



Home happens here.

The following slides were presented at Cedar Crest by Dr. William Clanfield, MD, FACP on 4/17/2025. He has granted permission to share this information as a resource.

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Healthy Aging

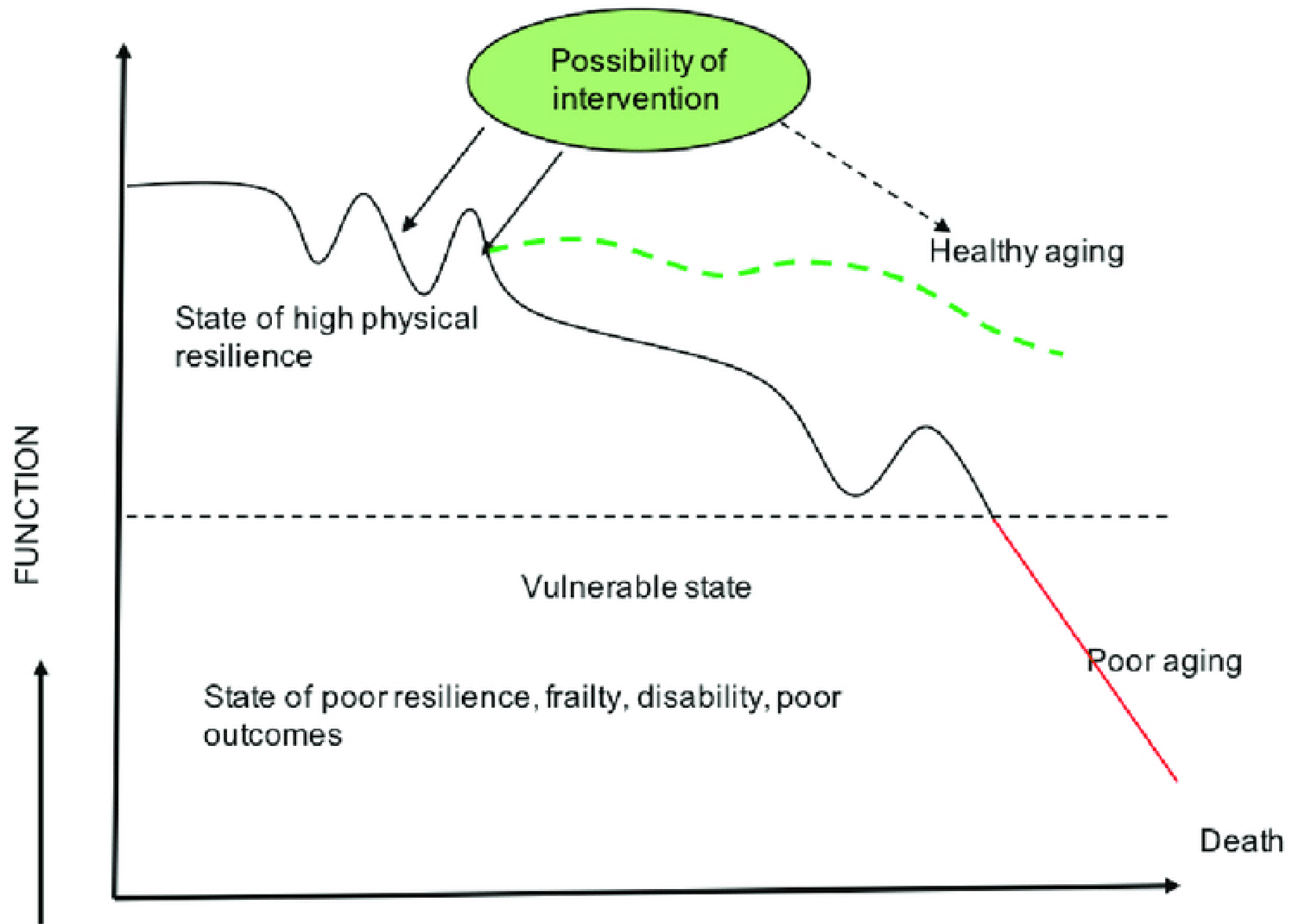


Thriving in your Next Chapter

William Clanfield MD FACP

Healthy Aging

- ❖ What is Healthy Aging?
- ❖ What is Normal Aging?
- ❖ Meeting the Goals of Healthy Aging
- ❖ Q&A and Closing Thoughts



What is Healthy Aging?

- ❖ High Physical Function
- ❖ High Cognitive Function
- ❖ Active Social Engagement
- ❖ Good Psychological Status
- ❖ Absence of Major Diseases
- ❖ No Disabilities

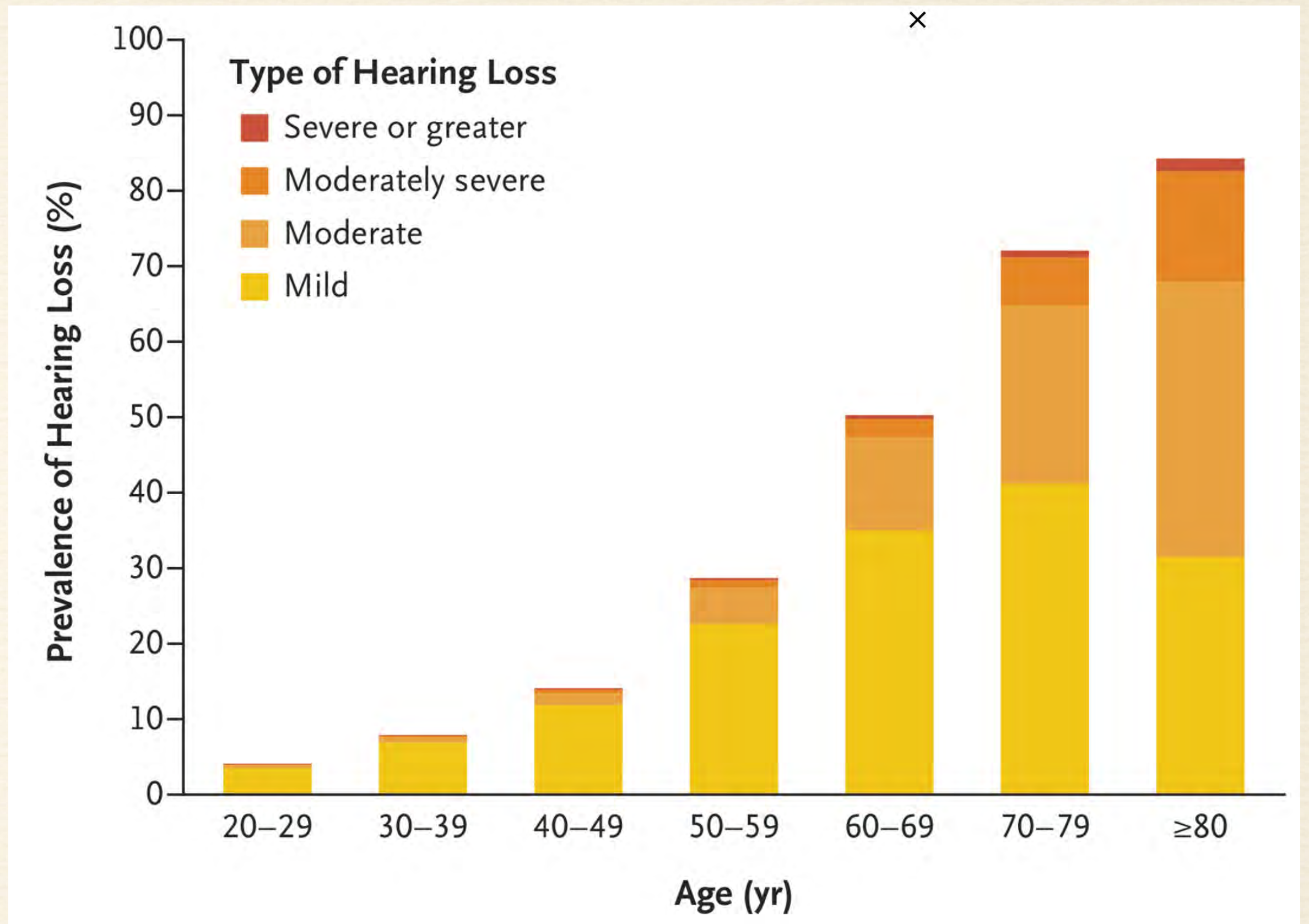


Sarcopenia: Muscle Loss

- ❖ There is a loss of 5-10% of muscle mass per decade after age 50
- ❖ There are also loss of neurons in the spinal cord leading to the muscles
- ❖ Decrease in anabolic hormones and increase in chronic inflammation.
- ❖ Disuse through physical inactivity and sedentary behaviors are the primary causes of muscle strength decrease and muscle loss

