

## Healthy Aging

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## The Impact of Culture

*Become 21*  
*Turn 30*  
*Push 40*  
*Reach 50*  
*Make it to 60*  
*Hit 70*



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## The Okinawan Example

- ☞ Lifelong physical activity
- ☞ Social and intellectual  
connectedness
- ☞ Unique diet
- ☞ Positive societal attitude  
toward age



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### Theories of Aging

- ⌘ Vital substance
- ⌘ Anti-oxidant
- ⌘ Telomeres
- ⌘ Cross-linking
- ⌘ Genetic
- ⌘ Waste product



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### Baltimore Longitudinal Study on Aging

- ⌘ Enormous individual variability
- ⌘ Reduced capacity to adapt
- ⌘ Reduced speed of performance
- ⌘ Increased susceptibility to disease



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### MacArthur Foundation Study of Aging in America

#### “Successful Aging”

- ⌘ Low probability of disease
- ⌘ High cognitive and physical functioning
- ⌘ Active engagement with life



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### Can we enhance longevity?

- ⌘ Prospective trial of 20,244 UK men and women aged 45–79 y with no known cardiovascular disease or cancer at baseline
- ⌘ Participants scored one point for each health behavior:
  - ↪ current non-smoking
  - ↪ physically active
  - ↪ moderate alcohol intake (1–14 units a week)
  - ↪ plasma vitamin C >50 mmol/l
- ⌘ 11 years of follow-up
- ⌘ The mortality risk for those with all four health behaviors (compared those with zero) was equivalent to being 14 years younger in chronological age.

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### The Healthy Ageing: a Longitudinal study in Europe (HALE)

- ⌘ 2339 healthy men and women, aged 70 to 90 years from 11 European countries
- ⌘ Ten-year mortality from all causes
- ⌘ Investigated the single and combined effect of Mediterranean diet, physical activity, moderate alcohol use, and nonsmoking
- ⌘ 935 participants died: 371 from cardiovascular diseases, 233 from cancer, and 145 from other causes; for 186, the cause of death was unknown.
  - ↪ Mediterranean diet (HR 0.77)
  - ↪ Moderate alcohol use (HR, 0.78)
  - ↪ Physical activity (HR, 0.63)
  - ↪ Nonsmoking (HR, 0.65)
  - ↪ All four combined: (HR 0.35)

JAMA. 2004;292:1433-1439.

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### Mediterranean diet mechanisms

- ⌘ Associated with high antioxidant capacity and low concentrations of oxidized LDL
- ⌘ High fiber and a low omega-6–omega-3 fatty acid ratio, which potentially prevent cancer initiation and progression
- ⌘ Lowers chronic inflammation
  - ↪ lower levels of C-reactive protein, interleukin-6, homocysteine, and fibrinogen and with lower white blood cell counts

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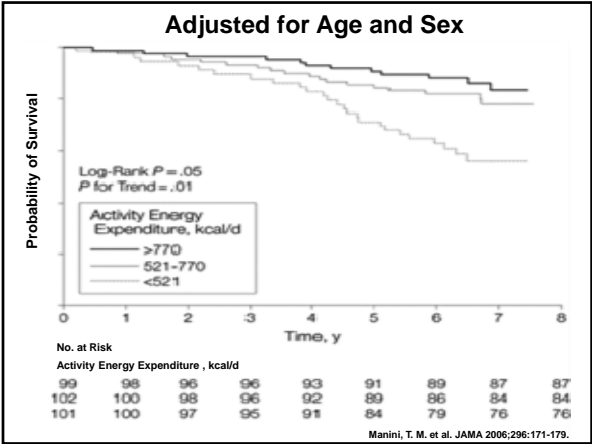
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**Benefits of Exercise**

- ⌚ ↓ coronary heart disease
- ⌚ ↓ cancer incidence
- ⌚ ↓ diabetes
- ⌚ ↓ falls
- ⌚ ↓ physical disability
- ⌚ Mechanism ?
  - ⌚ Exercise reduces oxidative stress and inflammation

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**Exercise Benefits continued**

- ⌚ Improves mood
- ⌚ Helps maintain cognitive function
  - ⌚ decreased amyloid plaques
  - ⌚ increased cerebral blood flow
  - ⌚ reduced accumulation of reactive oxygen species

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Exercise Recommendations:

- ⌘ **Cardiovascular**
  - ↳ continuous and rhythmic use of large muscle groups that increase resting heart rate by > 60% of heart rate reserve.
- ⌘ **Strength Training**
- ⌘ **Flexibility and Balance**



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Epic trial

- ⌘ Multicenter prospective cohort study carried out from 1992-2003
- ⌘ 74,607 participants aged >60 without coronary heart disease, stroke or cancer at baseline
- ⌘ Adherence to a modified Mediterranean diet reduced mortality by 7%



Modified Mediterranean diet and survival: *BMJ* 2005 Apr 30.

