

Brain Health: Cognitive Changes in Older Adults

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What's Normal?

- “I can't think of the word—it's on the tip of my tongue”
 - Can be normal
 - Difficulty with naming (especially people's names) is normal, but other parts of language should not change
- “It's normal to be forgetful at my age”
 - Not normal
 - Short term memory should be preserved at least until your 70's

What's Normal?

- “Mom, you just aren't as flexible as you used to be. Why is it taking you so long learn how to use the computer?”
- Can be normal
 - Mental flexibility and abstract reasoning decline with age
- “I am just not as fast at things anymore”
- Can be normal
 - Processing speed slows with age
- “I get distracted so easily”
- Can be normal

What's Normal?

- “I just am not as smart as I used to be”
 - Not normal
 - Comprehensive knowledge should remain intact

What is Normal Aging

- Aging is NOT illness
- Individual and age differences within the elderly
 - Impact of “chronic” illness
 - Societal expectation

Normal Cognitive Changes in Older Adults

- ✓ The significance of cognitive decline is partially determined by the individuals previous level of cognitive function (Premorbid intelligence).

Normal Cognitive Changes in Older Adults

- **Crystallized abilities:** accumulated knowledge and expertise
 - Relies on long-term memory
 - Assessed by tests of vocabulary, word knowledge, general knowledge, proverbs, and measures of occupation expertise

Normal Cognitive Changes in Older Adults

➤ **Crystallized abilities (cont.) :**

- These abilities increase during the lifespan through education, occupation, cultural experience and intellectual pursuits.
- They are less affected by aging and even often remain intact in early stages of dementia and brain injury.

Normal Cognitive Changes in Older Adults

- Fluid abilities: involve novel problem solving, spatial manipulations, mental speed and identifying complex relations among stimulus patterns.
 - Measured with tests involving identification in a series of abstract patterns, matrices or a series of numbers.
 - Relies on short term memory and processing
 - Starts declining in the mid-twenties; more rapid decline after the mid-sixties.

Normal Cognitive Changes in Older Adults

➤ Attention:

- **Selective Attention** – ability to attend to some stimuli while disregarding others
 - Older adults appear to be slower than younger individuals in responding to the targets, but are not differentially affected by distraction.

Normal Cognitive Changes in Older Adults

➤ Attention:

- **Divided Attention and Attention Switching** – processing of two or more sources of information or the performance of two or more tasks at the same time.
 - Has significant age-related declines in performance particularly with complex tasks.
 - Performance is also slowed to a greater degree than that of young adults when attention must be switched from one task to another requiring a change of mental set.

Normal Cognitive Changes in Older Adults

- **Divided Attention and Attention Switching cont. –**
 - There is evidence that deficits in Divided Attention can be reduced by practice or extended training and by aerobic exercise.
 - The enhancement of aerobic exercise appears to effect tasks involving executive function of attention which depends largely on the prefrontal

Normal Cognitive Changes in Older Adults

➤ Attention:

- **Sustained Attention** - ability to maintain concentration on a task over an extended period of time. Older Adults usually are able to maintain attention.

Normal Cognitive Changes in Older Adults

➤ Memory:

- **Primary Memory or short-term memory** - involves the simple maintenance of information over a period of time. Older adults have little minimal or no deficits.
- **Working Memory:** when active reorganization or manipulation of information in short term memory is required older adults show significant impairment.

Normal Cognitive Changes in Older Adults

➤ Memory:

- **Long-Term Memory –**
 - Aging affects **Episodic memory** or the ability for memories of events that occurred in specific places and times. It may involve deficient encoding, storage or retrieval processes.
- **Semantic Memory –**
 - Though “access may be slowed there is an increase in “fund of knowledge”.

Normal Cognitive Changes in Older Adults

➤ Memory:

- **Autobiographical Memory –**
 - Recent memories are the easiest to retrieve. There is a decrease in retention from the present to the remote past except for the “reminiscence bump”. Memories between ages of 15 – 25 are recalled at a higher rate due to the greater emotionality of this time period.

Normal Cognitive Changes in Older Adults

➤ **Memory:**

- **Implicit memory** – occurs as a result of experience though one has no recollection of that experience. This is preserved in older adults
- **Prospective Memory** – remembering to do things in the future. Older adults do well with these tasks if they have cues or reminders, such as calendars. Without cues (Working memory and Divided attention is needed) older adults show age-related deficits.

Normal Cognitive Changes in Older Adults

- Changes in intelligence
- Normal age-related memory changes
 - Attentional changes in the aged

This animation shows how we achieve maximal “smartness” early in life and need to work against those forces that negatively affect our cognition (cognitive reserve idea) .

