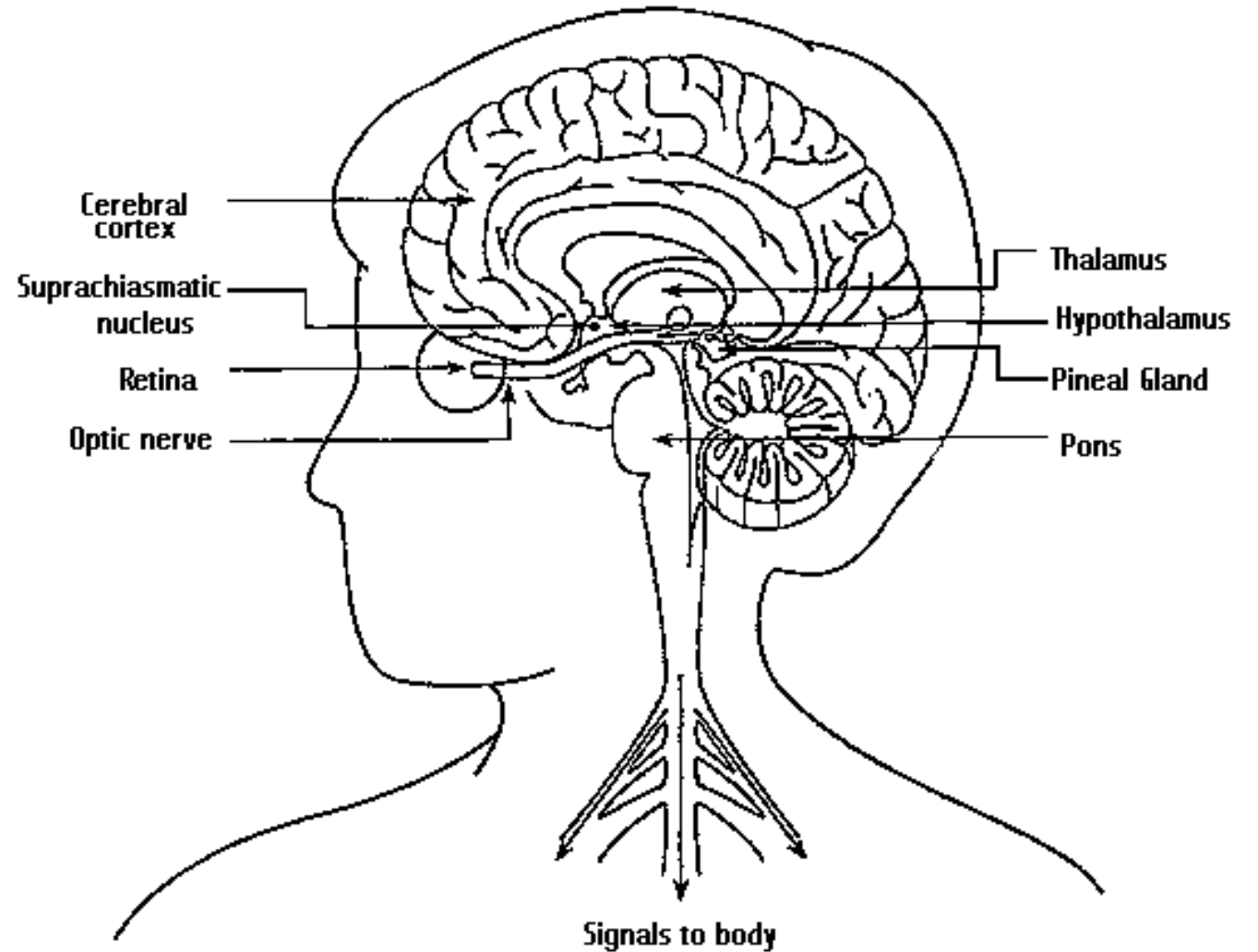


Figure 2

Act Out Dreams:

REM Sleep
Behavior Disorder



You Return to
Light Sleep
Throughout The Night

What Does this Mean?



Sleep Tip:
Sleep Anxiety
Over
A Normal Process

The Sleep Cycle Is

Entire Cycle takes
about 90 minutes

Light Sleep

Deep Sleep

REM Sleep (Dream)

Repeat



**60% Of Sleep Problems
Are Stress Related**


SLEEP TIP
Your Brain Is
A
Pattern
Machine



A photograph of a bedroom scene. In the foreground, a wooden nightstand holds a silver alarm clock, a small green dish with a candle, and a stack of books. A white lamp with a conical shade sits on the right side of the nightstand. In the background, a bed with white and yellow pillows is visible. The scene is softly lit, suggesting a calm evening.

Practical Before Bed Tips

- Light stretching
- Boring reading
- Soft relaxing music
- **Breathing exercises**
- Mindfulness exercises
- Sleep diary

A person wearing a purple long-sleeved shirt, blue jeans, and brown boots is using a power washer to clean a black metal chair on a wooden deck. The power washer is yellow and black, and the person is holding the spray wand with both hands. Water is spraying from the wand onto the chair. The background shows a wooden fence and green foliage.