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Mediterranean Diet

- ⌘ High intake of vegetables, legumes, fruits, and (unrefined) cereals
- ⌘ Moderate to high intake of fish
- ⌘ Low intake of saturated fats
- ⌘ High intake of mono-unsaturated especially olive oil
- ⌘ Low to moderate intake of dairy, mostly cheese and yogurt
- ⌘ Low intake of meat
- ⌘ Modest intake of alcohol, mostly as wine



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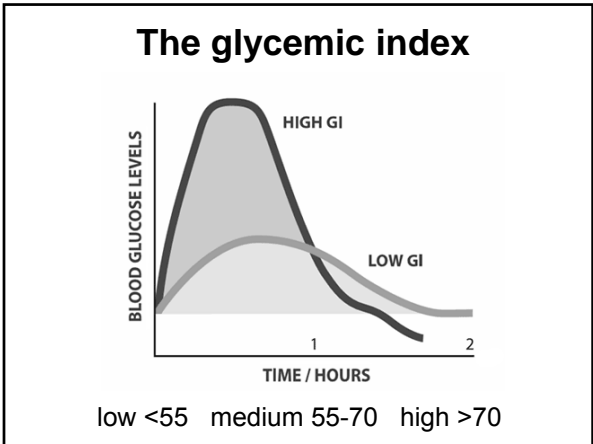
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### Omega 3 fatty acids

- ⌘ Patients with Alzheimer's dementia have 30% less DHA in brain tissue than age-matched controls.
- ⌘ 50% reduction in risk of dementia in people who eat >180mg of DHA or 2.7 servings of fish per week



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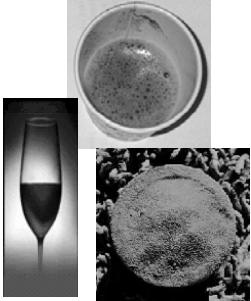
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### Protective Phytonutrients

- ⌘ Green tea
- ⌘ Pigments in red wine
- ⌘ Dark chocolate
- ⌘ Curcumin



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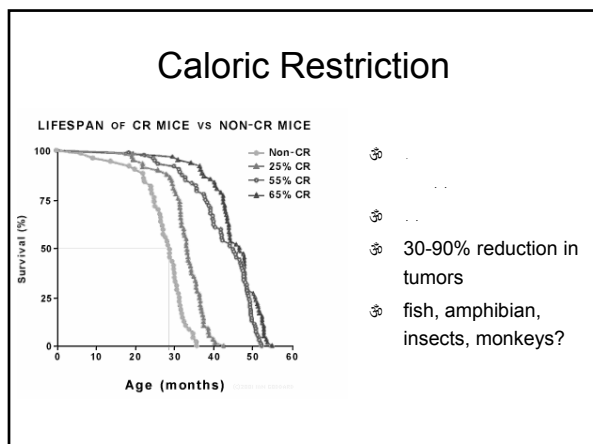
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### CALERIE trial

*Comprehensive Assessment of the Long-term Effects of Reducing Intake of Energy*

- ⊗ 6 month RCT of 48 sedentary, overweight men and women
- ⊗ 4 groups: diet to maintain weight vs 3 different degrees of caloric restriction; with and without exercise
- ⊗ Results:
  - ⊗ ongoing weight loss for six months.
  - ⊗ ↓ insulin resistance
  - ⊗ ↓ levels of LDL
  - ⊗ ↓ DNA damage

Pittas et al. *Diabetes Care*. 28(12):2939-41, 2005 Dec.

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### Alleged Anti-aging Medications and Supplements

⊗ Estrogen	⊗ Resveratrol
⊗ Testosterone	⊗ Hyaluronic acid
⊗ DHEA	⊗ Ginkgo biloba
⊗ HGH	⊗ Phosphatidyl serine
⊗ Melatonin	⊗ Collagen
⊗ Metformin	⊗ Adaptogenic herbs and mushrooms
⊗ Alpha-lipoic acid	⊗ Ashwaganda
⊗ Acetyl L-carnitine	⊗ Cordyceps

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**Micronutrients: Should you Supplement?**

Pros:

- ⌘ Insurance
- ⌘ Recommended amount not available in food
- ⌘ Antioxidant need may have increased
- ⌘ Vitamins and minerals with specific therapeutic effects

Cons:

- ⌘ Quality challenges
- ⌘ Vitamins not a substitute for whole food



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**Multivitamin recommendations:**

- ⌘ Vitamin C 200 milligrams a day
- ⌘ Vitamin E 400 IU of natural mixed tocopherols (or 80 milligrams tocopherols and tocotrienols)
- ⌘ Selenium 200 micrograms
- ⌘ Mixed carotenoids, 10,000 to 15,000 IU daily (no preformed vitamin A - listed as retinol or retinol palmitate)
- ⌘ Folic acid 400 micrograms
- ⌘ Vitamin D3 1,000 IU
- ⌘ Supplemental calcium depending on dietary intake