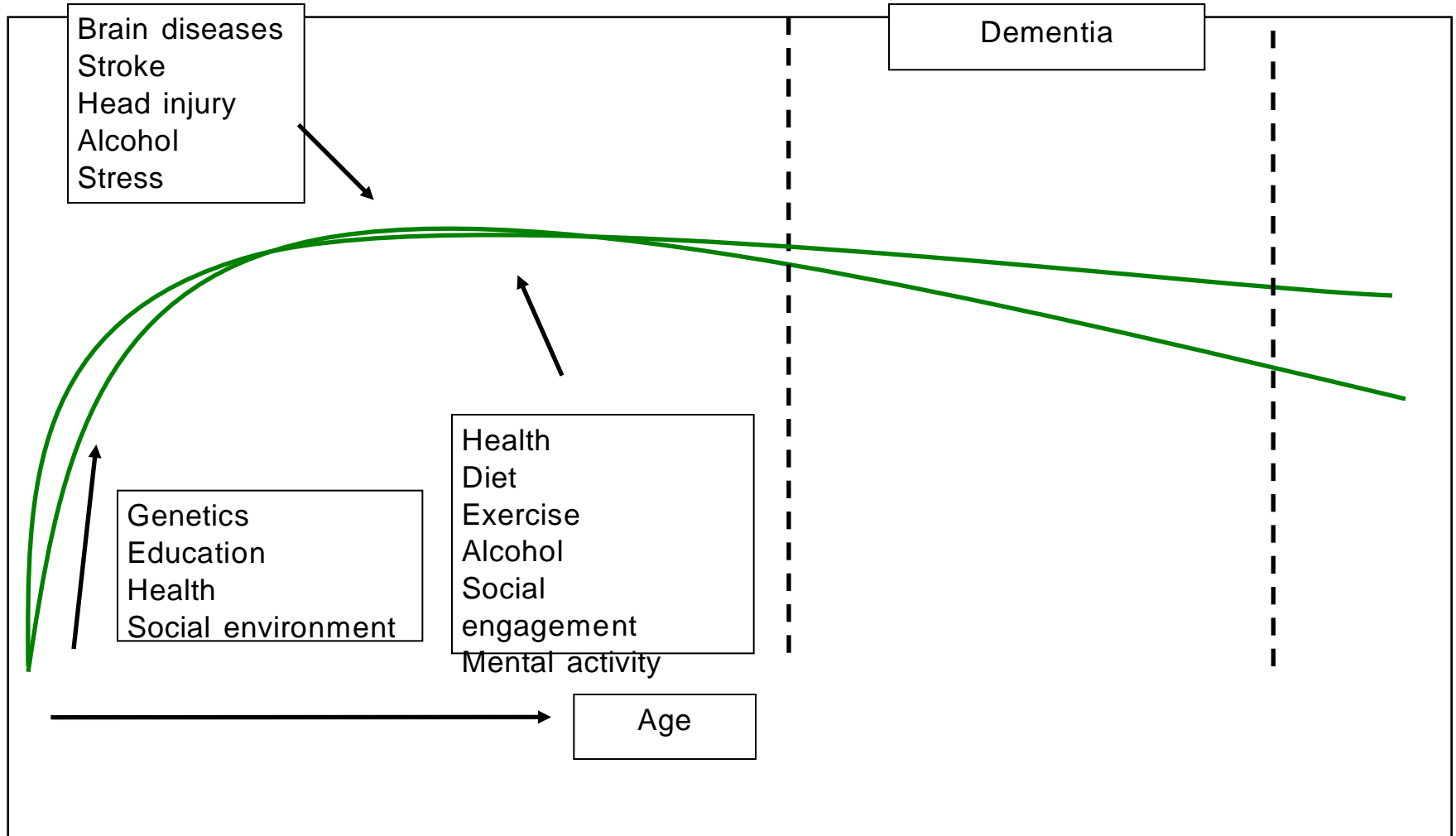


Figure adapted from Richards M and Deary I *J. Ann. Neurol.* 2005.

The Interactive Effects of Aging

- Physical changes
- Sensory deprivations
- Psychological stress
- Psychiatric illness
- Adverse drug reactions
- Medical illness

The Cascading Effects of Physical Changes

- Physiological changes that accompany aging may alter the way an individual responds to stress and disease:
 - ADL functioning
 - Frailty risk factors
 - Behavioral/ Mental Changes
 - Delirium/ Dementia/Depression

Delirium, Dementia and Depression

Delirium (sometimes called acute confusional state) and dementia are the most common causes of cognitive impairment in older adults, although affective disorders (eg, depression) can also disrupt cognition.

Merck Manual 2007

Delirium, Dementia and Depression

Delirium and dementia are separate disorders but are sometimes difficult to distinguish. In both, cognition is disordered; however, dementia affects mainly memory, and delirium affects mainly attention.

Merck Manual 2007

Delirium, Dementia and Depression

- ✓ These conditions are very complex and often:
 - Unrecognized and untreated.
 - Occur simultaneously so that symptoms are difficult to distinguish.
 - All can impact negatively upon the health, well-being, and quality of life of older individuals.

Delirium: Definition

- A mental disturbance characterized by sudden changes in mental functioning or acute confusion and fluctuating levels of consciousness.
- Delirium is the most acute condition of the “three D’s” and can be considered a true medical emergency.

Delirium

- The cardinal features of delirium are recent onset of fluctuating awareness, impairment of memory and attention, and disorganized thinking.

Delirium

- Most common complication of hospital admission of older individuals.
 - Occurs in 11 – 42% of medical inpatients
- Medications may be the sole precipitant for 12 – 39% of delirium.
 - Medications most commonly associated with delirium are benzodiazepines, narcotic analgesics, psychoactive drugs, and medications with anticholinergic effects.

