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Healthy Habits and Modifiable Risk Factors for Cognitive Decline: What the Research Tells Us

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Outline

1. Making sense of medical research
2. Modifiable risk factors for dementia
3. Affecting change in ourselves and others to modify dementia risk factors

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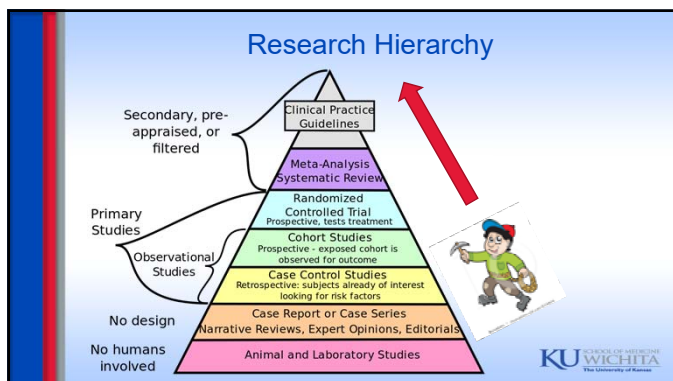
Reporting of medical research

Can sometimes be:

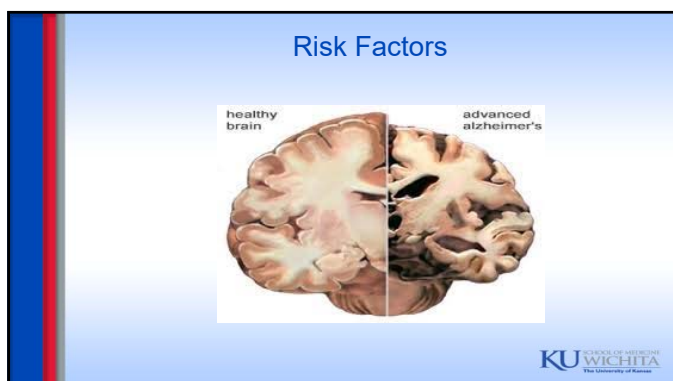
- Contradictory
- Difficult to know how to apply
- Mischaracterizing
- Confusing



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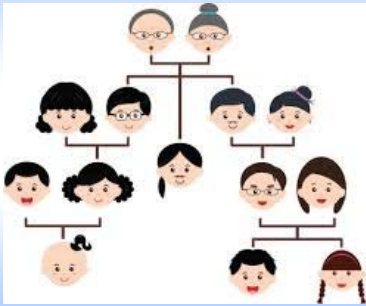
Non-modifiable risk factors



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This slide features a vertical sequence of seven illustrations of a woman at different stages of her life: a crawling baby, a toddler, a young girl, a young woman, a woman in her 20s, a woman in her 30s, and an elderly woman with a cane. The background is light blue with a red and blue vertical bar on the left. The KU logo is in the bottom right corner.

Non-modifiable risk factors



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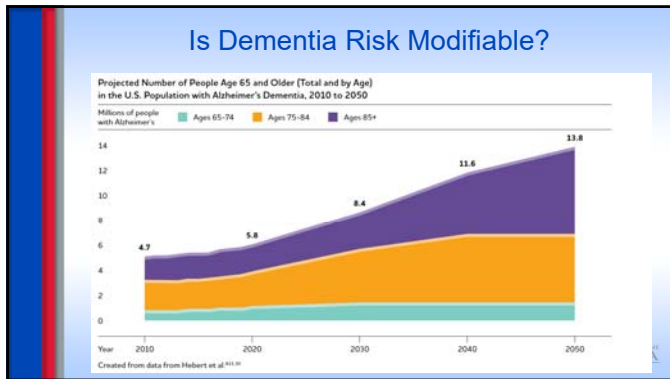
This slide shows a family tree diagram with three generations. The top generation consists of a man and a woman. The middle generation has four children (two from each parent). The bottom generation has five children (two from the first couple and three from the second couple). The background is light blue with a red and blue vertical bar on the left. The KU logo is in the bottom right corner.