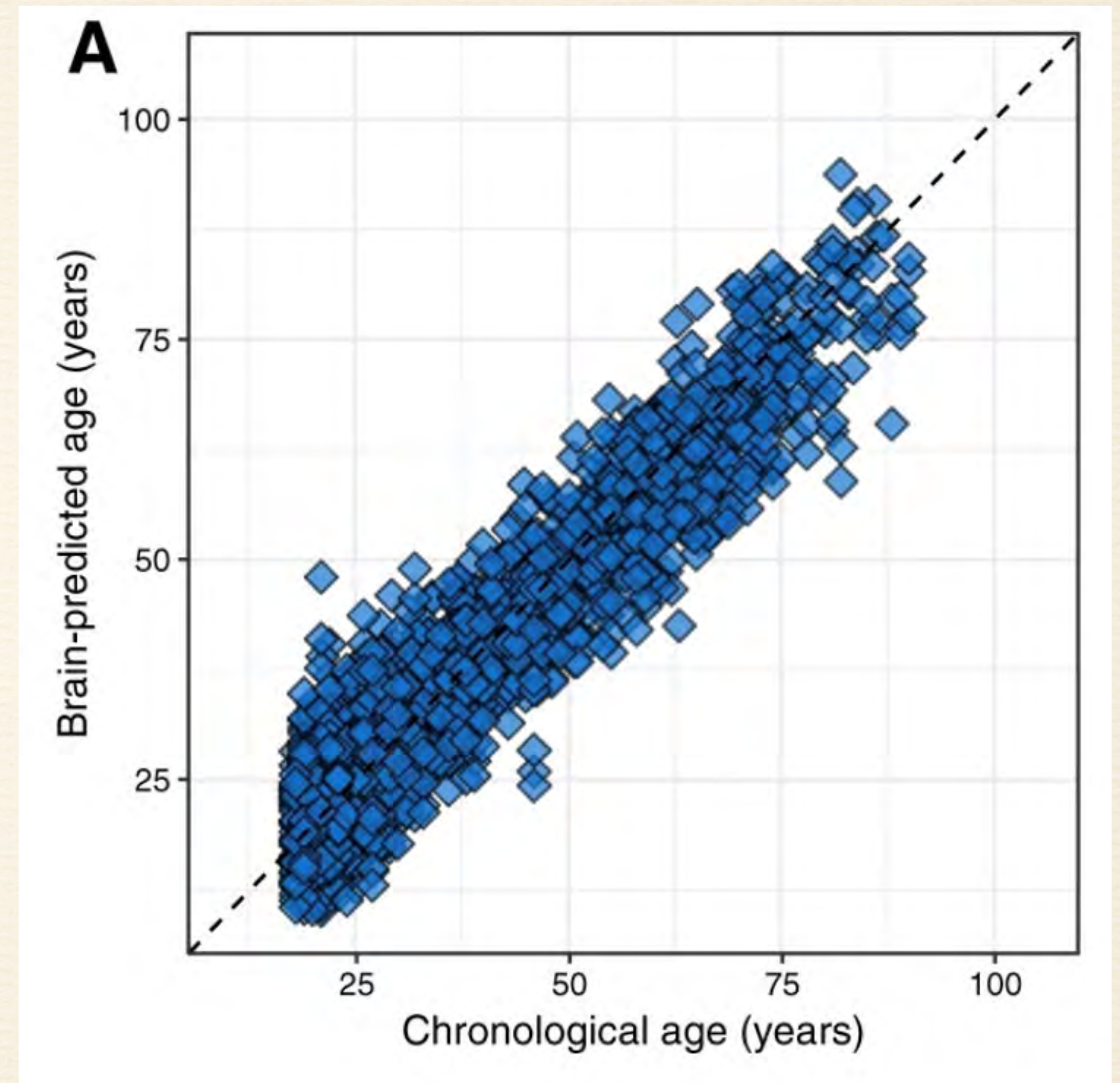
Change in the Senses

- ❖ Presbyopia describes farsightedness caused by stiffness of the lens of the eye which affects 60% of adults over 60 years of age
- ❖ Presbycusis: high frequency hearing loss with age. Processing speed is the number one cause of functional hearing loss.

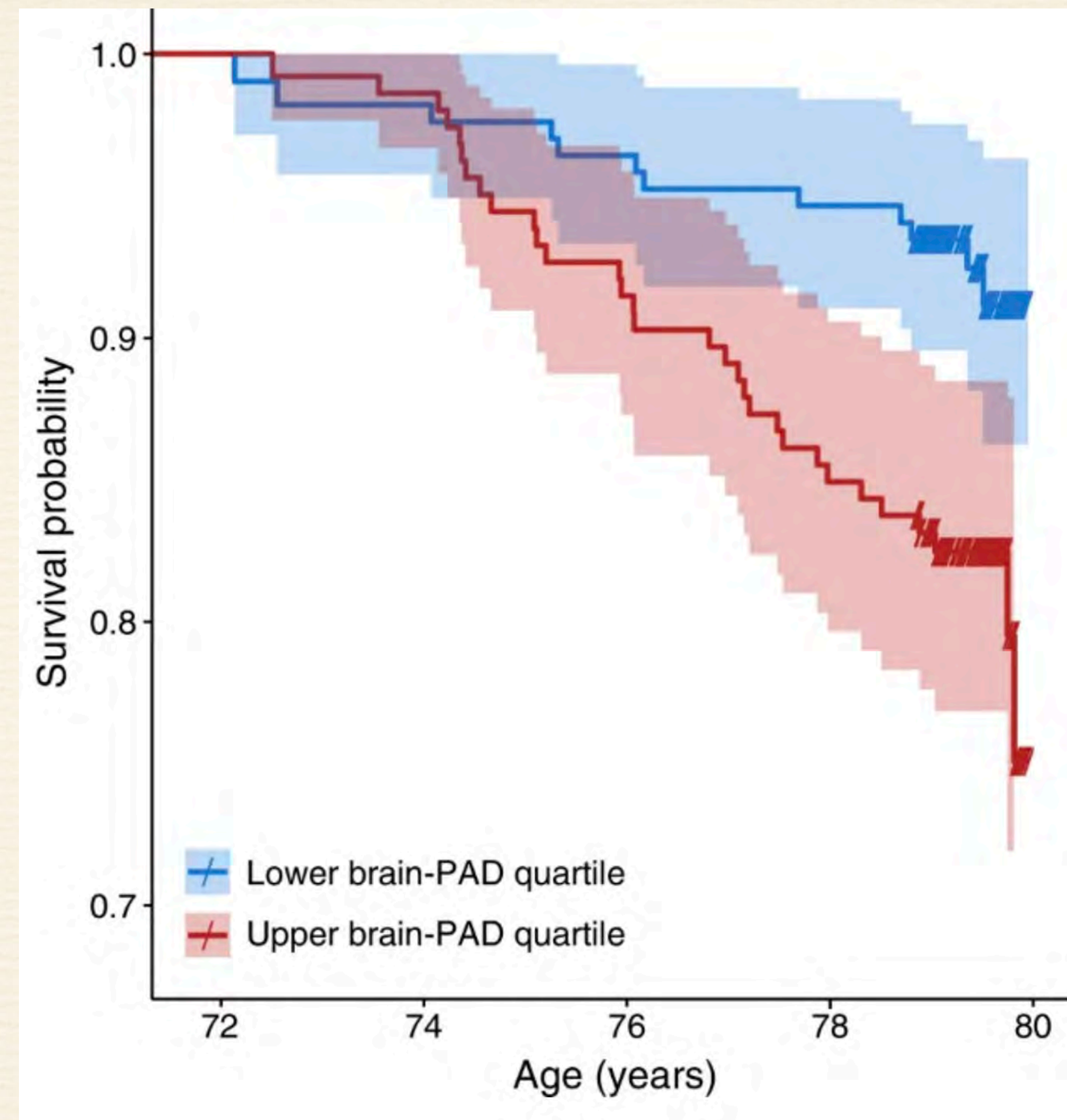


Brain Age

- ❖ Brain age on MRI imaging predicted chronological age within an error of 5 years.



Brain Age on MRI predicts mortality



Cognitive Function with Aging

- ❖ Vocabulary increases throughout life
- ❖ Long term memories accumulate.
- ❖ Wisdom accumulates.
- ❖ Thinking reflexes are slower leading to slower processing speed which can limit accessing old memory and making new memory.

Social Changes with Aging

- ❖ Social networks tend to increase until young adulthood, then steadily decline, while family networks remain relatively stable.
- ❖ Social activities generally decrease with age.
- ❖ Older adults tend to report higher satisfaction with their social encounters and take measures to minimize negative social encounters.
- ❖ Life transitions (school, job change, marriage, retirement, loss) lead to need to redefine social networks.