Delirium

- Delirium develops in 1/2 older adults post-operatively
- Precipitants of delirium:
 - Urinary tract infections/ catheters, respiratory infections, constipation, dehydration, renal failure, alcohol withdrawal, pain, sleep deprivation, surgery, neurological disorders, environmental risks

Risk Factors for Delirium

- Pre-existing cognitive problems
- Advanced age
- Hospitalization
- Multiple medical conditions
- Depression
- Use of multiple medications, especially those with anticholinergic properties
- General anesthesia
- Visual problems
- Male gender
- Abnormal serum sodium

Delirium

- Medical problems / Psychiatric symptoms
 - Rapid onset of confusion
 - Fluctuating level of consciousness
 - Reversible / treatable
 - May have in addition to a dementia!!

Dementia

- Irreversible chronic brain failure
- Loss of mental abilities
- Involves memory, reasoning, learning and judgment
- All patients with dementia have deficits, but how they are experienced depends on many “internal” and “external” factors

Dementia

DSM-IVR (Diagnostic and Statistical Manual of Mental Disorders, 4th Edition)

- Impairment of the short and long-term memory
- One of the following:
 - Impaired abstract reasoning
 - Impaired judgment
 - Aphasia (language disturbance)
 - Apraxia (action disturbance)
 - Agnosia (recognition disturbance)
 - Personality change

Dementia

- Disturbance of work and /or social functioning
- Not occurring only during a delirium
- Evidence for or presumption of organic etiologic factor

Alzheimer's Disease

- Most prevalent kind of dementia (60 – 80% of all cases)
- Although there is an increased incidence with age, it is not consequential to the aging process
 - 13 % population 65 years of age and older
 - Nearly half of the individuals (43%) over age 85

2011 Alzheimer's Diseases Facts and Figures

Alzheimer's Disease

- ✓ Today it is a major health concern!
- ✓ If no cure 14 million individuals will be affected by 2030
- ✓ Statistics: 5.4 million Americans
 - 2/3 of those with the disease are women
 - African Americans are twice as likely to develop the disease
 - Hispanic individuals are 1 ½ times more likely to develop the disease

Causes of Dementia

- Alzheimer's Disease
- Multi-Infarct or Vascular Dementia - strokes, mini-strokes, TIA's
- Pick's Disease
- Lewy Body Disease
- Jacob-Creutzfeldt Disease
- Parkinson's Disease
- Substance abuse

Depression and the Older Adult

- Individuals who get depressed for the first time in later life have a depression that is related to medical illness
- With proper diagnosis and treated more than 80% of individuals with depression recover and return to normal lives (GMHF)

Late Onset Depression

- Occurring for the first time in late life – onset later than age 60
- Usually brought on by another “medical illness”
- When someone is already physically ill, depression is both difficult to recognize and treat
- Greater apathy/ anhedonia
- Less lifetime personality dysfunction
- Cognitive deficits more pronounced

Depression and the Older Adult

- Community surveys have found that depressive disorders and symptoms account for more disability than medical illness
- Medical illness is the most common stressor associated with major depression and it is the most powerful predictor of poor outcome
- Untreated depression can lead to physical illness, institutionalization, psychosocial deterioration and suicide

Mild Cognitive Impairment (MCI)

**Is mild cognitive impairment
just part of the normal aging
process?**

Mild Cognitive Impairment (MCI)

Definition: a condition in which a person has problems with memory, language or another mental function severe enough to be noticeable to others, can be documented in testing, but is not serious enough to interfere with daily life.

Mild Cognitive Impairment

- Criteria for MCI:
 - Report of memory problems
 - Measurable, greater –than-normal impairment, detected with standard memory assessment tests
 - Normal general thinking and reasoning skills
 - Ability to perform normal daily activities

Mild Cognitive Impairment

- Individuals may also experience:
 - Depression
 - Irritability
 - Anxiety
 - Aggression
 - Apathy

Mild Cognitive Impairment

- Research has shown that individuals with MCI have an increased risk of developing Alzheimer's disease, however that risk is not as great as previously thought.
- Some individuals remain stable and others actually improve.

Screening Tests for MCI

MONTREAL COGNITIVE ASSESSMENT (MOCA)

Date of birth :

NAME :

Education :

DATE :

Sex :