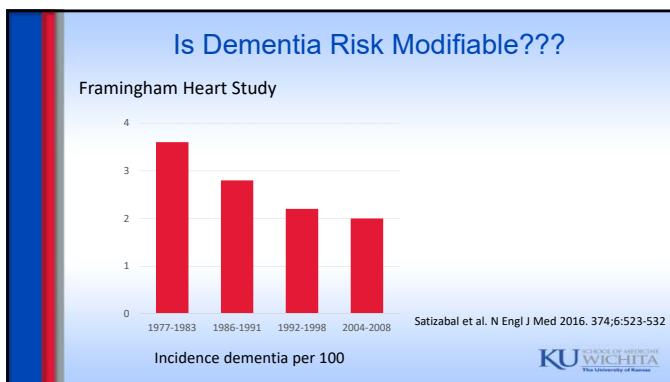
Non-modifiable risk factors

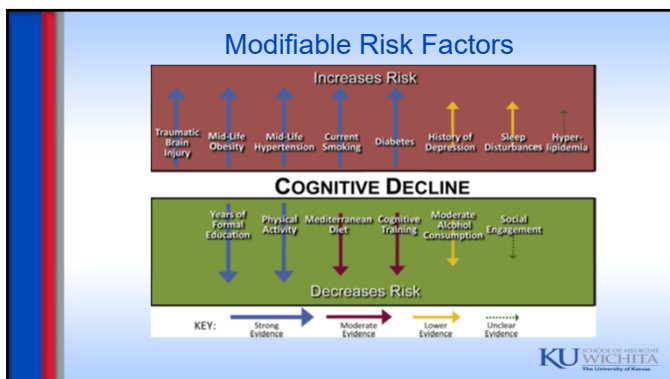


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This slide features a 3D rendering of a DNA double helix structure in shades of blue. The background is light blue with a red and blue vertical bar on the left. The KU logo is in the bottom right corner.







Education



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Why Does Education help?

- Increased *Cognitive Reserve*
 - Brain's ability to withstand pathologic changes
- More likely to have cognitively demanding job
- More likely engage in cognitively stimulating activity throughout lifespan
- Linked to socioeconomic status, diet, cardiovascular health

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Cognitive Activity

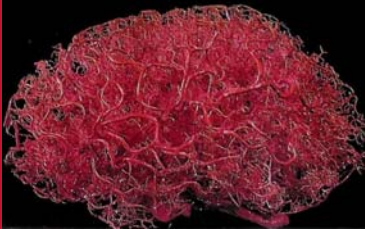
Religious Orders Study

- 801 older adults w/o dementia
- Rated from 1 - 5 on their frequency to participate in cognitively stimulating activities
- Followed from 1994 – 2001
- Outcome
 - Risk of dementia decreased by 33% in those more frequently cognitively active
 - Not explained by education, genetic risk, or medical conditions

Wilson et al. JAMA 2002; 287: 742-751.

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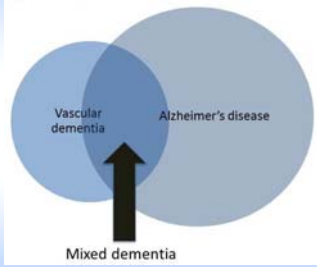
Cerebrovascular disease risk factors



- High blood pressure
- High cholesterol
- Diabetes
- Smoking

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Cerebrovascular disease risk factors

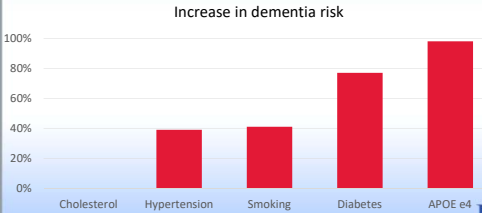


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Vascular Risk Factors

JAMA Neurology study (Gottesman et al., 2017)

Increase in dementia risk



Risk Factor	Increase in dementia risk (%)
Cholesterol	0%
Hypertension	40%
Smoking	40%
Diabetes	75%
APOE e4	95%