T h e P o w e r W a s h
F o r Y o u r B r a i n

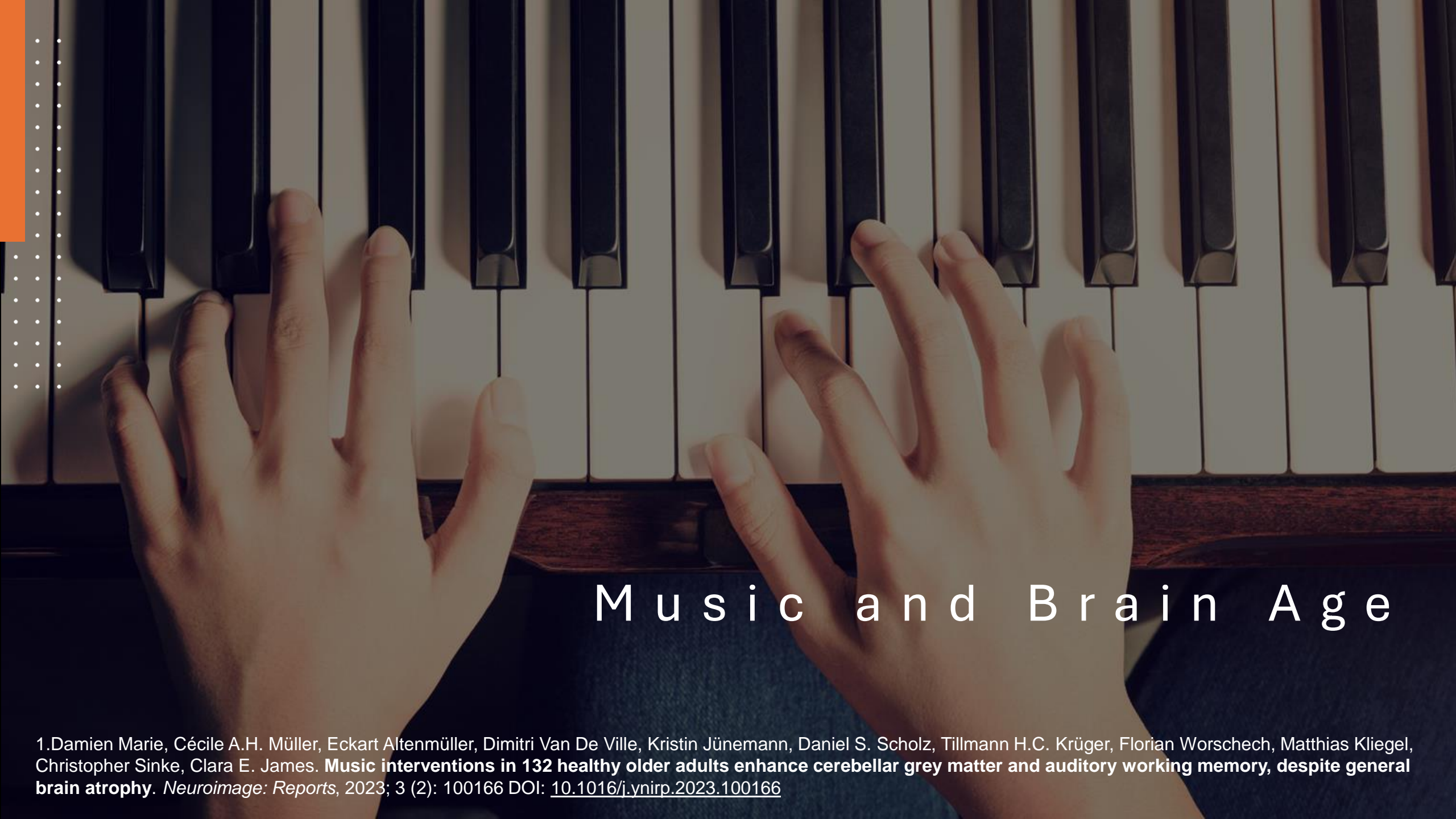
Make More Connections To
Plump The Brain



Cross-Train Your Brain

Month:

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday



Music and Brain Age

1. Damien Marie, Cécile A.H. Müller, Eckart Altenmüller, Dimitri Van De Ville, Kristin Jünemann, Daniel S. Scholz, Tillmann H.C. Krüger, Florian Worschech, Matthias Kliegel, Christopher Sinke, Clara E. James. **Music interventions in 132 healthy older adults enhance cerebellar grey matter and auditory working memory, despite general brain atrophy.** *Neuroimage: Reports*, 2023; 3 (2): 100166 DOI: [10.1016/j.ynirp.2023.100166](https://doi.org/10.1016/j.ynirp.2023.100166)

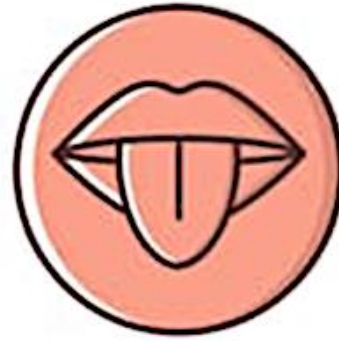
FIVE SENSES



HEARING



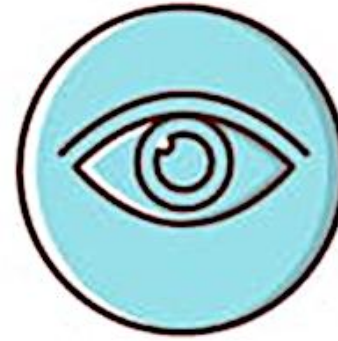
SMELL



TASTE



TOUCH

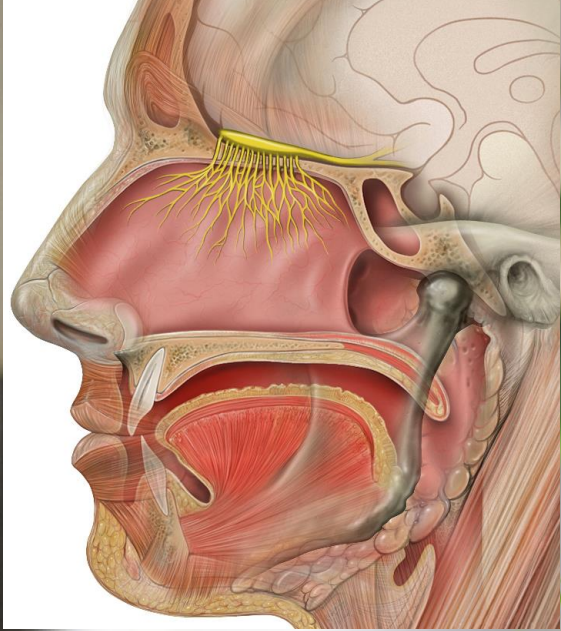


VISION

Sight:

- Participants who underwent cataract removal surgery had nearly 30% lower risk of developing dementia
- Overall sight problems at baseline had 44% increased risk of dementia





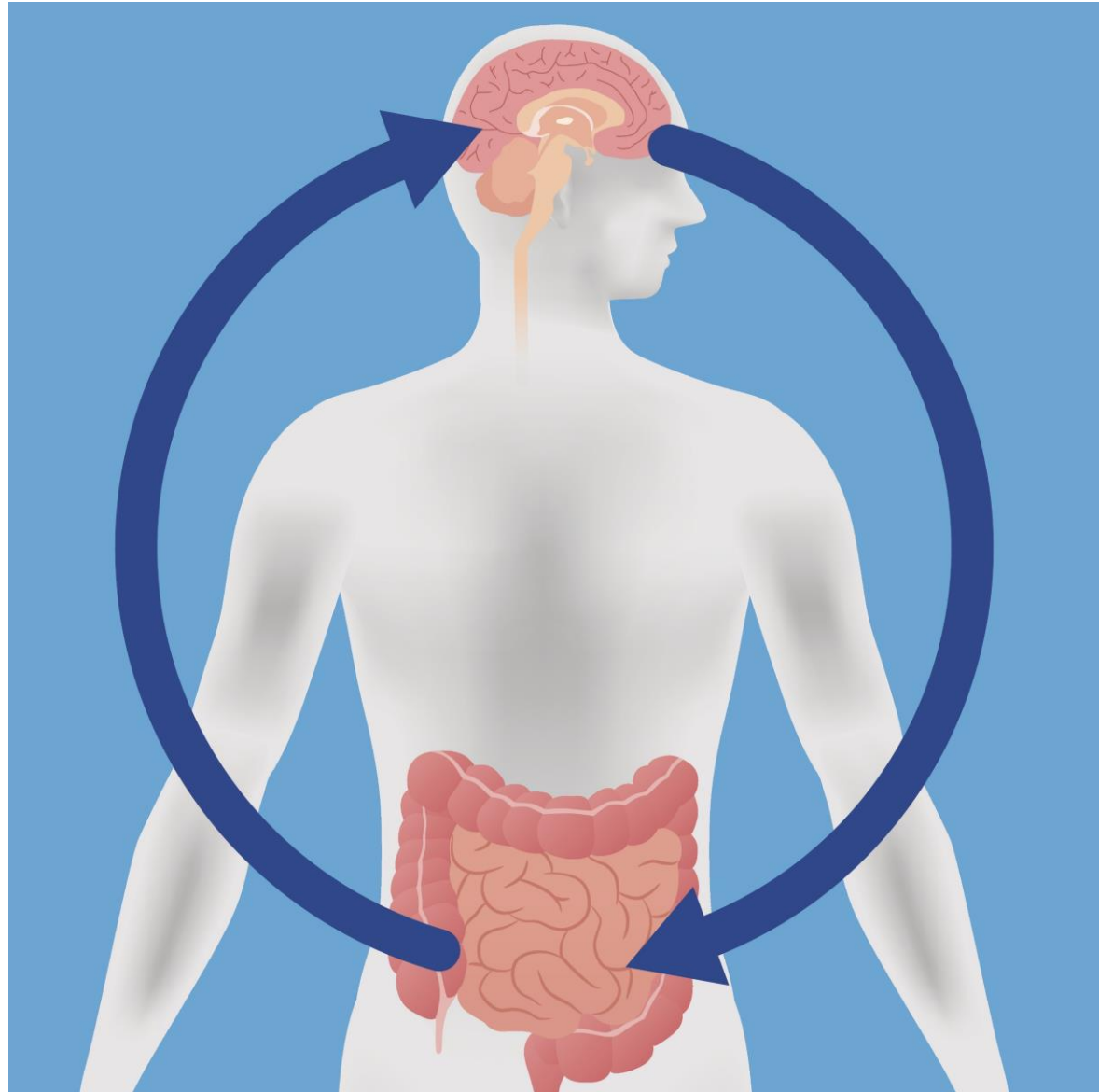
- Smell Test and 5 Year Follow-Up
- Almost all who were unable to name a single scent had been diagnosed with dementia.
- Nearly 80 percent of those who provided only one or two correct answers also developed dementia.

SMELL



Take Home Message
On Senses

Gut Brain Connection A Sneaky Trick





0g
trans FAT
per serving

Nutrition Facts		Amount/Serving	%DV*	Amount/Serving	%DV*
Serv. Size 4 cookies (32g) Servings 9	Total Fat	7g	11%	Total Carb.	20g 7%
	Sat. Fat	4.5g	23%	Dietary Fiber	1g 4%
Calories 150 Calories from fat 60	Trans Fat	0g		Sugars	10g
	Cholest.	0mg	0%	Protein	2g
	Sodium	115mg	5%		
Vitamin A 0% • Vitamin C 0% • Calcium 0% • Iron 4%					

INGREDIENTS: Enriched flour, riboflavin, sugar, partially hydrogenated vegetable oil, cocoa, cornstarch, hydrogenated oils, soy lecithin, salt, caramel color, artificial flavors.