VISUOSPATIAL / EXECUTIVE		Copy cube		Draw CLOCK (Ten past eleven) (3 points)		POINTS			
 <input type="checkbox"/>		 <input type="checkbox"/>		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Contour Numbers Hands		___/5			
NAMING									
 <input type="checkbox"/>		 <input type="checkbox"/>		 <input type="checkbox"/>		___/3			
MEMORY									
Read list of words, subject must repeat them. Do 2 trials. Do a recall after 5 minutes.			FACE	VELVET	CHURCH	DAISY	RED	No points	
1st trial									
2nd trial									
ATTENTION									
Read list of digits (1 digit/ sec). Subject has to repeat them in the forward order			[] 2 1 8 5 4				___/2		
			Subject has to repeat them in the backward order				[] 7 4 2		
Read list of letters. The subject must tap with his hand at each letter A. No points if ≥ 2 errors			[] FBACMNAAJKLBAFAKDEAAAJAMOF AAB				___/1		
Serial 7 subtraction starting at 100			[] 93	[] 86	[] 79	[] 72	[] 65	___/3	
			4 or 5 correct subtractions: 3 pts, 2 or 3 correct: 2 pts, 1 correct: 1 pt, 0 correct: 0 pt						
LANGUAGE									
Repeat: I only know that John is the one to help today.			[]				___/2		
			The cat always hid under the couch when dogs were in the room.				[]		
Fluency / Name maximum number of words in one minute that begin with the letter F			[] _____ (N ≥ 11 words)				___/1		
ABSTRACTION									
Similarity between e.g. banana - orange = fruit			[] train - bicycle	[] watch - ruler			___/2		
DELAYED RECALL									
Has to recall words WITH NO CUE			FACE	VELVET	CHURCH	DAISY	RED	Points for UNCUED recall only	
			[]	[]	[]	[]	[]		
Optional Category cue									
Optional Multiple choice cue									
ORIENTATION									
[] Date		[] Month		[] Year		[] Day	[] Place	[] City	___/6
© Z.Nosreddine MD Version November 7, 2004			Normal ≥ 26/30		TOTAL		___/30		
www.mocatest.org					Add 1 point if ≤ 12 yr edu				

Screening Tests for MCI

VAMC SLUMS Examination

Questions about this assessment tool? E-mail aging@slu.edu.

Name _____ Age _____
Is patient alert? _____ Level of education _____



/1
/1
/1

/3
/3
/5

/2

/4
/2

/8

- ❶ 1. What day of the week is it?
- ❶ 2. What is the year?
- ❶ 3. What state are we in?
- 4. Please remember these five objects. I will ask you what they are later.
Apple Pen Tie House Car
- 5. You have \$100 and you go to the store and buy a dozen apples for \$3 and a tricycle for \$20.
❶ How much did you spend?
❷ How much do you have left?
- 6. Please name as many animals as you can in one minute.
❶ 0-4 animals ❷ 5-9 animals ❸ 10-14 animals ❹ 15+ animals
- 7. What were the five objects I asked you to remember? 1 point for each one correct.
- 8. I am going to give you a series of numbers and I would like you to give them to me backwards.
For example, if I say 42, you would say 24.
❶ 87 ❷ 649 ❸ 8537
- 9. This is a clock face. Please put in the hour markers and the time at ten minutes to eleven o'clock.
❷ Hour markers okay
❷ Time correct
- ❶ 10. Please place an X in the triangle.  
- ❶ 11. Which of the above figures is largest?
- 11. I am going to tell you a story. Please listen carefully because afterwards, I'm going to ask you some questions about it.
Jill was a very successful stockbroker. She made a lot of money on the stock market. She then met Jack, a devastatingly handsome man. She married him and had three children. They lived in Chicago. She then stopped work and stayed at home to bring up her children. When they were teenagers, she went back to work. She and Jack lived happily ever after.
❷ What was the female's name? ❷ What work did she do?
❷ When did she go back to work? ❷ What state did she live in?

TOTAL SCORE



HIGH SCHOOL EDUCATION		SCORING	LESS THAN HIGH SCHOOL EDUCATION
27-30	Normal 25-30
21-26	MNCD* 20-24
1-20	Dementia 1-19

* Mild Neurocognitive Disorder

SH Tariq, N Tumosa, JT Chibnall, HM Perry III, and JE Morley. The Saint Louis University Mental Status (SLUMS) Examination for Detecting Mild Cognitive Impairment and Dementia is more sensitive than the Mini-Mental Status Examination (MMSE) - A pilot study. J Am Geriatr Psych (in press).

