Cognitive Rehabilitation and Memory Enhancement: Evidence-Based Interventions for Older Adults

Dr. Rob Winningham
Western Oregon University

Table of Contents
• Use it or lose it: Maximizing memory ability
• Memory and cognition
• Memory and the brain
• Understanding dementia and memory loss
• Developing your own cognitive enhancement programs
• Cognitive enhancement activities: Learning the different types
• Motivating patients to engage in behaviors that will improve their health and quality of life.

4 Websites
• [www.robwinningham.com](http://www.robwinningham.com)
  Open to the public
  Online CE courses
  Mini Sudokus
• [gwi.northwestrehab.com](http://gwi.northwestrehab.com)
  2 years access, with username and pw in handout
• [www.activityconnection.com](http://www.activityconnection.com)
  30 days access, memory care
  Dr. Rob's Cranium Crunches
  username: dolor
  pw: actcon654
Some Facts about Aging and Memory

• Nearly 6 million older adults in the U.S. suffer from AD
• 14 million older adults suffer from Mild Cognitive Impairment (MCI) or other more severe disorders affecting memory.
• 16% of people with MCI develop Alzheimer’s Disease each year. 80% of people with MCI will develop AD within six years (Petersen et al., 2005).

© 2017, Dr. Rob Winningham All Rights Reserved

There Is Hope

• Take a multifactorial approach to preventing dementia and maximizing memory ability
  – Cognitive exercise
  – Physical exercise
  – Nutrition
  – Social support and loneliness
  – Mood
  – Sleep

© 2017, Dr. Rob Winningham All Rights Reserved
There Is Hope

• Reduce risk factors
  – Obesity
  – Diabetes
  – Stress
  – Isolation
  – Smoking
  – Delirium

More Hope

• Older adults grow new neurons, not everyone, but in the hippocampus.
• Older adults can make new connections and rewire their brains.
• The organization and connection among neurons is more important than the number of neurons.
• What causes us to make and maintain connections among neurons?

86 Billion Neurons with up to 20,000 Connections Each (in the cortex)
Cognitive Exercise is the Key

• Older adults can improve their memory ability with regular cognitive exercise.
• The “Use It or Lose It” theory is now widely accepted by scientists.
• The “Reserve Hypothesis” is consistent with the “Use It or Lose It” theory, in that increased neuronal connectivity will lead to better functioning.

More Scientific Findings

• Stimulating jobs are associated with decreased likelihood of having memory problems
• Having complex and dense ideas early in life is associated with fewer memory problems later (nun study)
• Increased education is associated with a decreased likelihood of developing Alzheimer’s Disease.

Recent Scientific Findings

• March, 2005 - Higher levels of education are associated with different cognitive courses in AD patients. More education is associated with a relative preservation of attention and verbal processes. Le Carret et al., Universite Victor Segalen
Dementia Prevalence is Declining

• Matthews et al. (2013) reported in the journal *Lancet* that dementia rates among people 65 and older have plummeted by 25 percent over the past two decades, to 6.2 percent from 8.3 percent, a trend that researchers say is probably occurring across most developed countries. Why?

Possible reasons for the 25% reduction:
  – Controlling cardiovascular risk factors
    • Cholesterol
    • Blood pressure
  – Better education and possibly more cognitive stimulation
  – Greater awareness of the importance of physical exercise

2013 Article in the Journal *Neurology*

• Wilson et al. found that people who participated in more mentally stimulating activities had a slower rate of decline in memory. Mental activity accounted for nearly **15 percent** of the difference in decline beyond what is explained by brain changes associated with dementia.
One of the first controlled studies on cognitive stimulation

- Average age = 82, average MMSE = 23
- Attended 3 sessions per week in their assisted living community.
- Learned about the brain and memory.
- Engaged in challenging and fun activities.
- Exercised many different parts of their brain.
- Developed better social support networks.

Participants in 7 different facilities were tested on many different memory and mental tests. Then 1/2 of the participants engaged in the cognitive enhancement program and the other 1/2 (the control group) did not. Three months later all participants were retested on the same tests. Changes over the three months were analyzed.