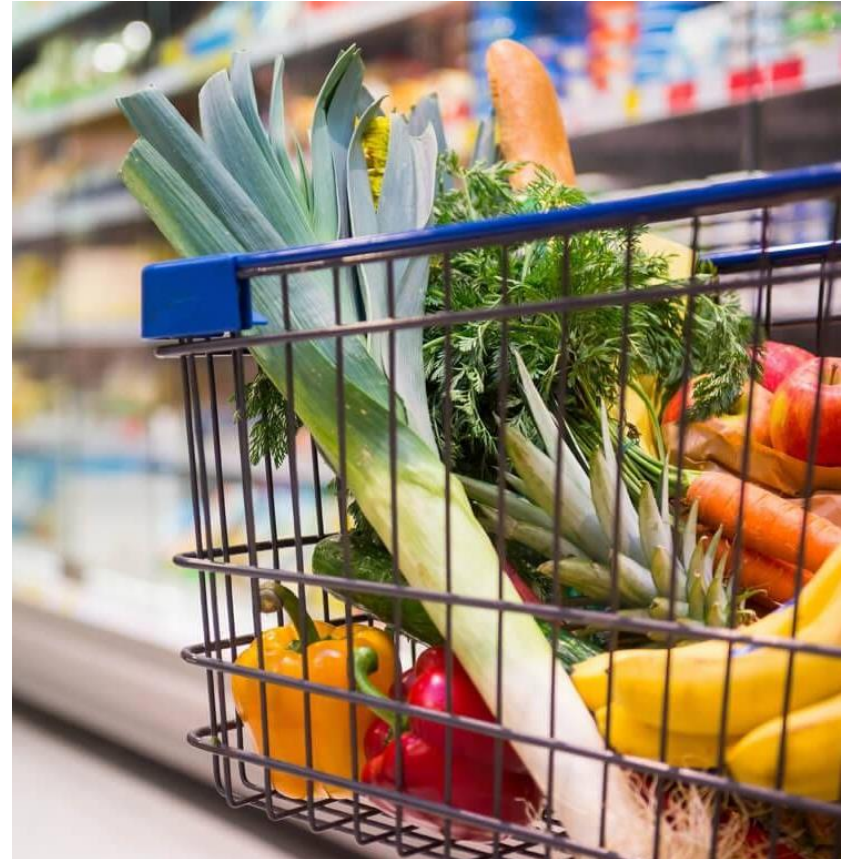
Honda T, Ohara T, Shinohara M, Hata J, Toh R, Yoshida D, Shibata M, Ishida T, Hirakawa Y, Irino Y, Sakata S, Uchida K, Kitazono T, Kanba S, Hirata KI, Ninomiya T. Serum elaidic acid concentration and risk of dementia: The Hisayama Study. *Neurology*. 2019 Nov 26;93(22):e2053-e2064. doi: 10.1212/WNL.0000000000008464. Epub 2019 Oct 23. PMID: 31645469.

The Big 5 In Your Shopping Cart

- Diet is individualized and can quickly become overwhelming with the latest fad or trend.
- ***Fatty fish like salmon***
- ***Avocados***
- ***Nuts***
- **Blueberries**
- **Cruciferous veggies (don't forget the broccoli)**

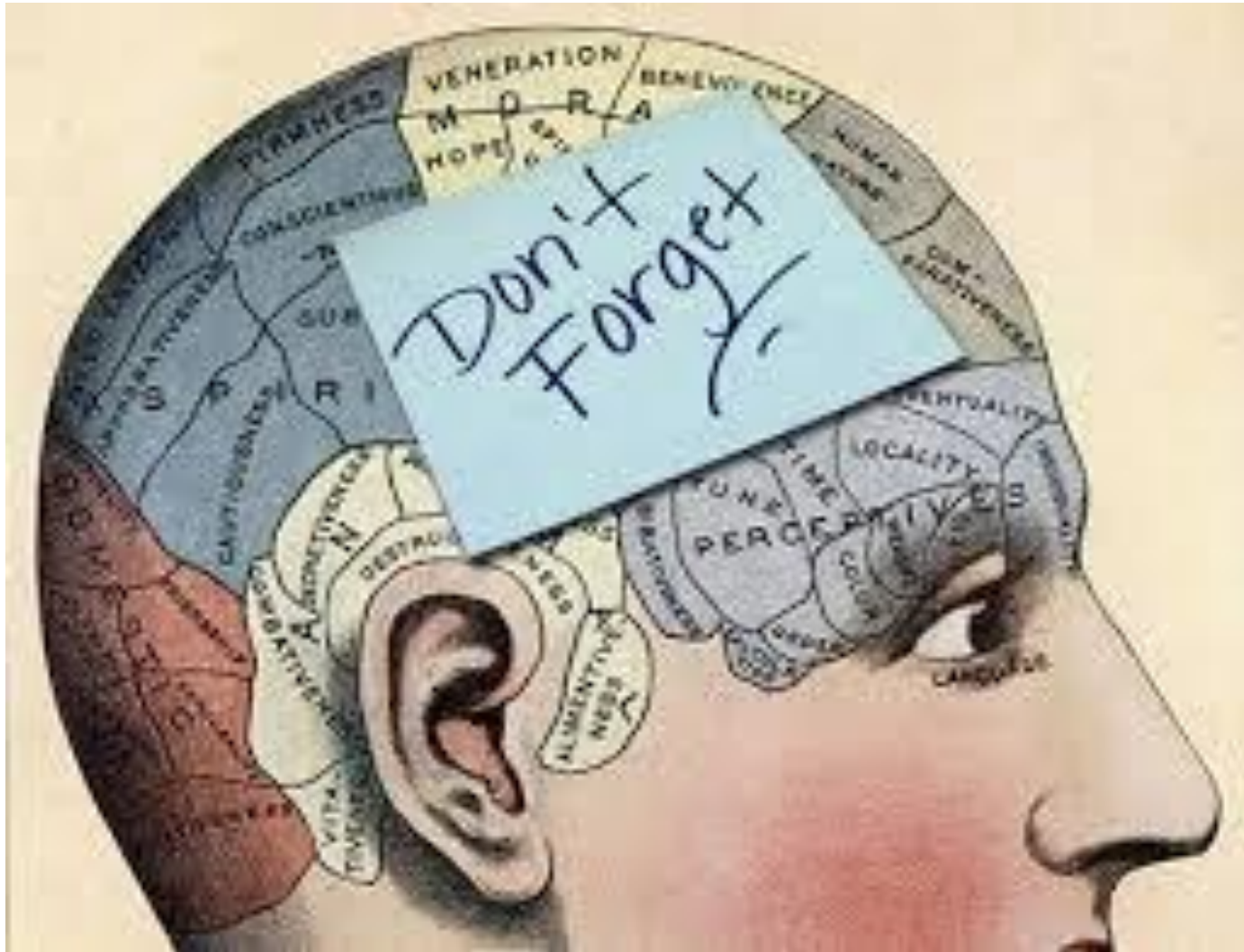
- Bonus: capers or red onions.