Heart , Lung and Circulation Aging

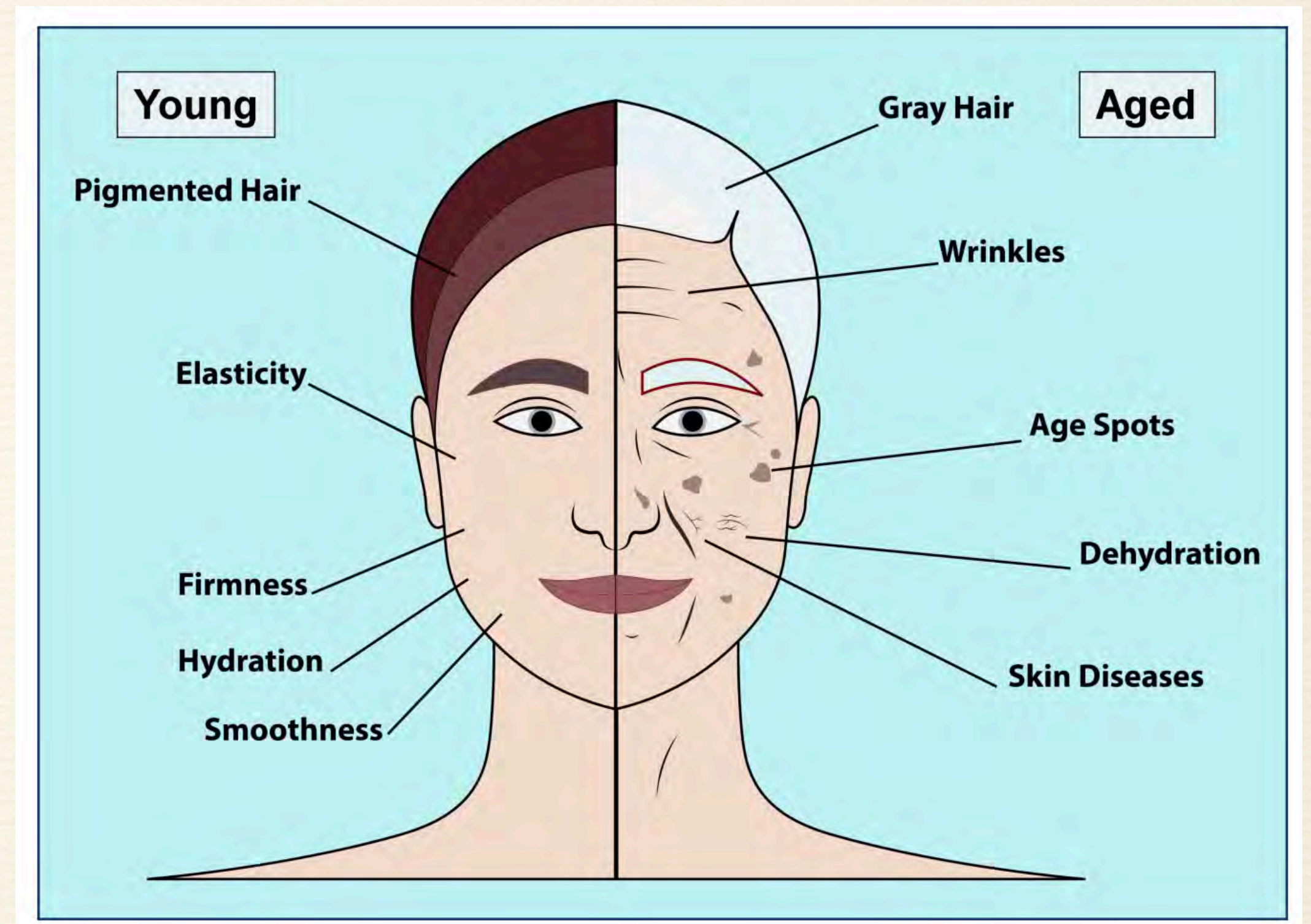
- ❖ Stiffer heart muscle and arteries with a decline in the efficiency of supplying oxygen to the body ($VO_2\text{max}$).
- ❖ High blood pressure (lifetime risk of 90%)
- ❖ Diminished reflexes of the circulation with lower peak heart rate and more prone to dizziness upon standing.
- ❖ Decrease in the ability to move air and efficiently pick up oxygen.

Inflammaging

- ❖ Inflammaging is a gradual increase in chronic inflammation that occurs with aging. This is driven by cell damage/death & an imbalance in inflammatory responses.
- ❖ Gradual increased inflammation of aging is a key risk factor for unstable plaque in arteries leading to heart attacks and strokes.
- ❖ A decrease in mitochondria (energy power plants of for the cells) leads to less efficient immune cell function with higher rates of infection and cancer.

Skin Aging

- ❖ Wrinkles, laxity, roughness and thinning are hallmarks of skin aging
- ❖ There is some evidence that only 3% of intrinsic factors trigger visual changes when it comes to skin aging. External factors are much more responsible for that process.



Skin Aging

TABLE 1 Causes of skin aging.

Intrinsic aging (natural or chronological aging)	Extrinsic aging (photo-aging)
Passage of time	UVA/UVB and ionizing radiation
Genetic conditions	Unhygienic lifestyle
Hormonal imbalances	Unsuitable diet
Harmful effects of ROS activity	Dehydration
Immune system disorders	Environmental pollution
	Cigarette smoke
	Sleep deficiency and stressful lifestyle
	Improper skin care

ROS, reactive oxygen species; UVA, long-wave ultraviolet radiation; UVB, medium-wave ultraviolet radiation.

- ❖ The major factor responsible for external aging is ultraviolet (UV) radiation, which accounts for more than 80% of facial aging.

Ultraviolet Light Effects

- ❖ Solar UV radiation (UVR) consists of UVA (320–400 nm), UVB (280–320 nm), and UVC (100–280 nm).
- ❖ UVB induces sunburn and is associated with skin cancer & aging.
- ❖ UVA is lower in energy but approximately 20 times more abundant in the earth's atmosphere and is not blocked by glass. It promotes skin wrinkles, spots and roughness.

Chronic Disease Increases with Age

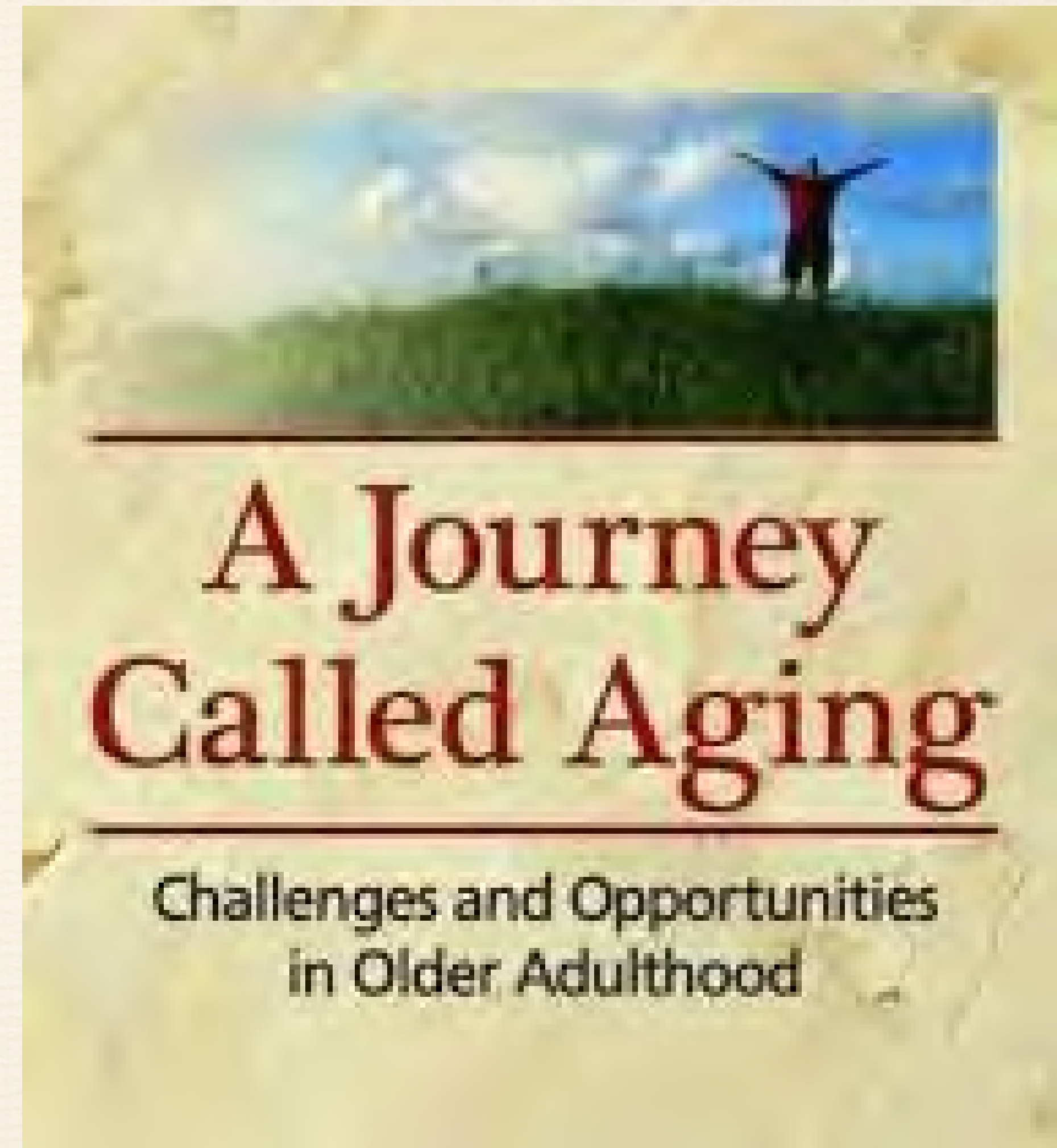
- ❖ Canadian Longitudinal Study on Aging: The number of chronic conditions increased from 2.1 in those aged 45-54 years to 4.8 in those over age 78.
- ❖ The lifetime risk of developing any non-infectious disease after age 45 is 93-94%.