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Smoking

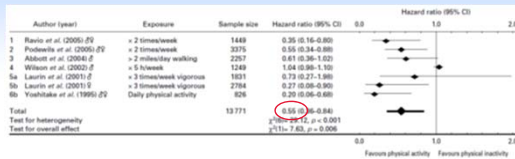
- > 2X greater risk for developing Alzheimer's and Vascular dementia (Rusamen et al., 2011)



- People who quit smoking in midlife are not at greater risk (O'Hara et al., 2015)



Exercise and Risk

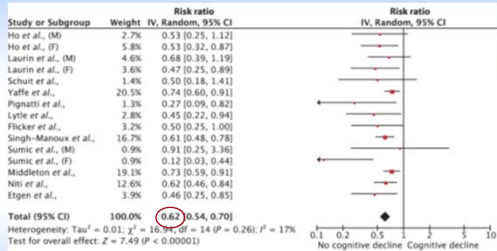


Individuals who exercised regularly were about half as likely to develop AD during the study periods

Hamer M & Chida Y. Psychol Medicine 2009; 39: 3-11.



Exercise and Risk



Sofi et al. J Intern Med 2011; 269:107-17

1/3rd lower risk of any type dementia with exercise



Exercise and Risk

Midlife cardiovascular fitness and dementia

- 191 Swedish women
- Cardiovascular fitness in mid-life (Mean age = 50)
 - Low
 - Medium
 - High
- High vs. medium fitness level
 - **88% less likely** to develop dementia
 - Age of onset of dementia **9.5 years later**



Horder et al. Neurology 2018; 10 -1212



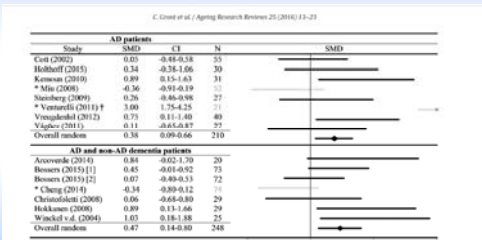
Exercise

- Defina et al. (2013) Midlife fitness and dementia
 - ~20,000 community dwelling middle-aged individuals
 - Fitness level
 - Maximal time on a treadmill test at baseline
 - Dementia diagnosis at age >65
 - Highest versus lowest fitness
 - ~1/3rd less likely to develop dementia
 - Regardless of history of stroke




Impact of Exercise on Cognition in Early Dementia

C. Cross et al. / Aging Research Review 25 (2016) 19–23



Exercise: Other benefits

- Improved balance
- Reduced falls
- Improved mood
- Improved overall health
- Social activity
- Improved daily functioning in dementia (Vidoni et al., 2017; Toots et al., 2016)



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What is a Mediterranean diet?

Not necessarily....



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Mediterranean Diet



Meats and Poultry

Poultry, Eggs, Cheese, and Yogurt

Fish and Seafood

Fats, Vegetables, Grains, Beans, Nuts, Legumes, and Seeds


Fruits

Be Physically Active, Enjoy Meals with Others

For University of Kansas

Mediterranean Diet



- High:
 - Vegetables and fruit
 - Whole grains, legumes, nuts, and seeds
- Moderate:
 - Fish, poultry, eggs
 - Dairy (yogurt and cheese)
 - Olive oil (extra virgin)
 - Red wine
- Low
 - Red, processed meats
 - Saturated fats



MEDITERRANEAN DIET =
Healthy Fats + Protein + Unrefined Carbs + Unlimited Non-starchy Veggies
Every Time You Eat... Every Meal & Every Snack!
Use this diagram to know which foods fall into more than one unrestricted group.