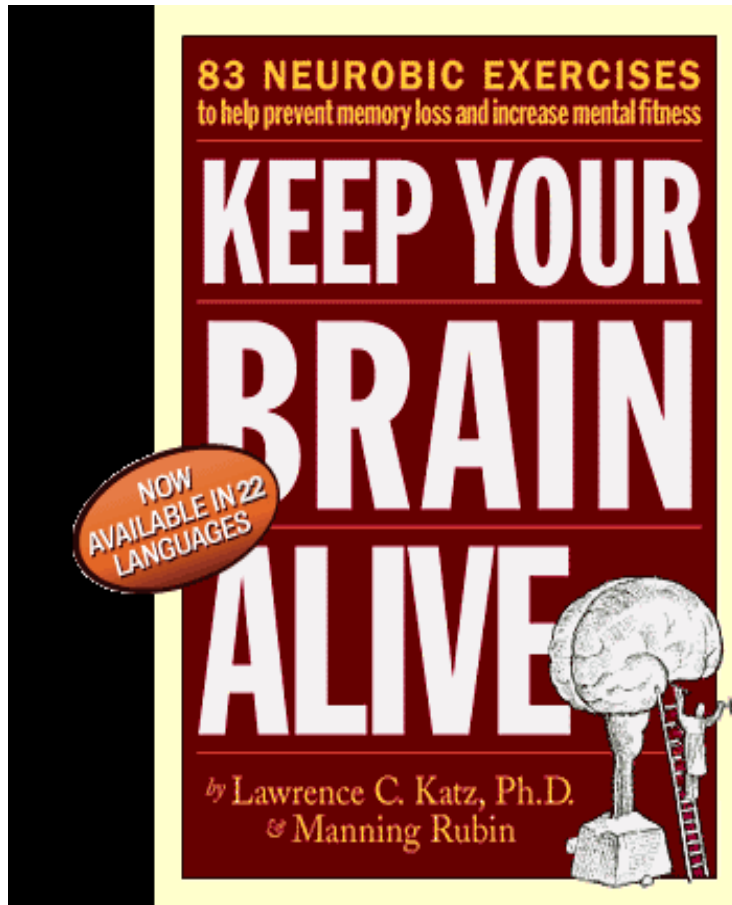
Recommendations for Prevention of MCI

- Eat a variety of foods, including 5 fruits and vegetables each day. Eating fish as a regular part of one's diet may also help improve memory.
- Do not smoke.
- Exercise daily.
- Regular mental activity may help preserve mental functioning.
- Social contacts with family and friends may enhance preservations of cognitive functions.

Good News!

- We have the capacity to develop new synapses
- We have the capacity to develop neurons.
- Our thought processes, memory, reasoning, and learning are retained but may be slower!

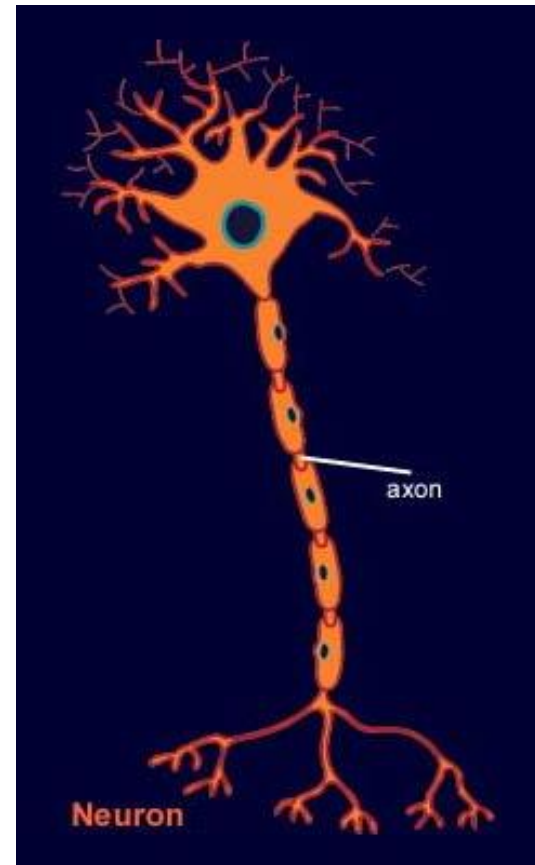
“Neurobics”



- Invented by Duke University neurobiologist Lawrence Katz and author Manning Rubin.
- Theory: Certain brain exercises that use specific kinds of sensory stimulation to cause brain cells to secrete molecules called neurotrophins that act like nutrients to improve cellular health.
- The activity should be completely removed from your regular routine. And the more senses you engage, the better.
- Example: If you normally go to work using the same route, try a different one. At a stop light, roll down the window and close your eyes, listening to the sounds, feeling the air on your face.

Basics of Neurobics :

- Turn on those synapses!!
 - Turn on those switches regularly
 - Old neurons grow new dendrites
 - Brain can still grow, adapt, and change patterns



THE TOP TEN LIST:

How we can maintain our brain?

#10 Keep Medically Healthy

- **STOP SMOKING**

- Ongoing smoking is related to a faster decline of thinking ability
- Current smokers have an increased risk of dementia
- Not as clear about former smokers

- **TREAT HIGH BLOOD PRESSURE**

- People who have high blood pressure are more likely to develop mild cognitive impairment, mid life high blood pressure is related to dementia, and certain high blood pressure drugs may help reduce cognitive decline.

- **LOSE WEIGHT**

- Being overweight in mid-life is associated with worse cognition and an increased risk of dementia in later life.
- But, an unintended late life weight loss is a bad sign