- Why these foods???



Bonus Tip: Can You Imagine
Eating The Right Foods The
Wrong Way





Breathing: Stress, Sleep and Memory


Lee SH, Park DS, Song CH. The Effect of Deep and Slow Breathing on Retention and Cognitive Function in the Elderly Population. *Healthcare (Basel)*. 2023 Mar 20;11(6):896. doi: 10.3390/healthcare11060896. PMID: 36981553; PMCID: PMC10047962.

Jerath R, Beveridge C, Barnes VA. Self-Regulation of Breathing as an Adjunctive Treatment of Insomnia. *Front Psychiatry*. 2019 Jan 29;9:780. doi: 10.3389/fpsy.2018.00780. PMID: 30761030; PMCID: PMC6361823

[nature](#) > [scientific reports](#) > [articles](#) > article

Article | [Open access](#) | [Published: 09 March 2023](#)

Modulating heart rate oscillation affects plasma amyloid beta and tau levels in younger and older adults

[Jungwon Min](#), [Jeremy Rouanet](#), [Alessandra Cadete Martini](#), [Kaoru Nashiro](#), [Hyun Joo Yoo](#), [Shai Porat](#), [Christine Cho](#), [Junxiang Wan](#), [Steve W. Cole](#), [Elizabeth Head](#), [Daniel A. Nation](#), [Julian F. Thayer](#) & [Mara Mather](#) 

[Scientific Reports](#) **13**, Article number: 3967 (2023) | [Cite this article](#)

29k Accesses | **5** Citations | **346** Altmetric | [Metrics](#)