Healthy Aging Definition

- ❖ Data from the Nurses' Health Study (1986–2016) and the Health Professionals Follow-Up Study (1986–2016)
- ❖ Healthy Aging definition: No chronic disease, cognitive impairment, limits on physical functions, or poor mental health.
- ❖ After a follow-up of up to 30 years, 9.3% participants achieved healthy aging, 10.8% in the NHS and 2,169 6.2% in the HPFS.

Meeting the Goals of Healthy Aging

- ❖ Genetics
- ❖ Lifestyle
- ❖ Environment



Healthy Aging: Genetics

- ❖ Medical literature consensus is that genetic factors account for only 15 to 30% of the variation of human lifespan.
- ❖ People are living longer and healthier than ever before which cannot be attributed to genetic changes. The life expectancy of Americans increased from 62.9 years in 1940 to 76.8 years in 2000 and 78.8 years in 2014.
- ❖ Nevertheless, people with longer-lived ancestors also tend to live longer.
- ❖ Identical twins experience more similar life spans than fraternal twins.

Healthy Aging: Exercise

Long-Term Leisure-Time Physical Activity Intensity and All-Cause and Cause-Specific Mortality: A Prospective Cohort of US Adults

Dong Hoon Lee¹, ScD; Leandro F.M. Rezende², ScD; Hee-Kyung Joh, MD, PhD; NaNa Keum, ScD; Gerson Ferrari, PhD; Juan Pablo Rey-Lopez, PhD; Eric B. Rimm, ScD; Fred K. Tabung, PhD; Edward L. Giovannucci, MD, ScD

Circulation. 2022;146:523–534.

August 16, 2022

- ❖ Data from the Nurses' Health Study (1986–2016) and the Health Professionals Follow-Up Study (1986–2016) over 30 years
- ❖ Self reported leisure time physical activity compared to mortality

Healthy Aging: Exercise

- ❖ Moderate Physical Activity (MPA) defined as < 6 METs including walking, weight lifting, yoga
- ❖ Vigorous Physical Activity (VPA) defined as ≥ 6 METs including running, swimming, cycling, working outdoors, climbing stairs

Intensity	METS	Examples
Sedentary Behavior*	1-1.5	Sitting, reclining, or lying; watching TV
Light	1.6-2.9	Walking slowly, cooking, light house work
Moderate	3.0-5.9	Brisk walking (2.4-4mph), biking 5-9mph, ballroom dancing, active yoga, recreational swimming
Vigorous	≥ 6	Jogging/running, biking ≥ 10 mph, singles tennis, swimming laps

*Sedentary behavior is defined as any waking behavior characterized by an energy expenditure ≤ 1.5 metabolic equivalents (METs), while in a sitting, reclining, or lying posture. Standing is a sedentary activity in that it involves ≤ 1.5 METs, but is not considered a component of sedentary behavior; mph indicates miles per hour

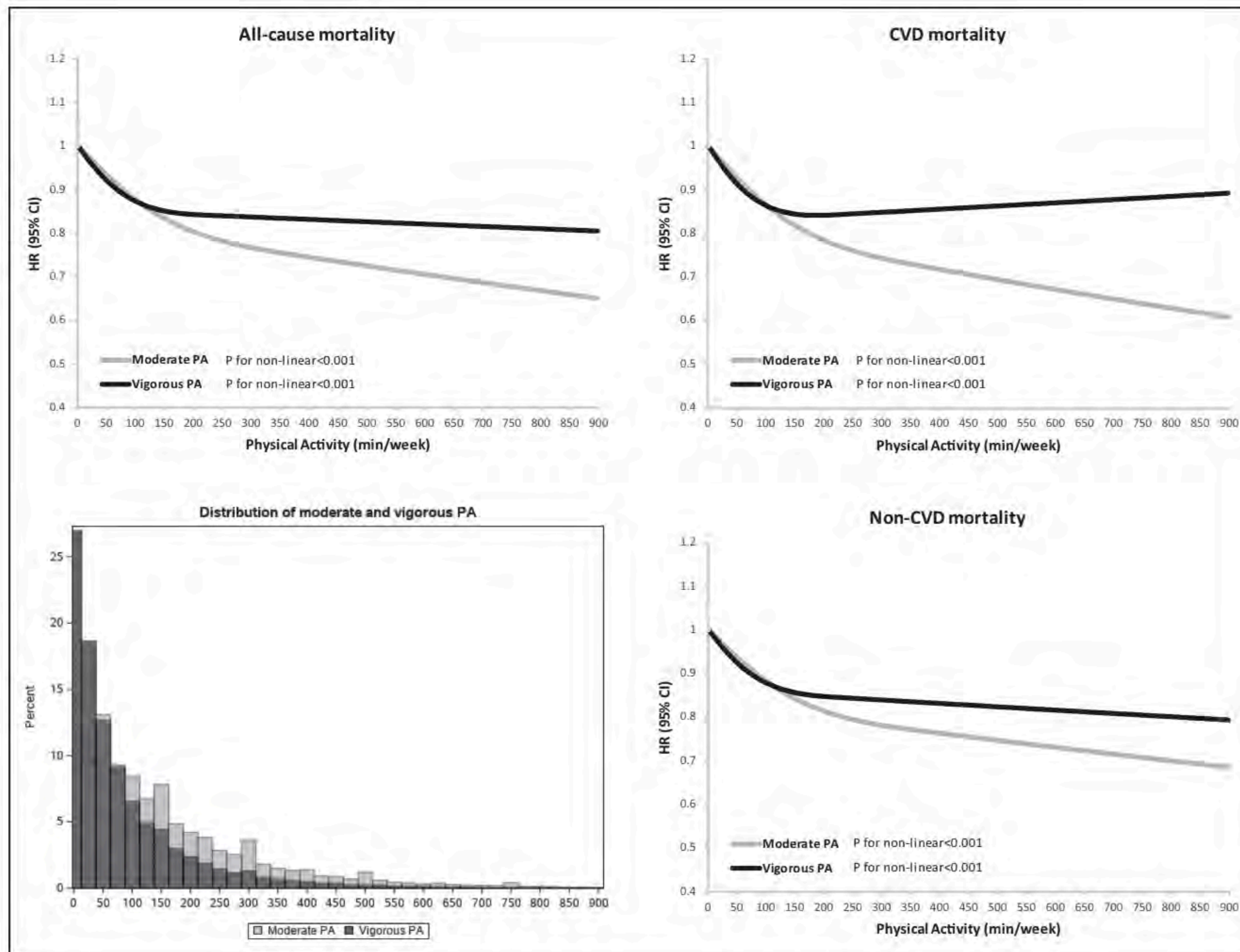
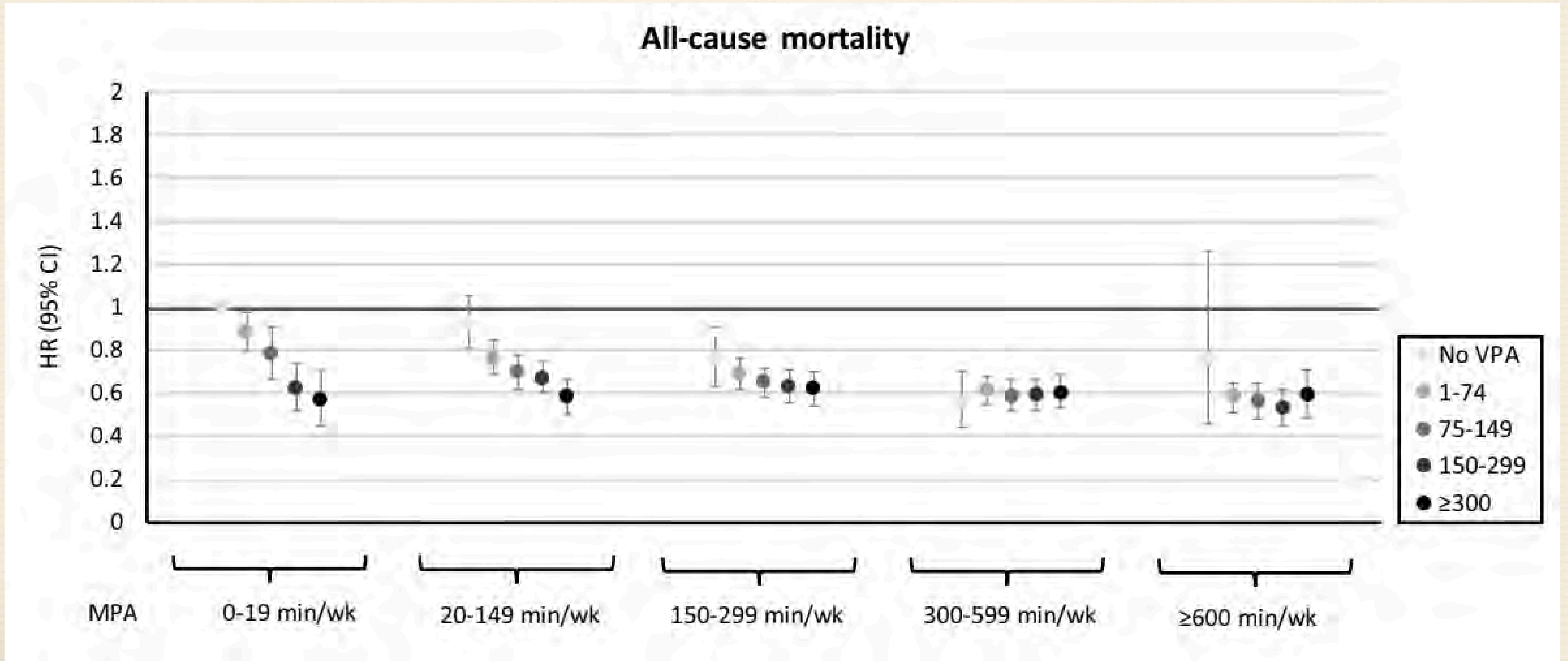