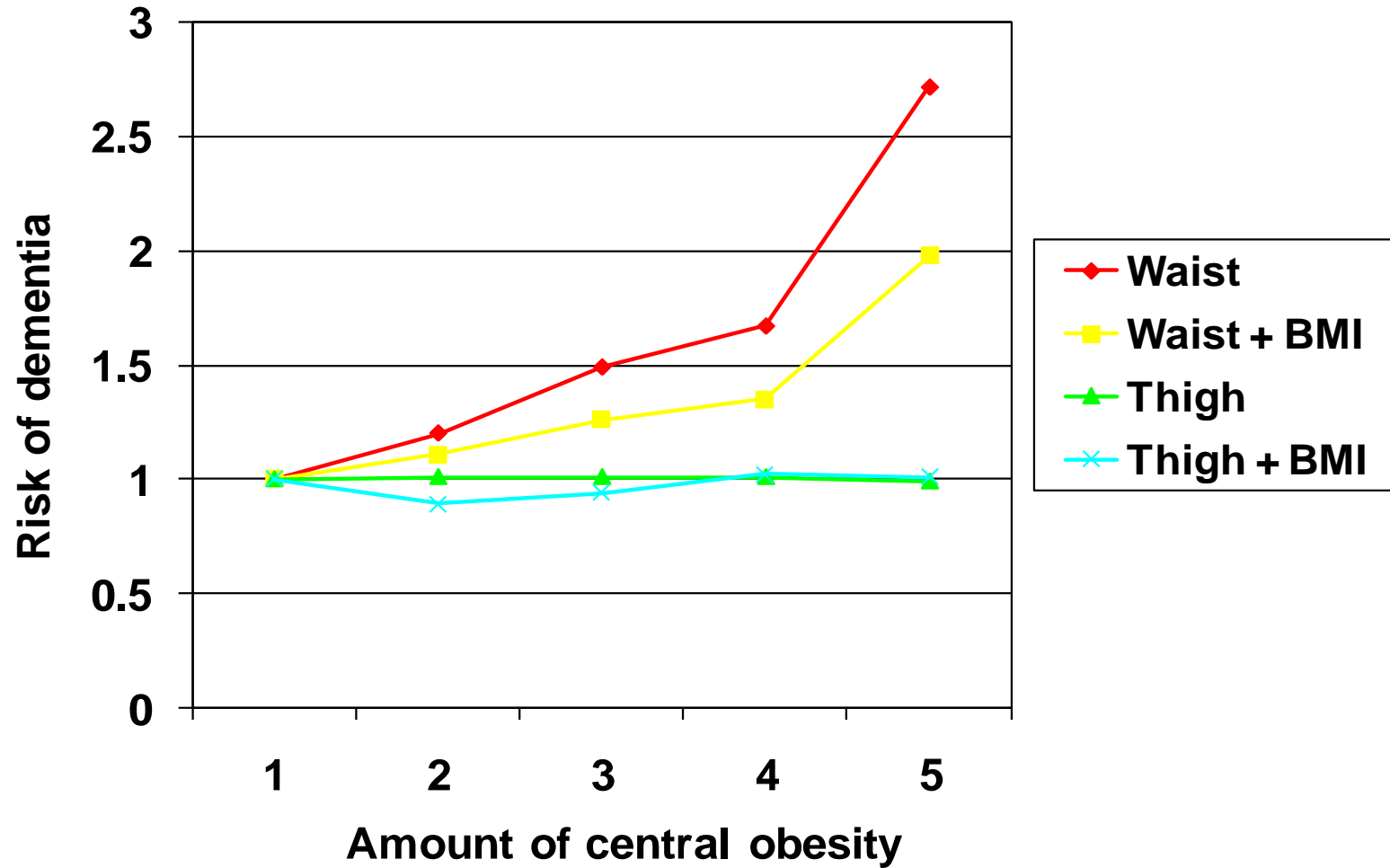
Weight

Metabolic syndrome
(Syndrome X)

- Central obesity
- High blood pressure
- High triglycerides
- Low HDL-cholesterol
- Insulin resistance