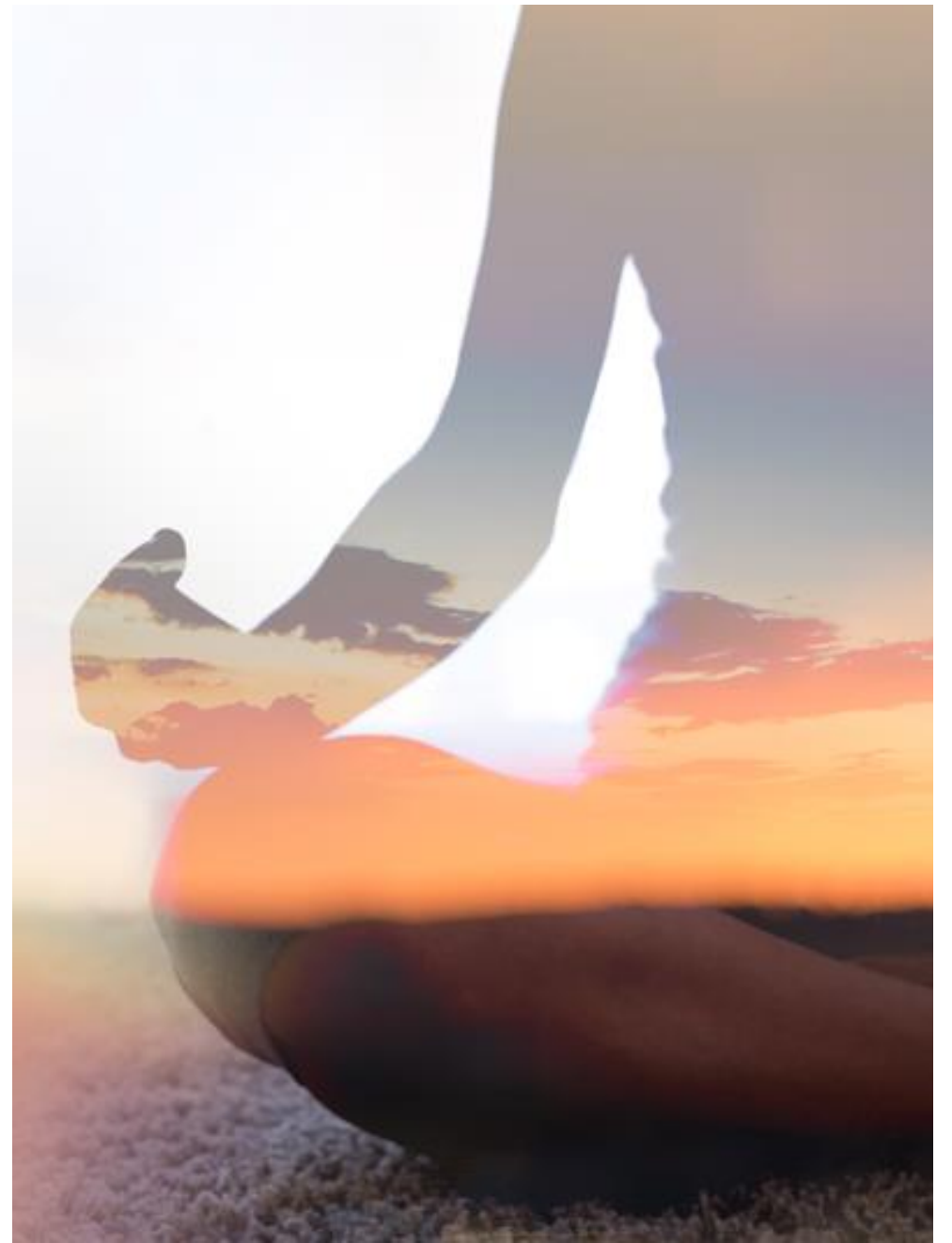
Abstract

Slow paced breathing via heart rate variability (HRV) biofeedback stimulates vagus-nerve pathways that counter noradrenergic stress and arousal pathways that can influence production and clearance of Alzheimer's disease (AD)-related proteins. Thus, we examined whether HRV biofeedback intervention affects plasma A β 40, A β 42, total tau (tTau), and phosphorylated tau-181 (pTau-181) levels. We randomized healthy adults (N = 108) to use slow-paced breathing with HRV biofeedback to increase heart rate oscillations (Osc+) or to use personalized strategies with HRV biofeedback to decrease heart rate oscillations (Osc-).

Deep and slow breathing (DSB)

Adults normally breathe 16-18 times a minute. With practice, they can reduce the number of breaths to six to eight per minute

2:2:4 breathing technique:





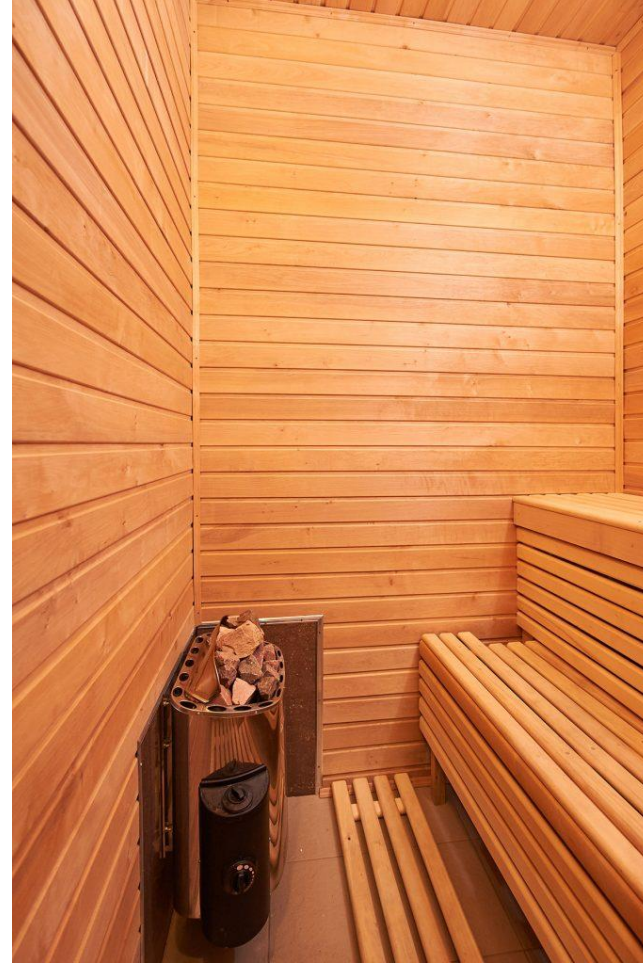
I S a w I t
O n
T i k T o k . . .



S a u n a s ?

Sauna Facts:

- Associated with a reduction in the risk of vascular diseases, such as high blood pressure and cardiovascular disease.
- Does blood pressure drop?
- Exercise?
- But be careful of overstating benefits and use caution.