Figure 1. Dose-response relationship of long-term leisure-time MPA and VPA with all-cause mortality (pooled results of HPFS and NHS, 1988–2018).

Combining Moderate and Vigorous Exercise



Benefits of resistance training

- ❖ Measures of muscle strength, especially grip strength, predict successful aging.
- ❖ Adding weight training (2-3 times per week, 2-3 sets of 1-2 exercises per major muscle group) can lead to less falls, more functional independence, improved mood and thicker skin.

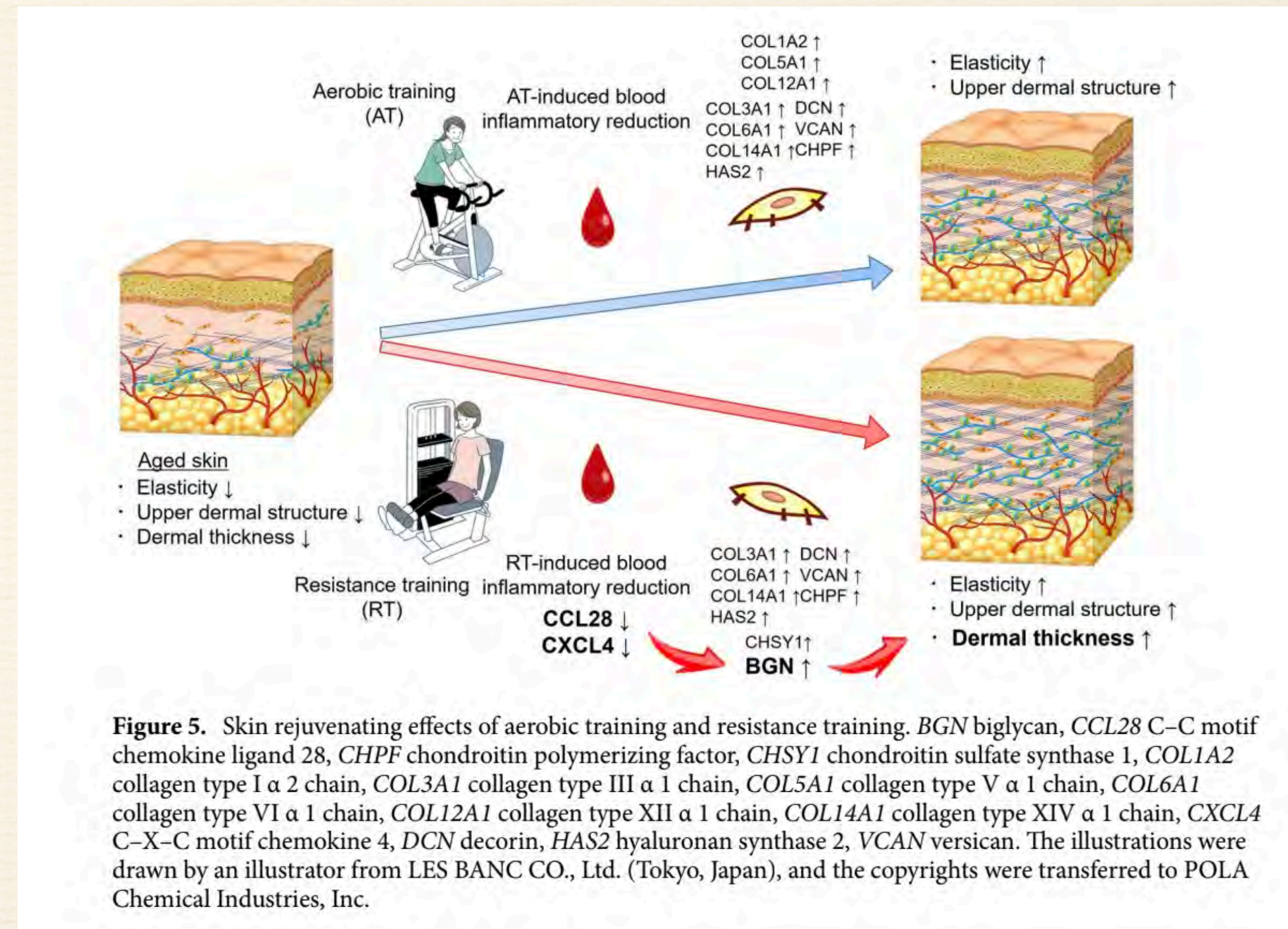
Resistance Training and Skin

Resistance training rejuvenates aging skin by reducing circulating inflammatory factors and enhancing dermal extracellular matrices

Shu Nishikori^{1,2}, Jun Yasuda¹, Kao Murata¹, Junya Takegaki¹, Yasuko Harada², Yuki Shirai² & Satoshi Fujita¹

nature portfolio (2023)

- A 16-week, randomized study in 61 healthy sedentary middle-aged Japanese women comparing aerobic exercise versus weight training.
- “RT counteracts skin aging such as deteriorations in skin elasticity, upper dermal structure and dermal thickness. Our findings suggest that the increase in dermal thickness is a specific effect of RT on the skin”



Physical Exercise Benefits for Older Adults

- ❖ Better memory test scores and an increase in brain areas for memory on imaging.
- ❖ Fewer viral and bacterial infections
- ❖ Lower levels of stress hormones
- ❖ Less falls
- ❖ More youthful skin

CDC Guidelines

Older adults (65 years and older)



At least 150 minutes a week of moderate-intensity activity such as brisk walking.

At least 2 days a week of activities that strengthen muscles.

Activities to improve balance such as standing on one foot.

Healthy Aging: Diet

nature medicine



Article

<https://doi.org/10.1038/s41591-025-03570-5>


Optimal dietary patterns for healthy aging

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 Check for updates

Healthy Aging: Diet

- ❖ Data from the Nurses' Health Study (1986–2016) and the Health Professionals Follow-Up Study (1986–2016)
- ❖ Higher intakes of fruits, vegetables, whole grains, unsaturated fats, nuts, legumes and low-fat dairy products were linked to greater odds of healthy aging. (e.g Mediterranean Diet)
- ❖ higher intakes of trans fats, sodium, sugary beverages and red or processed meats (or both) were inversely associated.