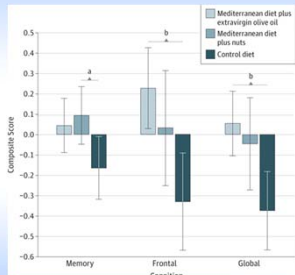
Mediterranean Diet Benefits

- Cardiovascular risk factors
 - LDL cholesterol
 - Blood pressure
 - Diabetes
 - Obesity
- Improved cognition
- Reduced stroke risk
- Reduced depression
- Reduced dementia risk





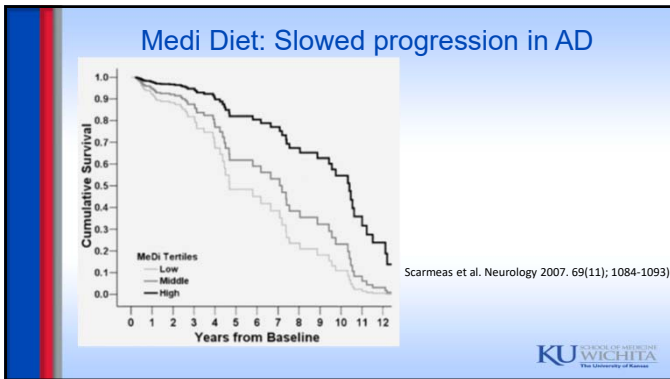
Mediterranean diet

Mediterranean Diet
vs.
Controls - over 4 years



Category	Mediterranean diet plus extra virgin olive oil	Mediterranean diet plus nuts	Control diet
Memory	0.10	0.05	-0.10
Frontal Cognition	0.20	0.10	-0.10
Global	0.10	0.05	-0.10

Valls-Pedret et al. 2015. JAMA Intern Med; 175: 1094-103. 



- ### Depression
- Baltimore Longitudinal Study on Aging (Dotson, 2010)
 - 1239 individuals followed over 25 years
 - Number of depressive episodes associated with increased dementia risk
 - 2 episodes of depression = 2x risk
 - Whitehall cohort study (Singh-Manoux, 2017)
 - 10,308 individuals followed over 28 years
 - Depression in midlife did not predict dementia
 - Individuals diagnosed with dementia
 - Were more likely to have Depression in the 11 years preceding diagnosis
 - 9 times more likely to have depression in the year before diagnosis
 - Cause or symptom?
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“Super Agers” and Social relationships

RESEARCH ARTICLE
Psychological well-being in elderly adults with extraordinary episodic memory

Amanda Cook Mabe^{1,2*}, Stephanie Kiehl^{1,2}, Erinleigh Lopez¹, Maureen Conroy¹, Alfred Ruitman^{1,3}, M. Marcel Merzenich^{1,4}, Sandra Weintraub^{1,5,6}, Dan McAdams¹, Regina Lopez¹, Emily Rogalski¹

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* amandacook@northwestern.edu



— &vetrauf

Cognitive “super agers” report a higher degree of positive relations with others


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Social Isolation

- Associated with
 - Hypertension
 - Coronary artery disease
 - Depression
 - Cognitive inactivity
- Honolulu-Asia Aging Study (Saczynski, 2006)
 - Increased dementia risk
 - Isolation in late life
 - Decreased social activity from mid to late life

Sleep



Alzheimer's & Dementia

Featured Article


Sleep disturbances and dementia risk: A multicenter study

Shireen Sindi^{1,2,3,4}, Ingemar Kareholt⁵, Lena Johansson⁶, Johan Skog⁷, Linnea Sjöberg⁸, Hui-Xin Wang⁹, Boo Johansson¹⁰, Laura Fratiglioni¹¹, Hilka Soininen¹², Alina Solomon¹³, Ingemar Skog¹⁴, Mia Kivipeto^{15,16}

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Factors increasing dementia risk:


- Mid-life insomnia
- Late-life terminal insomnia
- Late-life long sleep duration



Hearing Loss

- Associated with almost 2x risk for dementia
- Common (32% individuals >55)
- Mechanisms?
 - May not be causative
 - Confounded by microvascular pathology?
 - Increased cognitive load?
 - Contribute to social/mental engagement
 - Citations in lancet article
- Do interventions help???

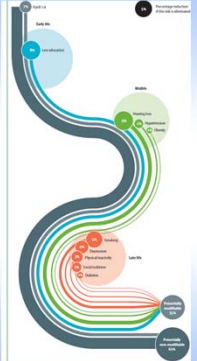
Livingston et al. The Lancet 2017; 390: 2673-2734.