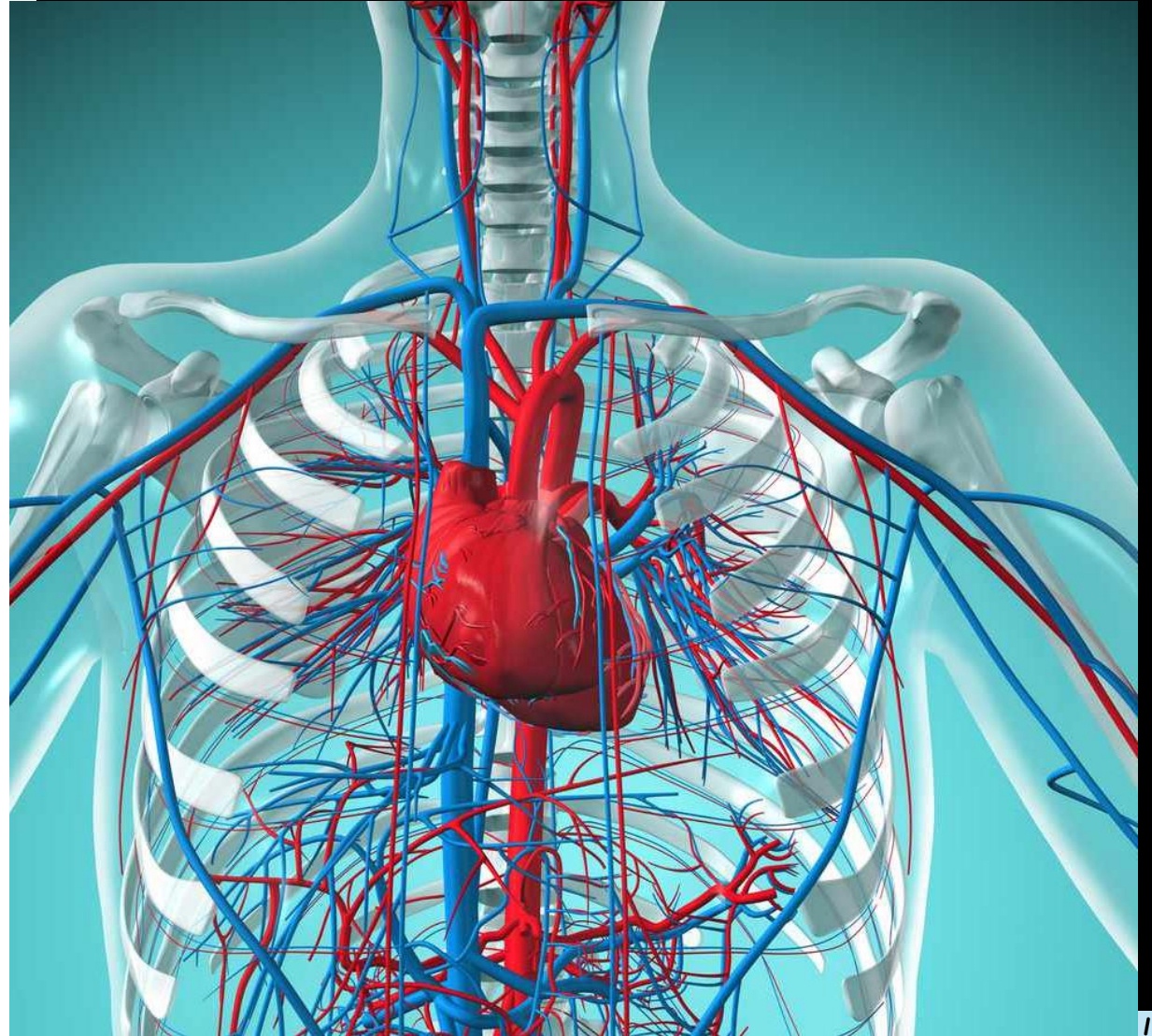


1. Jari A. Laukkanen, Tanjaniina Laukkanen, Setor K. Kunutsor. **Cardiovascular and Other Health Benefits of Sauna Bathing: A Review of the Evidence.** *Mayo Clinic Proceedings*, 2018; 93 (8): 1111
DOI: [10.1016/j.mayocp.2018.04.008](https://doi.org/10.1016/j.mayocp.2018.04.008)

1. Francesco Zaccardi, Tanjaniina Laukkanen, Peter Willeit, Setor K. Kunutsor, Jussi Kauhanen, Jari A. Laukkanen. **Sauna Bathing and Incident Hypertension: A Prospective Cohort Study.** *American Journal of Hypertension*, 2017; DOI: [10.1093/ajh/hpx102](https://doi.org/10.1093/ajh/hpx102)

Take Home Message:

- **On the list of 15**
- Stroke
- High blood pressure
- **Low blood pressure (be careful)**
- Heart disease



A close-up photograph of a hot tub filled with water. A large amount of ice is being poured into the tub from above, creating a spray of water droplets. The background is slightly blurred, showing a wooden deck and a white chair. The overall lighting is soft and natural.

Cold Plunge?
Reported Benefits?



Dangers of Cold Plunge

- Anyone at risk of or diagnosed with a cardiovascular disease.
- Cold shock, passing out, drowning.
- Cold injuries to hands and feet.



Supplements?

Vitamin D
Supplement was
associated with 40%
lower dementia
incidence

Supplement
Protocol?



1.Chirag M Vyas, JoAnn E Manson, Howard D Sesso, Nancy R Cook, Pamela M Rist, Alison Weinberg, M Vinayaga Moorthy, Laura D Baker, Mark A Espeland, Lok-Kin Yeung, Adam M Brickman, Olivia I Okereke. **Effect of multivitamin-mineral supplementation versus placebo on cognitive function: results from the clinic subcohort of the COcoa Supplement and Multivitamin Outcomes Study (COSMOS) randomized clinical trial and meta-analysis of 3 cognitive studies with.** *The American Journal of Clinical Nutrition*, 2024; DOI: [10.1016/j.ajcnut.2023.12.011](https://doi.org/10.1016/j.ajcnut.2023.12.011)

Ghahremani M, Smith EE, Chen HY, Creese B, Goodarzi Z, Ismail Z. Vitamin D supplementation and incident dementia: Effects of sex, APOE, and baseline cognitive status. *Alzheimers Dement (Amst)*. 2023 Mar 1;15(1):e12404. doi: 10.1002/dad2.12404. PMID: 36874594; PMCID: PMC9976297.

Multivitamin



1. Lok-Kin Yeung, Daniel M. Alschuler, Melanie Wall, Heike Luttmann-Gibson, Trisha Copeland, Christiane Hale, Richard P. Sloan, Howard D. Sesso, JoAnn E. Manson, Adam M. Brickman. **Multivitamin supplementation improves memory in older adults: a randomized clinical trial.** *The American Journal of Clinical Nutrition*, 2023; DOI: [10.1016/j.ajcnut.2023.05.011](https://doi.org/10.1016/j.ajcnut.2023.05.011)

Physical Tests and Brain Health



Lower Handgrip Strength:

- More than twice as likely to have a late-life dementia event than the strongest individuals.



Stronger Hand Grip Strength:

- Associated with a 42 percent lower risk of stroke in people over age 65
- Larger total brain volume.
- Better performance on cognitive tests



A close-up photograph of a highly muscular human arm and hand. The arm is extended from the left side of the frame towards the right. The hand is firmly gripping a tool, likely a pair of pliers or a similar gripping device. The tool has a silver metal head and a circular ring at the end. The handle of the tool is wrapped in a white, textured material, possibly tape or a specialized grip. The background is a solid, dark green color. The text 'MOLDING A MIGHTY GRIP' is overlaid on the right side of the image in a large, bold, black font with a white outline.

MOLDING A MIGHTY GRIP

Grip Strength and Brain Health

- **Combine light weights, resistance bands or body weight for at least 10 minutes a day**
- Regularity over intensity
- **Squeeze a stress ball or racquetball or squash ball.** Tennis ball too much.