Healthy Aging: Diet

	Healthy aging	Intact cognitive function	Intact physical function	Intact mental health	Free from chronic disease	Survived to 70 years of age
Fruit	*	*	*	*	*	*
Mono-unsaturated fatty acid:saturated fatty acid ratio	*	*	*	*	*	*
Whole grains	*	*	*	*	*	*
Vegetables	*	*	*	*	*	*
Added unsaturated fat	*	*	*	*	*	*
Leafy-green vegetables	*	*	*	*	*	*
Nuts	*	*	*	*	*	*
Nuts and legumes	*	*	*	*	*	*
Dark-yellow vegetables	*	*	*	*	*	*
Vegetable oils	*	*	*	*	*	*
Berries	*	*	*	*	*	*
Yogurt	*	*	*	*	*	*
Low-fat dairy	*	*	*	*	*	*
Olive oil	*	*	*	*	*	*
Other vegetables	*	*	*	*	*	*
Long-chain n-3 (omega-3) polyunsaturated fatty acids	*	*	*	*	*	*
Polyunsaturated fatty acids	*	*	*	*	*	*
Beans	*	*	*	*	*	*
Tomatoes	*	*	*	*	*	*
Coffee and tea	*	*	*	*	*	*
Wine	*	*	*	*	*	*
Fruit juices	*	*	*	*	*	*
Total dairy	*	*	*	*	*	*
Coffee	*	*	*	*	*	*
Legumes	*	*	*	*	*	*
Tea	*	*	*	*	*	*
Soy	*	*	*	*	*	*
Fish and seafood	*	*	*	*	*	*
Fast and fried foods	*	*	*	*	*	*
Beer	*	*	*	*	*	*
Eggs	*	*	*	*	*	*
Animal fat	*	*	*	*	*	*
Cheese	*	*	*	*	*	*
Pizza	*	*	*	*	*	*
Butter	*	*	*	*	*	*
Total alcohol	*	*	*	*	*	*
Potatoes	*	*	*	*	*	*
Sugar-sweetened beverages and fruit juices	*	*	*	*	*	*
High-fat and regular-fat dairy	*	*	*	*	*	*
Snacks	*	*	*	*	*	*
Poultry	*	*	*	*	*	*
Sweets and desserts	*	*	*	*	*	*
Refined grains	*	*	*	*	*	*
Starchy vegetables	*	*	*	*	*	*
Sugar-sweetened beverages	*	*	*	*	*	*
Liquor	*	*	*	*	*	*
Low-energy beverages	*	*	*	*	*	*
Added sugar and fruit juices	*	*	*	*	*	*
French fries	*	*	*	*	*	*
Organ meats	*	*	*	*	*	*
Miscellaneous animal-based foods	*	*	*	*	*	*
Creamy soup	*	*	*	*	*	*
Added saturated fatty acids and trans fats	*	*	*	*	*	*
Unprocessed red meat	*	*	*	*	*	*
Margarine	*	*	*	*	*	*
Butter and margarine	*	*	*	*	*	*
Processed meat	*	*	*	*	*	*
Red and processed meats	*	*	*	*	*	*
Sodium	*	*	*	*	*	*
Total meats	*	*	*	*	*	*
Trans fats	*	*	*	*	*	*

- adjusted for age at baseline (1986), cohort (sex), BMI, ancestry (European, Asian, African-American, Other), smoking status, physical activity, multivitamin use ever, family history of myocardial infarction, type 2 diabetes, cancer, or dementia, postmenopausal status, menopausal hormone use, SES at baseline, marital status, living alone ever and history of depression.

Fat intake

- ❖ In the NHS and HPFS, types of fat were far more important than total amount of fat in determining the long-term risk of mortality.
- ❖ Replacing 5% of energy from saturated fat with the same amount of energy from monounsaturated fats (MUFAs) and PUFAs was associated with a 27% and 15% reduced risk of mortality, respectively. These would include nuts, olive & canola oil.
- ❖ replacing saturated fat with carbohydrates from refined starches and added sugars did not alter the risk.

Protein Intake benefit varies by age

- ❖ Among individuals aged 50–65-year old, high protein intake was associated with a 75% increase in overall mortality and a fourfold increase in cancer and diabetes mortality during 18 years of follow up. The association was significant only for animal protein but not for plant protein.
- ❖ On the other hand, in individuals aged 65 or older, higher protein intake was associated with lower mortality. Plant protein sources were associated with lower odds of cognitive decline when compared with animal protein sources. Also, habitual consumption of unprocessed and processed red meat was associated with a moderately higher risk of frailty.

Healthy Aging: Protein intake

- ❖ International study groups (Bauer et al. 2013; Deutz et al. 2014) recommended 1.2-1.5 g protein/kg BM/day for adults older than 65 years. This exceeds the current RDA of 0.8-1.0 g protein/kg BM/day.
- ❖ For a 70 kg (154 lb) person = 84-105 g protein/day.
- ❖ Note: limit of approximately 20 kg protein able to be absorbed in one meal.

protein

SOURCES & AMOUNTS

plant-based:	animal-based:
3/4 cup tofu.....19g	3 oz. chicken.....23g
1/2 cup cooked soybeans....15g	3 oz. pork.....22g
1/2 cup cooked lentils.....9g	3 oz. beef.....21g
2 tbsp. peanut butter.....7g	3 oz. shrimp.....19g
1/2 cup cooked beans.....7g	1 cup greek yogurt...19g
1 oz. nuts*.....6g	3 oz. salmon.....17g
1/4 cup hummus.....5g	1 cup milk.....8g
2 tbsp. seeds.....4g	1 egg.....7g
1/2 cup cooked quinoa.....4g	1 oz. cheese.....7g
1 cup almond milk.....1g	

Goal: 6-10g with snacks, 15-20g with meals

* 1 oz. serving of nuts = 14 walnuts, 16 cashews, 23 almonds, 28 peanuts, and 49 pistachios.

Sugar Sweetened Beverages

- ❖ In the NHS and HPFS, each serving per day increment in SSBs was associated with a 7% higher risk of total mortality (HR: 1.07; 95% CI: 1.05,1.09), a 10% higher risk of CVD death (HR: 1.10; 95% CI: 1.06, 1.14), and a 5% higher risk of cancer death.

Polyphenols exhibit anti-aging properties

- ❖ Polyphenols are a diverse group of naturally occurring compounds found in plant-based foods, such as fruits, vegetables, whole grains, nuts, and legumes—including soy products, coffee, tea, cocoa, red wine, herbs, and spices.
 - ❖ Flavenoids - fruits, vegetables, tea, coffee, cocoa and soy
 - ❖ Lignans - seeds, grains and vegetables
 - ❖ Phenolic Acids - coffee, nuts and fruits
 - ❖ Resveratrol - grapes and wine

HEALTHY EATING PLATE

Use healthy oils (like olive and canola oil) for cooking, on salad, and at the table. Limit butter. Avoid trans fat.



The more veggies – and the greater the variety – the better. Potatoes and French fries don't count.

Eat plenty of fruits of all colors.



STAY ACTIVE!

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Drink water, tea, or coffee (with little or no sugar). Limit milk/dairy (1-2 servings/day) and juice (1 small glass/day). Avoid sugary drinks.

Eat a variety of whole grains (like whole-wheat bread, whole-grain pasta, and brown rice). Limit refined grains (like white rice and white bread).

Choose fish, poultry, beans, and nuts; limit red meat and cheese; avoid bacon, cold cuts, and other processed meats.

Harvard Medical School
Harvard Health Publications
www.health.harvard.edu



Association of Nut & Legume Consumption with Total and Cause-Specific Mortality

❖ n engl j med 369;21 nejm.org november 21, 2013

	Never (N=521,763)	Less Than Once per Week (N=1,202,005)	Once per Week (N=601,917)	Two to Four Times per Week (N=549,126)	Five or More Times per Week (N=164,042)	
All causes						
No. of deaths	5203	10,287	5181	5012	1746	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.93 (0.90–0.96)	0.89 (0.86–0.93)	0.87 (0.83–0.90)	0.83 (0.78–0.88)	<0.001
Cancer						
No. of deaths	1883	3904	1976	1898	632	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.93 (0.88–0.98)	0.93 (0.87–1.00)	0.92 (0.85–0.98)	0.89 (0.81–0.99)	0.03
Cardiovascular disease						
No. of deaths	1355	2219	1224	1216	457	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.84 (0.78–0.90)	0.83 (0.76–0.89)	0.79 (0.73–0.86)	0.75 (0.62–0.84)	<0.001
Heart disease						
No. of deaths	1044	1693	914	907	348	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.84 (0.77–0.91)	0.78 (0.71–0.86)	0.75 (0.68–0.82)	0.71 (0.63–0.81)	<0.001
Stroke						
No. of deaths	311	526	310	309	109	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.82 (0.70–0.97)	0.94 (0.79–1.10)	0.93 (0.79–1.10)	0.89 (0.67–1.19)	0.91
Respiratory disease						
No. of deaths	376	769	379	355	122	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.95 (0.84–1.08)	0.91 (0.78–1.06)	0.83 (0.66–1.04)	0.76 (0.59–0.98)	0.005
Neurodegenerative disease						
No. of deaths	327	788	380	344	130	
Multivariate-adjusted hazard ratio (95% CI)	1.00	1.11 (0.97–1.26)	1.09 (0.94–1.27)	1.00 (0.76–1.32)	0.98 (0.79–1.22)	0.12
Infection						
No. of deaths	69	163	73	68	24	
Multivariate-adjusted hazard ratio (95% CI)	1.00	1.07 (0.80–1.43)	0.86 (0.61–1.21)	0.80 (0.56–1.15)	0.77 (0.46–1.28)	0.06
Kidney disease						
No. of deaths	80	138	73	56	20	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.89 (0.67–1.18)	0.87 (0.62–1.21)	0.70 (0.38–1.28)	0.61 (0.34–1.08)	0.19
Diabetes						
No. of deaths	79	129	39	42	15	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.95 (0.67–1.33)	0.70 (0.47–1.06)	0.79 (0.52–1.22)	0.84 (0.45–1.57)	0.29

Sunscreen Benefits

- ❖ Large randomized, controlled study in younger subjects aged <55 years old (mean age 39 years), which was conducted in Australia .
- ❖ Subjects were randomly assigned to apply SPF 15+ broad-spectrum sunscreen daily for 4.5 years (with instructions on how to apply it properly) or to the control group who could apply sunscreen on a discretionary basis (which was usually recreational use).
- ❖ The daily sunscreen group showed no detectable increase in skin aging after 4.5 years and 24% less skin aging than the discretionary sunscreen group (relative odds, 0.76 [95% CI, 0.59-0.98]), as measured by microtopography of dermal elastosis on the back of the hands.
- ❖ Hughes MC, Williams GM, Baker P, Green AC. Sunscreen and prevention of skin aging: A randomized trial. *Ann Intern Med.*2013;158(11):781-790.