Memory Ability Increased after Three Months of Cognitive Enhancement Training

![RiverMead Behavioral Memory Test (Extended)](chart)
Journal of Mental Health and Aging Conclusions

"If older adults can maintain their cognitive ability, they will require less care and possibly delay or even eliminate the need to go to a nursing home. Cognitively stimulating activities may also postpone symptoms of dementia, which could also delay the need for more intensive care."

*Dr. Winningham, Journal of Mental Health and Aging*

Cognitive Stimulation

```
  1  6  5
    4  5  7  3
  2  5  8  7  3
    8  9  5
  9  4  5  8
    5  7  1
    2
  
```

Memory Basics

• In order to discuss issues related to memory and aging, we need to make sure we understand some basic memory principles.
  – Three stages of making memories
  – Three types of memories
  – Three memory processes
A Classic Memory Study

- Atkinson and Shiffrin (1968) asked participants to listen to a list of 20 words and then immediately write them down, in any order.
- What would a graph look like if we graphed the percentage of words recalled as a function of their position in the original reading?
- Would people recall the first words best? The middle words? Or, the last words?

Serial Position Curve

This Can Inform Us About Why We Sometime Forget

- The first words were rehearsed more and made it into long-term memory
- The last words were recalled at a higher rate because they were still in short-term memory (immediate or working memory)
**Question**

- What do you think would happen to the curve if we had people do another activity for one minute?
- Hint: either the primacy or the recency effect will go away.
- Yes, the recency effect disappears with a short delay.

---

Short-term memory is like a bookshelf: You put new books on one side and that pushes the oldest book off the other side. Your short term memory is like that, you put new ideas in and that pushes the oldest idea out. Unfortunately, our bookshelves are fairly small, probably holding less than seven books (depending on their size).
This Can Inform Us About Why We Sometimes Forget

- The last words were recalled at a higher rate because they were still in short-term memory.
- The first words were also recalled at a high rate because they were rehearsed more. The words at the beginning of the list actually made it into long term memory.
- The dip in the middle is due to:
  - Increased distracters
  - Lack of cognitive resources
  - Lack of rehearsal

How Can We Improve Memory?

- So how do we get information from short term memory into long term memory?
- Rehearsal, rehearsal, rehearsal…

Information Overload?

- Miller (1956) estimated that adults can hold about seven items, plus or minus two, in their short term memory.
- How does the seven items, plus or minus two estimate related to learning, memory, and older adults?
A Great Memory Model

- How do humans learn and make new memories?
- The Modal Model of Memory helps explain how we make new memories.

The Human Capacity to Learn

What is affected as adults age?

- **Sensory memory** - not affected
- **Short-term or working memory** - affected
- **Long-term memory** - memories that were stored in the past are not affected unless there has been brain damage or advanced dementia. Making new long-term memories is affected.
Any Memory Failure Can Be Attributed to One of the Three Memory Processes

- Encoding
- Storage
- Retrieval

What is affected as adults age?

- **Encoding** - affected
- **Storage** - not affected, in most cases
- **Retrieval** - well practiced memories not affected, proper nouns affected, verb generation affected with Alzheimer's disease
Three Types of Memory

• **Procedural** – anoetic, implicit, nondeclarative, automatic

• **Semantic** - declarative, explicit

• **Episodic** - autobiographical

There is a very predictable order of loss.

• First episodic is lost
• Then semantic is lost
• Finally, in some cases, procedural memories are lost
• That’s an example of retrogenesis

Dissociation between implicit/explicit memory

• People with dementia and/or traumatic brain injury (TBI) can learn implicitly. Or, in other words, they can make new procedural memories.

• HM: mirror drawing figures
Main strategies when the individual cannot encode new memories

- Errorless learning
- Sequencing
- Constrained induced movement therapy

What Abilities Are Preserved (to some degree) in People with Dementia?

- Procedural learning
- Recognition
What Abilities Are Preserved (to some degree) in People with Dementia?