Slower Walking Speed in Middle Age

One-and-a-half times more likely to develop dementia.

Slower walking speed associated with lower total brain volume

Poorer performance on memory, language and decision-making tests.





What Do
You See?



What's The Difference in
Heart Rate/Blood Pressure?

- Anxiety vs Excitement?
- Acknowledge vs Suppress?
- Tackle one task at a time and then take a quick break.

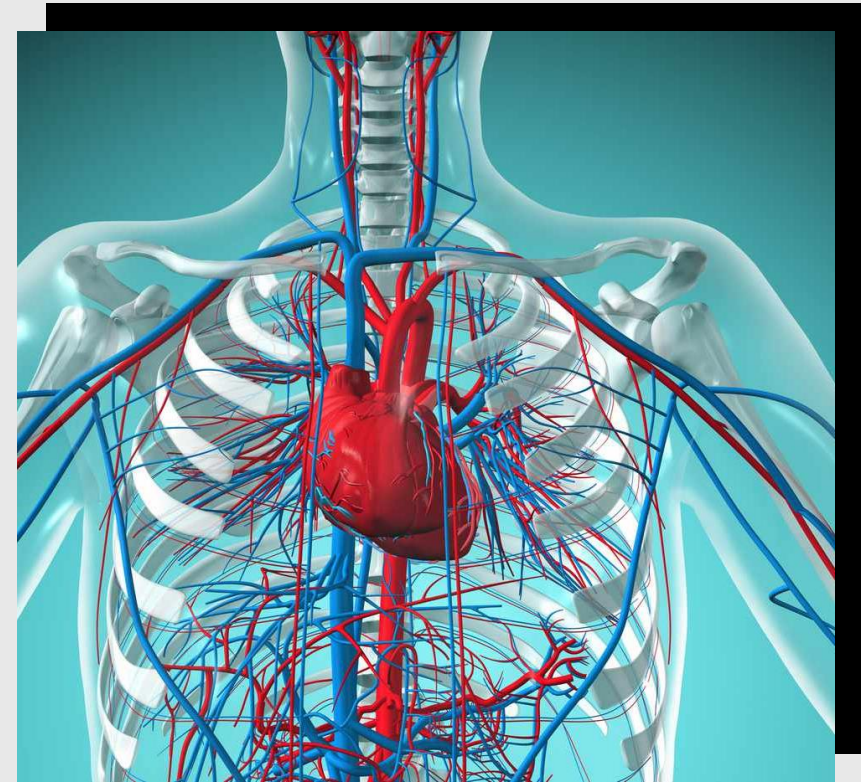
Biggest Risk Factors for Dementia:

- 1. Vitamin D deficiency
- 2. Hearing impairment
- 3. Alcohol use disorder
- 4. Social Isolation
- 5. Depression
- 6. High C-reactive protein levels
- 7. Lower handgrip strength (physical frailty)
- 8. Orthostatic hypotension (a form of low blood pressure)
- 9. Stroke
- 10. Diabetes
- 11. Heart disease
- 12. Carrying two copies of the APOE gene (a marker that influences Alzheimer's risk)

• Hendriks S, Ranson JM, Peetoom K, et al. Risk Factors for Young-Onset Dementia in the UK Biobank. *JAMA Neurol.* 2024;81(2):134–142. doi:10.1001/jamaneurol.2023.4929

5 of the 15 Controllable Risk Factors for Dementia:

- 1. Heart disease
 - 2. Stroke
 - 3. High Blood Pressure (what's better than aerobic exercise)?
 - 4. Low Blood Pressure Orthostatic hypotension (a form of low blood pressure)
 - 5. Diabetes
-
- Why did we talk about sleep?
 - Diet, sauna, walking, grip strength, breathing exercises?



• Hendriks S, Ranson JM, Peetoom K, et al. Risk Factors for Young-Onset Dementia in the UK Biobank. *JAMA Neurol.* 2024;81(2):134–142. doi:10.1001/jamaneurol.2023.4929




HEARING

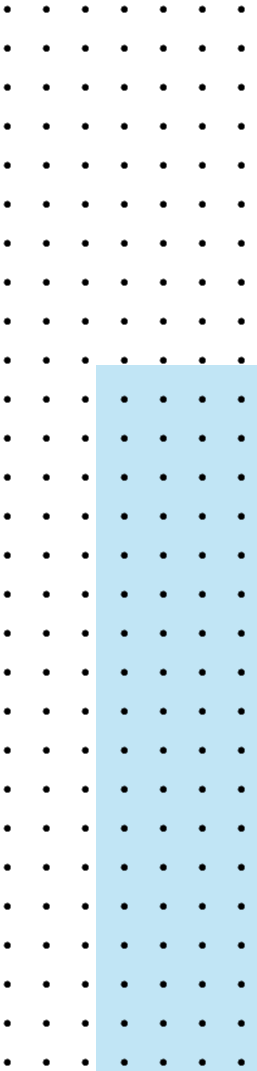


Biggest Risk Factors: These 5 are Treatable

- 1. Vitamin D deficiency
- 2. Hearing impairment (take care of all senses)
- 3. High C-reactive protein levels (inflammation)
- 4. Lower handgrip strength (physical frailty)
- 5. Social Isolation



What lowered the risk of dementia
by 49.8 even if those in the study
had a genetic risk for Alzheimer's?





- Those who had a positive attitude toward their age and the aging process had a 49.8 percent lower risk of dementia, even if they had a genetic risk for Alzheimer's.

Optimism....

Why Negative Thoughts?



What's Next?



Best Case Scenario?



Gratitude Journal & The Visual Part of the Brain



One of the Most Common Questions Asked
From The First Talk.....

Can This Be The
Wine Glass?



Questions:

- Melatonin
- Sound While Sleeping
- Naps
- Alarm Clocks
- When Mindfulness
- Feel Energetic In The Morning
- Focus