Central Obesity Link



Data from Whitmer, et. al. *Neurology*. 2008

#9 Diet

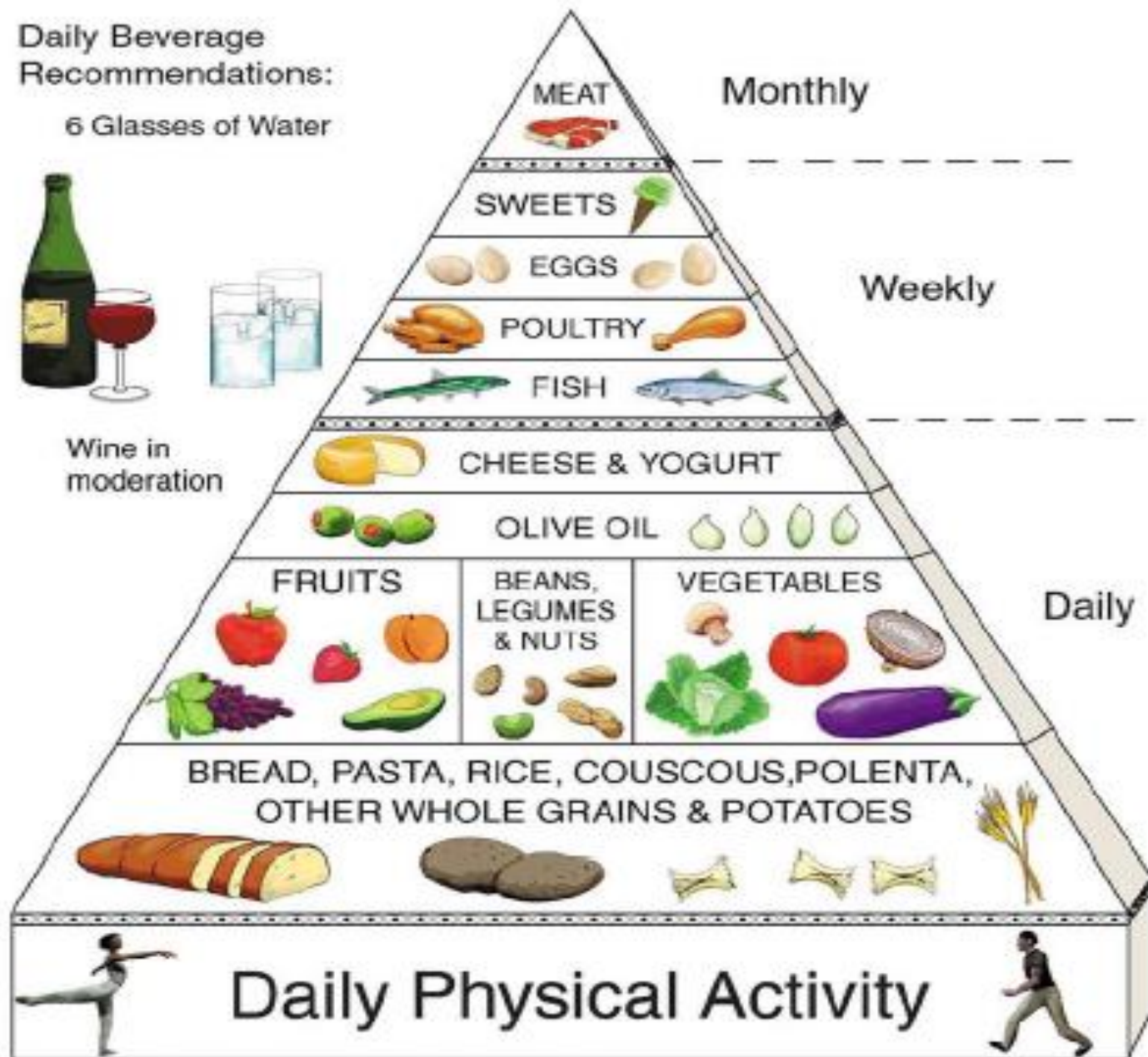
- Following a Mediterranean diet is related to slower loss of thinking ability and a lower chance of developing dementia.
 - Keep unhealthy fats to a minimum (no more than 20 percent of calories), eat lots of fresh fruits and vegetables, a minimum of red meat, and plenty of fish.
- Increased fish consumption (one or more meal per week) is associated with a 10-13% reduced rate of cognitive decline.
- Eating vegetables, especially leafy green vegetables is associated with slower cognitive decline. Fruit may not be protective.
 - A study of 13,388 nurses found that women who ate more cruciferous and leafy vegetables in their 60's had a lower rate of cognitive decline. The more of these vegetables they ate, the better.

Daily Beverage
Recommendations:

6 Glasses of Water



Wine in
moderation



What about fats?

- Increased intake of polyunsaturated & monounsaturated fatty acids decreases risk of cognitive decline, but may not protect against dementia
- How might unsaturated fatty acids work?
 - Omega-3 fatty acids, specifically “DHA”, are an essential component of neural cell membranes that help to transmit information into and out of brain cells.
 - Or, fatty acids may work by counteracting free radicals that cause oxidative damage to brain cells
 - Or, some research suggests they may help improve the efficiency of nerve signal transmission at synapses.
- Some fish are high in omega-3 fatty acids: Salmon, mackerel, tuna, sardines and herring

Which fish are safe?

WILD	FARMED
ANCHOVIES	CARP
ARCTIC CHAR, color added	CATFISH (domestic)
ATLANTIC BUTTERFISH	STRIPED BASS (rockfish)
BLACK COD (Sable, Butterfish on West Coast)	TILAPIA
BLACK SEA BASS	TROUT (rainbow and steelhead)
HADDOCK	
HAKE (white, silver and red-Chilean, Cape and Argentine)	
HALIBUT (Pacific only)	
HERRING	
MACKEREL (Atlantic or Boston only)	
MAHI-MAHI	
PACIFIC COD	
PACIFIC SAND DAB (yellowtail flounder)	
PACIFIC WHITING	
PLAICE	
PORGIES	
SALMON (Pacific)	
SARDINES	
SHAD	
SMELT	
SOLE (gray, petrale, rex, yellowfin)	
WHITEFISH	

#8 Supplements

- Vitamin E:
 - Amount of dietary intake has been associated with slower cognitive decline.
 - It is not clear if there is any benefit from supplement forms of Vitamin E and high doses have been related to increased risk of death and heart attack.
- Folate:
 - In America, no benefit to supplementation (foods have been fortified with folate since 1996).
 - In areas where it is not fortified, there is a benefit to folate in reducing cognitive decline.

#8 Supplements (cont.)

- B vitamins: (B12 and B6) not clear but looks to be no benefit.
- Caffeine: 3 or more cups a day may slow cognitive decline in women (no evidence in men).
- Fish oil supplements may not be protective against cognitive decline

Foods high in Vitamin E

Wheat germ oil

Almonds

Sunflower seeds

Safflower oil

Peanuts

Corn oil

Spinach

Broccoli

Soybean oil

Kiwi

Mango

Spinach

#7 Alcohol

- Moderate use of alcohol (any type) is associated with a decreased rate of cognitive decline
- But...Alcohol kills brain cells, and the more you drink the more brain cells are destroyed.
- Limit: One drink per day for those over 65



Is red wine better?

- Red wine contains an abundance of a potent antioxidant called resveratrol.
- Resveratrol, also found in berries and peanuts, is a compound produced by plants to ward off disease
- Animal studies show resveratrol can reduce signs of Alzheimer's disease
- The wines with the most resveratrol are those made from pinot noir grapes.