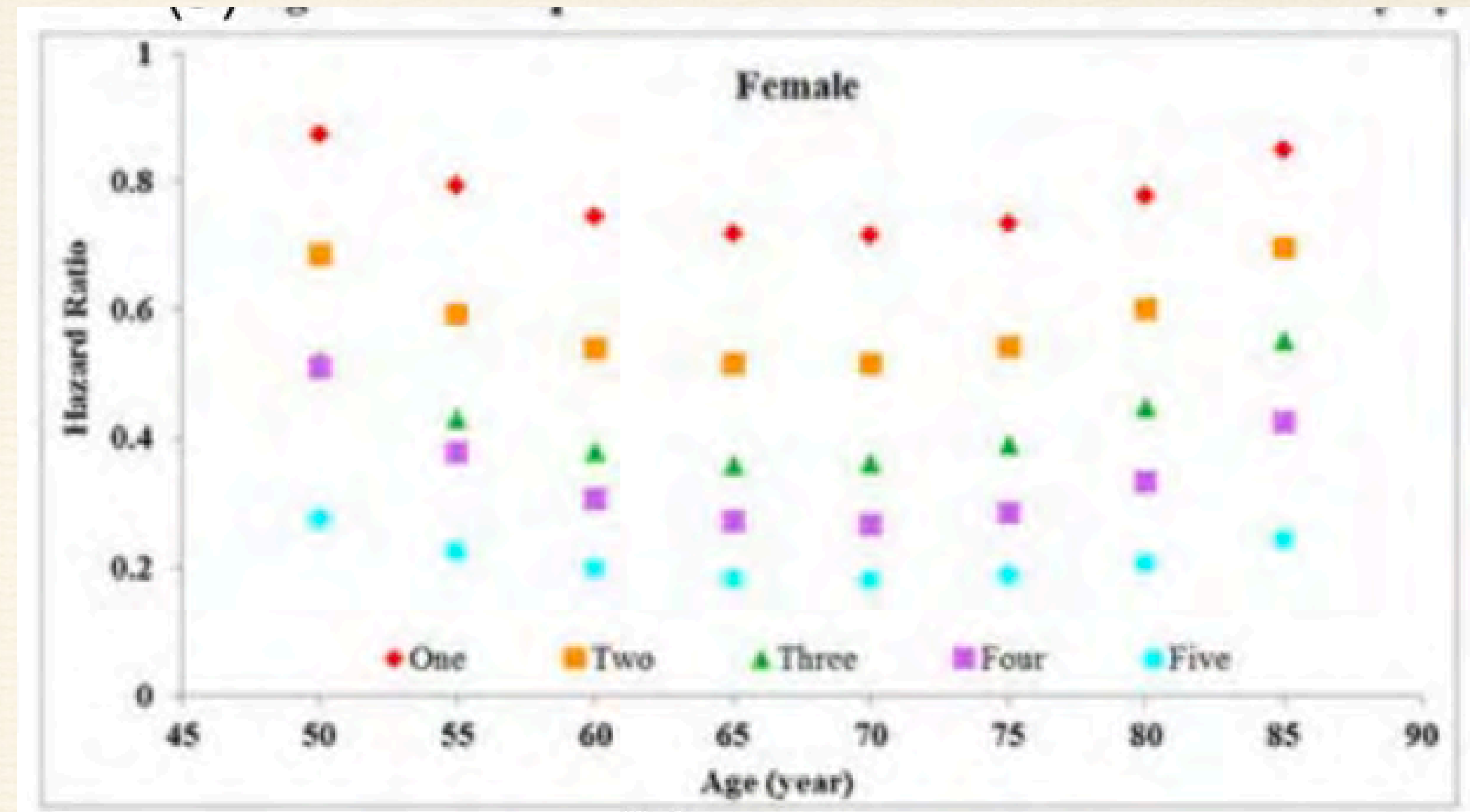
Smoking and Alcohol

- ❖ Smoking is well proven to accelerate and aging and disease
- ❖ Alcohol use limited to 1-2 servings per day can be protective in studies starting at younger ages but the risk increases with advancing age (falls, altered sleep, atrial fibrillation, and other chronic illnesses).



Lifestyle Factors Combined

- ❖ adopting a healthy diet along with other lifestyle factors (not smoking, engaging in regular physical activity, maintaining a healthy weight, and consuming alcohol in moderation [if any]) can potentially add approximately 8 to 10 years of disease-free life expectancy. Beyond physical health and longevity, a healthy diet and lifestyle can help to promote mental well-being and mitigate age-related cognitive decline, reducing the risk of dementia and enhancing the overall quality of life.



(Prevalence of lifestyle factors using National Health and Nutrition Examination Survey (NHANES) data 2013-2014.. Low-risk lifestyle factors included cigarette smoking (never smoking), physically active (≥ 3.5 h/week moderate to vigorous intensity activity), high diet quality), moderate alcohol intake and normal weight (body mass index < 25 kg/m²).

Multivitamins in the Prevention of Cancer in Men

The Physicians' Health Study II Randomized Controlled Trial

- ❖ The Physicians' Health Study II (PHS II): the only large-scale (14 641 male physicians aged 50 years or older) randomized, double-blind, placebo-controlled trial testing the long-term effects of a common multivitamin (Centrum Silver) in the prevention of chronic disease.
- ❖ Overall, minimal benefit of a daily multivitamin supplement, Perhaps more benefit in men over age 70 with a prior history of cancer.
- ❖ Slight increase in the risk of rashes and nosebleeds with multivitamin supplements.
- ❖ Additional finding of no benefit with Vitamin E, C or beta carotene.
- ❖ Also, no benefit in preventing heart attacks or stroke.

Table 2. Association Between Randomized Multivitamin Assignment and the Risk of Total Cancer, Site-Specific Cancer, and Mortality in the PHS II^a

Outcome	Total Men in Analysis ^b	Multivitamin		Placebo		Adjusted HR (95% CI) ^c	P Value
		Active	No. of Events	No. of Men	No. of Events		
Total cancer	14 641	7317	1290	7324	1379	0.92 (0.86-0.998)	.04
Total epithelial cell cancer ^d	14 641	7317	1158	7324	1244	0.92 (0.85-0.997)	.04
Total cancer minus prostate cancer ^e	14 641	7317	641	7324	715	0.88 (0.79-0.98)	.02
Prostate cancer	13 980	6988	683	6992	690	0.98 (0.88-1.09)	.76
Prostate cancer death	14 641	7317	70	7324	78	0.91 (0.66-1.26)	.58
Colorectal cancer	14 519	7255	99	7264	111	0.89 (0.68-1.17)	.39
Colorectal cancer death	14 641	7317	37	7324	39	0.95 (0.60-1.48)	.81
Lung cancer	14 610	7300	74	7310	88	0.84 (0.61-1.14)	.26
Lung cancer death	14 641	7317	65	7324	73	0.89 (0.64-1.25)	.50
Bladder cancer	14 570	7276	41	7294	57	0.72 (0.48-1.07)	.10
Bladder cancer death	14 641	7317	15	7324	18	0.84 (0.42-1.67)	.62
Pancreatic cancer	14 638	7315	43	7323	36	1.19 (0.76-1.85)	.45
Pancreatic cancer death	14 641	7317	39	7324	39	0.99 (0.64-1.55)	.97
Lymphoma	14 595	7296	100	7299	88	1.13 (0.85-1.51)	.40
Lymphoma death	14 641	7317	38	7324	33	1.15 (0.72-1.84)	.55
Leukemia	14 612	7296	50	7316	60	0.83 (0.57-1.21)	.33
Leukemia death	14 641	7317	22	7324	37	0.59 (0.35-1.01)	.053
Melanoma	14 483	7238	108	7245	96	1.12 (0.85-1.47)	.42
Melanoma death	14 641	7317	9	7324	10	0.91 (0.37-2.25)	.84
Total mortality ^f	14 641	7317	1345	7324	1412	0.94 (0.88-1.02)	.13
Cancer mortality	14 641	7317	403	7324	456	0.88 (0.77-1.01)	.07

Abbreviations: HR, hazard ratio; PHS, Physicians' Health Study.