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*Emotional*

*Family*

*Friends*

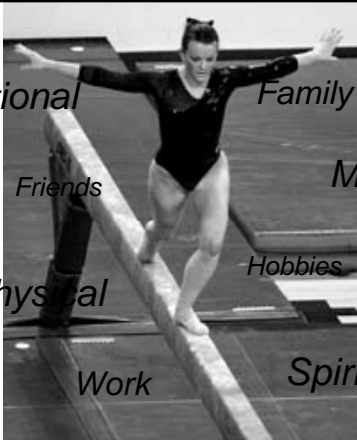
*Mental*

*Physical*

*Hobbies*

*Work*

*Spiritual*



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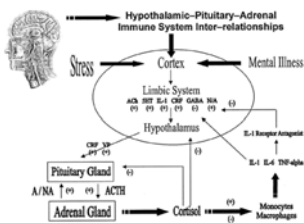
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### Emotions and longevity

- ☞ Psychoneuroimmunology: the study of mind-body connection
- ☞ Emotional states that impact health
  - ☞ Depression
  - ☞ Hostility
  - ☞ Stress



### Stress reduction practices

- ☞ Using your breath
- ☞ Meditation
  - ☞ Centering
  - ☞ Improved learning
  - ☞ Lower blood pressure
  - ☞ Longer life?
- ☞ Active forms of relaxation



#### Risk factors for cognitive impairment

Risk factor	Remarks
Age	Increased risk with increased age
Sex	2:1 female: male ratio
Education	Increased number of years confers decreased risk
Head trauma	
Family history of dementia	
Cardiovascular disease	Amenable to lifestyle modification
Atherosclerosis	Amenable to lifestyle modification
Hypertension	Amenable to lifestyle modification
Diabetes mellitus (Type 2)	Amenable to lifestyle modification
Total serum cholesterol level	Amenable to lifestyle modification
Serum fibrinogen	Amenable to lifestyle modification
Apolipoprotein E ε4 allele carrier	

Adapted from: Schuit AJ et al. Physical activity and cognitive decline, the role of apolipoprotein ε4 allele. Med Sci Sports Exerc.2001;33:772-777.

Maximizing Cognitive Function

- ☞ Lifelong learning
- ☞ Strenuous activity
- ☞ Self efficacy
- ☞ Plasticity



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Leisure Activity	People with Dementia	All subjects	Hazard Ratio for Dementia (95% CI)
Playing board games	16	103	.26 (0.17-0.57)
Reading	84	382	.65 (0.43-0.97)
Playing a musical instrument	4	17	.31 (0.11-0.90)
Dancing	25	130	.24 (0.06-0.97)

Adapted from Verghese NEJM 2003 Leisure Activities and the Risk of Dementia in the Elderly

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Continuing Engagement with Life

- ☞ Social relations
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  - ☞ Alameda
- ☞ Productive activity



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Role of Elders

- ☞ Mentors
- ☞ Mediators
- ☞ Monitors
- ☞ Mobilizers
- ☞ Motivators



Maggie Kuhn  
 Founder: Gray Panthers  
 1905-1995

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Whistle While You Work

A survey of elders  
 Richard Leider



- ☞ Be more reflective
- ☞ Be more courageous
- ☞ Live with more purpose, leave a legacy, and make an imprint

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Let the beauty we  
 love be what we do.  
 There are hundreds  
 of ways to kneel and  
 kiss the ground.

Rumi

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### Legacy?



- ⌘ Have I fulfilled my purpose?
- ⌘ What will I be remembered for?
- ⌘ What kind of legacy have I passed along to my family and others?

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### Prevention Prescription

- ⌘ Physical activity – daily aerobic, twice weekly weights, flexibility
- ⌘ Mediterranean diet
- ⌘ Minimal alcohol, no tobacco
- ⌘ Daily relaxation practices
- ⌘ Commit to life-long learning
- ⌘ Social connections
- ⌘ Engage the spirit
- ⌘ Consider your legacy



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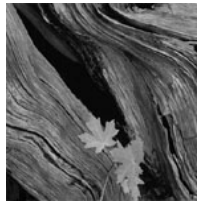
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### Resources

- ⌘ Books
  - ↗ *A Year to Live* by Stephen Levine
  - ↗ *How Then Shall We Live* by Wayne Muller
  - ↗ *Healthy Aging* by Andrew Weil
  - ↗ *How and Why We Age* Leonard Hayflick
- ⌘ Tapes
  - ↗ [www.healthjourneys.com](http://www.healthjourneys.com)
  - ↗ [www.tranceformation.com](http://www.tranceformation.com)
  - ↗ *The Crown of Age* by Marion Woodman
- ⌘ Websites
  - ↗ [www.drweil.com](http://www.drweil.com)
  - ↗ [www.foodnews.org](http://www.foodnews.org)
- ⌘ Integrative Physicians
  - ↗ [www.integrativemedicine.arizona.edu](http://www.integrativemedicine.arizona.edu)



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