Modifiable Risk Factors and Mood

	Cognition	Mood/ Well-Being
Exercise	+	+
Diet	+	+/ <i>o</i>
Social Activity	+	+
Cognitive Activity	+	+/-
Treating Depression	+	+
Sleep	+	+
Managing Vascular Conditions	+	+

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Lancet Commissions - 2017

- Overall, 35% of dementia risk is believed potentially modifiable

MRF's aren't a cure and can't guarantee prevention of dementia....


...but do offer promise in reducing risk and potentially slowing decline

Livingston et al. The Lancet 2017; 390: 2673-2734.

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Okay, so....


- Exercise
- Eat healthy
- Don't smoke
- Take care of your heart
- Stay active



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Okay, so...

- Knowing = easy
- Doing = ehh.....



featurePics

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Motivational Interviewing

- Empathic approach to talking with patients /others about unhealthy behaviors
- Explores ambivalence
- Non-judgmental
- Acknowledges stages of change
- Patient takes responsibility for change

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Motivating Change


Remember...

- No one likes to be judged
- Decisions to change generally come from within
- We generally maintain behaviors for their positives, not their negatives

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Stages of change

1. Precontemplation	Why should I change!
2. Contemplation	Maybe it's time to change!?!?
3. Preparation	How do I change?
4. Action	I'm changing!
5. Maintenance	I will continue. Yay for change!





Basic tips for approaching and assessing for change

- “Do you mind if we talk about”
- “Did you know that...”
- On a scale from 1 – 10, how ready are you to
 - Three months ago, how ready were you to change? How did you get from a 3 to a 5?
 - If you were a 7, what would that look like?
- Weighing the pros and cons
 - “What are the good things about (current behavior)?”
 - “What are the less good things/bad things?”



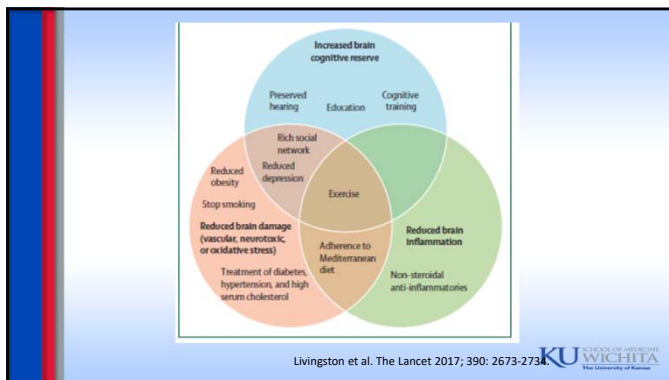
Decisional Balance

	Change	No Change
Benefits		
Costs		



Decisional Balance - Exercise

	Change	No Change
Benefits	<ul style="list-style-type: none"> - Reduced risk for cognitive decline - Improved mood - Improved energy - Better fitness - Feel better about myself - Reduce risk for hypertension, high cholesterol, diabetes, heart disease 	<ul style="list-style-type: none"> - More time at home in the evenings
Costs	<ul style="list-style-type: none"> - Less TIME for family, relaxing, hobbies, eat... - It's hard!!! - Feeling self conscious at the gym - Gym membership costs \$ 	<ul style="list-style-type: none"> - Increased risk for dementia, heart disease, stroke, diabetes - Continue to gain weight - Harder to start in future



Exercise

What type? How often? How intense?

- Specific programs still under investigation
- Northey et al. (2018)
 - Meta-analysis of 39 studies
 - Moderate to high intensity > low intensity
 - >45 minutes/session
 - Any amount; better outcomes with greater frequency
 - Aerobic and/or resistance
- World Health Organization – 150 mins/week

Exercise – Getting Started

- Ask your doctor about any restrictions and considerations
- Getting started
 - Gym membership/personal trainer/group exercises
 - Find a buddy
 - Make it fun
- Start small and ramp up
- Set goals
- Be consistent
- Activity log/Record your success



Healthy Change is Often Not a Straight Path



10 WAYS TO LOVE YOUR BRAIN

START NOW. It's never too late or too early to incorporate healthy habits.

Visit alz.org/10ways to learn more. Alzheimer's Association