^aMean follow-up of 11.2 years for all 14 641 men through June 1, 2011.

^bFor total cancer, site-specific mortality, total mortality, and cancer mortality, analyses included all 14 641 participants. For the incidence of site-specific cancers, analyses were restricted to men without that site-specific cancer at baseline.

^cAdjusted for age, PHS cohort (original PHS I participant, new PHS II participant), and randomized treatment assignment (beta carotene, vitamin E, and vitamin C), and stratified on baseline cancer.

^dEpithelial cell cancer was limited to carcinomas, which included all cancers except for lymphoma and leukemia.

^eIncludes all cancers other than prostate cancer.

^fAdditionally stratified on baseline cardiovascular disease.

Omega-3 Fatty Acids

- ❖ Supplements commonly are derived from Fish Oil but may also be from algae.
- ❖ May lower the risk for dementia by up to 20% but many studies find no benefit.
- ❖ May lower organ aging by lowering inflammation.
- ❖ May have GI side effects and increase the risk of bleeding
- ❖ No professional organizations recommend these supplements.

Using your Brain Prevents Dementia

- ❖ Cognitive reserve hypothesis - dementia is less likely with larger brain weight.
- ❖ Higher education
- ❖ Leisure activities that have demonstrated procognitive effects include reading, discussion groups, computer usage, participation in card and board games, solving puzzles, playing musical instruments, and earning a second language.
- ❖ Social activities that have demonstrated procognitive effects include traveling; attending theater, concerts, or art events; participating in social groups or pension organizations; socializing with family; and dancing.

Healthy Aging: Social Supports

- ❖ Good social connections have been associated with lower risk of dementia and mortality.
- ❖ Perception of social support and loneliness were the biggest drivers.
- ❖ Living with others, yearly/monthly/weekly community engagement, and having a confidante are associated with lower mortality risk.
- ❖ Stress Buffering Hypothesis: on three neurobiological pathways that link social support with health and longevity: the autonomic nervous system, the neuroendocrine system, and the immune system.



Positive Social Factors Prospectively Predict Younger Epigenetic Age: Findings from the Health and Retirement Study

Abby R. Hillmann, B.S.^{1,*}, Roma Dhingra², Rebecca G. Reed, Ph.D.¹

- ❖ Study examined whether perceived social support from and contact frequency with four different relationship types (i.e., spouse, children, friends, and other family) prospectively related to epigenetic age up to 10 years later.
- ❖ The friends relationship domain emerged as the most robust main effect predictor of epigenetic age across both social support and contact frequency.



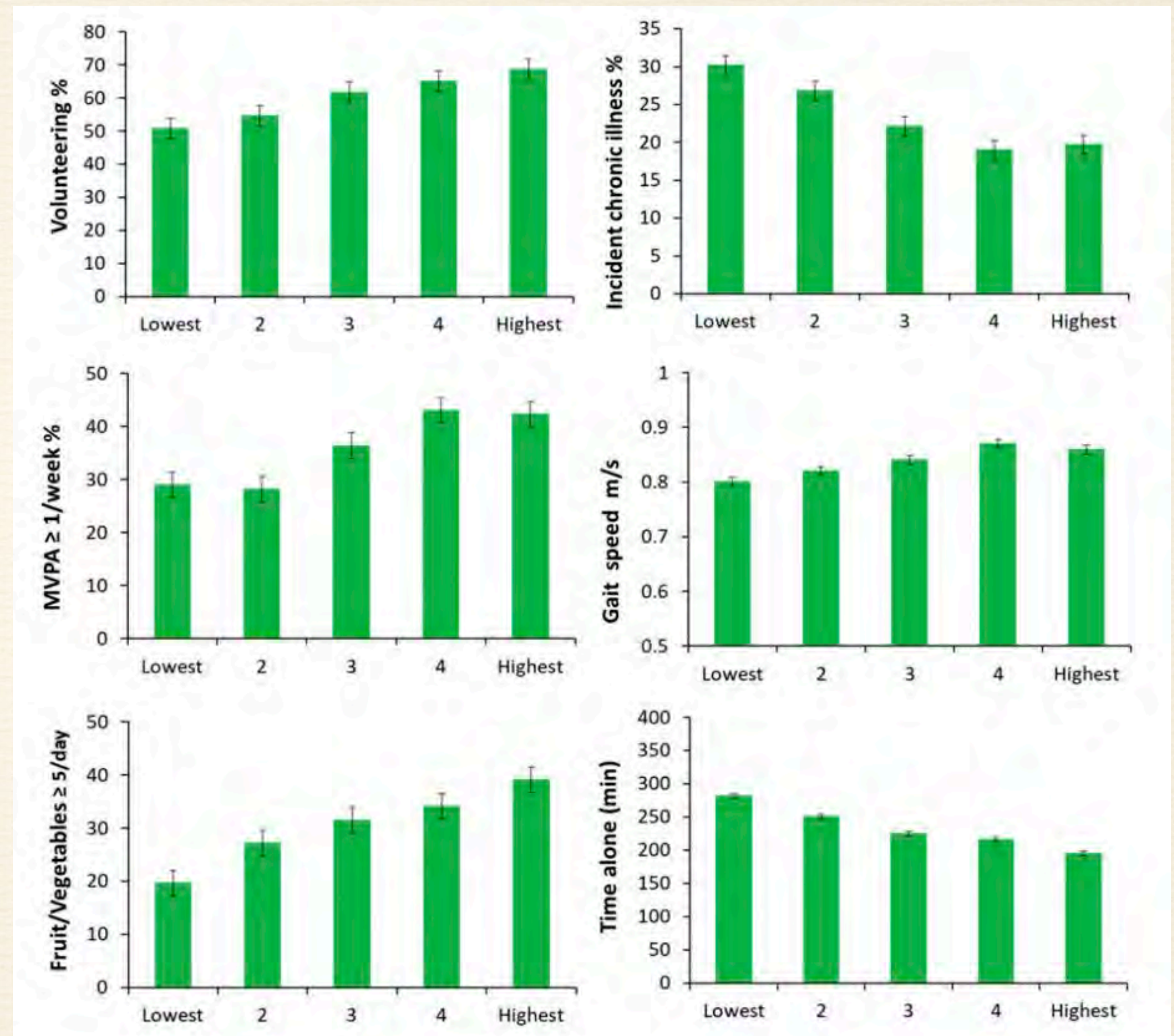
Health Aging: Gerotranscendence

- ❖ Positively viewing the aging itself as a natural process.
- ❖ “Less material interest, less obsessed about themselves, feel a sense of closeness between generations, and feel happy and satisfied, so they perceive old age positively.”
- ❖ Traits such as resilience and optimism are associated with greater longevity and reduced physical illness



Healthy Aging: Purpose in Life

- ❖ Among persons with a high level of purpose in life, dementia-free life is prolonged by 6 years.
- ❖ Purpose in life is modifiable and amenable to improvement via a variety of approaches.
- ❖ Purpose is protective against psychological and physical morbidity in the settings of cancer, chronic pain and other health conditions.
- ❖ Graph: Associations of a rating of a “worthwhile” life adjusted for age, SES and education.



Stress accelerates Aging

- ❖ Increases cellular damage and inflammation.
- ❖ Accelerates the accumulation of genetic markers of aging (DNA damage, telomere shortening, etc)
- ❖ Leads to an increase in chronic disease rates.



Healthy Aging: Regular Medical Care

- ❖ Screening for conditions like hypertension, diabetes, cardiovascular risk and cancer are critical for early detection and treatment.
- ❖ Less preventative health care leads to more chronic illnesses and less effective management of them.
- ❖ Geriatric care can screen for risk of falls, dementia, depression in particular.



RESEARCH ARTICLE

Estimating the effect of health assessments on mortality, physical functioning and health care utilisation for women aged 75 years and older

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- ❖ This study compared long term health care use to physical functioning and mortality in healthy women aged ≥ 75 years of age.
- ❖ Women who had regular health assessments were more likely (1/3 more likely) to survive, have less hospitalizations and have better function scores than those who did not.

Healthy Aging: Quick Tips

- ❖ Walk 30 to 60 minutes 5 days a week and at a good pace
- ❖ Have 1 ounce of nuts daily
- ❖ Limit red meat, choosing 0.55 grams per pound body weight per day of non-red meat protein (e.g. for 150 pounds = ~ 80 grams/day).
- ❖ Schedule Polyphenols in your diet (found in plant-based foods, such as fruits, vegetables, whole grains, nuts, and legumes—including soy products, coffee, tea, cocoa, red wine, herbs, and spices).
- ❖ Use sunscreen (SPF 30) daily to your face, neck and forearms.
- ❖ Expand your friend network in low stress relationships while living in a safe environment
- ❖ Find your purpose in life while positively viewing the aging itself as a natural process.
- ❖ Establish regular health care for preventive care and to manage chronic health conditions.