#6 Can drugs prevent dementia?

- Aspirin or other NSAIDs (ibuprofen, naproxen):
 - These do not prevent cognitive decline or dementia when started after age of 65.
 - Due to side effects, not recommended presently
 - Conflicting studies of people who started using these drugs at a younger age
- Hormone replacement therapy:
 - No. This may worsen cognition and increase risk of dementia.

#6 Can drugs prevent dementia? (cont.)

- “Statins” (cholesterol medication):
 - Not clear because of conflicting evidence. Several trials are ongoing.
 - One recent trial did not show that statin medications protect against AD or decline in cognition.

#5 Stress

- Chronic stress may lead to cognitive decline.
- Higher levels of the stress hormone cortisol are associated with lower cognitive function in 50-70 year olds.

#5 Stress (cont.)

- What about meditation?
 - Meditation can reduce stress **and** reduce stress-induced cortisol release.
 - Meditation is associated with an increased thickness of the cortex, which is involved in cognition.
 - In one study, people with normal to high blood pressure who practiced daily meditation were 23 percent less likely to die—from any cause. Meditation was more effective at preventing death than other more conventional treatments.

#4 Social Engagement

- Greater social networks and social engagement decrease cognitive decline.
- Many, but not all, studies show social interaction is associated with less cognitive decline.
 - A large study reported in the *New England Journal of Medicine* found that people who engaged in leisure activities such as learning to play a musical instrument or dancing were less likely to develop dementia.
- A feeling of loneliness is associated with an increased risk for Alzheimer's disease.

Ideas for Staying Socially Connected

Volunteer at a charity, school, museum or organization.

Join a book club, bowling league, or any group dedicated to being actively engaged

Get a pet. Animal shelters are full of potential companions. (They can also be great places to volunteer.)

Join a group in your religious organization

Maintain a network of friends and family with whom you regularly interact

Pursue social activities, like wine tastings, lecture programs, or traveling with friends

Get involved in projects that require you to have regular contact with others: planning a gathering for a club, organizing a card- or game-playing night with friends

Get connected while you improve your health: Join a walking or biking club or your local fitness center, go out

#3 Physical Activity

- Better physical fitness at age 11 is associated with higher IQ at age 79.
- Physical “frailty” in old age is associated with more brain changes of Alzheimer’s disease.
- Research has shown that physical exercise stimulates the production of new brain cells in the hippocampus. The hippocampus is vital for learning and memory.

Physical Activity (cont.)

- Many, but not all, studies show that physical exercise can slow cognitive decline.
 - A study reported in the *Journal of the American Medical Association* of over 18,000 women showed that even *easy* walking for 1.5 hours/week was associated with better cognition and slower decline of their thinking ability.
 - Another study in the same journal showed that in people who noticed memory problems, physical activity three times/week modestly improved their thinking ability.

Physical Activity (cont.)

- One study showed that physical activity was associated with a lower risk of stroke-related dementia but not Alzheimer's disease.

#2 Self-Efficacy

- Studies of people who stayed mentally sharp into old age showed that
 - feeling good about ourselves
 - having a sense of self-worth and effectiveness in our lives
 - are important for successful aging.

#2 Self-Efficacy (cont.)

- Research shows that older adults may naturally tune into the positive aspects of life.
 - A study at Stanford University, which used fMRI to track patterns of activity in the brain, found that older adults are more responsive to positive images than to negative ones.
 - Compared to younger adults, people ages 70 to 90 showed greater activity in the amygdala—the brain region central to emotional processing—when they looked at pictures of people expressing positive emotions versus negative ones.

#1 Continued Learning

- Staying mentally active
- Many studies show that activities that engage your brain were associated with less mental decline, e.g.,
 - Reading
 - Playing board games
 - Playing musical instruments
 - Dancing

#1 Continued Learning (cont.)

- Purposeful training
 - In-depth cognitive training can have effects that last at least 5 years. Cognitive (mental) "training sessions" improved memory, concentration and problem-solving skills in healthy adults ages 65 and older. They effectively erased 7 to 14 years of normal cognitive decline.
 - The skills learned can enhance functioning on similar-minded tasks, and may or many not transfer to other aspects of cognition, e.g., memory training might improve recall, but may not help with problem solving.

#1 Continued Learning (cont.)

- Anything that expands your knowledge may be effective.
- Ideas:
 - Learning a new language
 - Take dance lessons
 - Learn a new sport
 - Read a new book
 - Do crossword or sudoku puzzles



Conclusions

- Keep medically healthy
- Follow a healthy diet
- Remain physically and mentally active
- Reduce stress
- Relationships are a good thing

Resources

- Alzheimer's Association – www.alz.org
1- (800) 652-3370 Greater PA
Chapter
- ADEAR – adear@alzheimers.org
- Family Caregiver Alliance –
www.caregiver.org
- Geriatric Mental Health Foundation –
www.gmhfonline.org
- Medline Plus – medlineplus.gov
- Suicide Prevention Network USA –
www.spanusa.org

Resources

- New York Times Well Blog -
<http://well.blogs.nytimes.com/>