• Classical conditioning
  – Emotional conditioning
    • They may not remember your name
    • They may not remember what you have done
    • But, they will remember how you made them feel

What is affected as adults age?

• Procedural - not affected
• Semantic - encoding affected some, storage and retrieval not usually affected
• Episodic - encoding affected, storage and retrieval not affected very much

Memory Theories

• Any questions?
Neuroanatomy

- Occipital lobe - vision
- Temporal lobe - language
- Parietal lobe - association cortex

Neuroanatomy

- Frontal Lobe Functions
  - Selective Attention
  - Sustained Attention
  - Inhibition - prevents us from just responding to the environment, rather than executing plans.
  - Regulate social behavior (related to inhibition)
Neuroanatomy

• Frontal Lobe Functions
  Planning
  Problem solving
  Executes motor behavior

Neuroanatomy

• We will discuss how to exercise inhibitory processes and thereby improve attentional and memory abilities.

Frontal lobes, attention, and memory

• Odd Question:
Frontal lobes, attention, and memory

• Not all rehearsal and practice is the same because attentional resources vary.
• Levels of processing matters (Craik & Lockhart, 1972) and is related to attention.

Not All Rehearsal is Created Equal

• Shallow vs. Deep Processing
• Maintenance vs. Elaborative Rehearsal

Frontal lobes, attention, and memory

• How can you help patients process information at a deeper level?
  – Predictions
  – Postdictions
  – Retention testing that is announced beforehand
  – Mental imagery
  – Put signs in the room (e.g., sternal precaution)
  – Teaching others, group therapy
  – Generation effect

Helping Patients Process Information at a Deeper Level: Generation Effect

- The generation effect refers to an enhanced ability to remember information that is self-generated compared with material that is passively presented.
- Generating information helps activate the frontal lobes and enhances recall. In addition, generation may lead to greater attention and interest, which can also improve memory performance. (Taconnat & Isingrini, 2004)
- Recent research found that patients with mild dementia and memory impairment related to MS benefited from self-generating information (Basso et al., 2008)
- By having patients generate solutions to problems they will be more likely to remember the correct behavior.

Helping Patients Process Information at a Deeper Level: Generation Effect

- Errorless learning vs. Generating (incorrect) solutions
Demonstration

- In a moment, you will see a list of words.
- Please read the color the word is written in, not what the word says. Read the first column, then the second, then the third, and finally the fourth.
- Example: RED say “Red”
- Example: GREEN say “Red”
- Please loudly state the color the word which is printed.
- When you are done with all four columns, please raise your hand.

Why Does The Stroop Effect Occur?

- When viewing the incongruent list (word and color of ink are different) people have a difficult time inhibiting the action of reading words when they are suppose to be stating the color of the ink.

Why Does The Stroop Effect Occur?

- Difficulty with the Stroop Test is indicative of impaired inhibitory processing (and thus attention and memory ability).
- The above can be rehabilitated, if caught early enough.
- The Stroop Materials are available on the website and can be used as an exercise and/or as a way to track changes over time.
Sentence Inhibition Activity

- Instructions: Have participants verbally state a word that is different than the typical response, after you verbally state the first part of the sentence.

Sentence Inhibition Activity

- The captain wanted to stay with the sinking...
- We love to decorate the Christmas...
- The student was late catching the...
- I love my mom and...
- Could you please pass the salt and...
- Three strikes you are...

Understanding Dementia

- Dementia is a global category of disorders. There are many types of dementia, such as Alzheimer’s disease, vascular dementia, dementia with Lewy Bodies, Pick’s disease, etc.
Dementia and Delirium

Dementia is a syndrome of global cognitive decline that most likely occurs for the first time in old age. Dementia is different from delirium which refers to an acute physiological brain dysfunction that developed over a relatively quick period of time.

Medication

Post-operative affects (51% of hip fracture surgery patients had delirium in a study by Munster et al., 2012)

Metabolism issues

Chemobrain

Food intake

Dehydration

Infections

Sleep Apnea

Mini Mental State Exam

- Orientation to time
- Orientation to place
- Registration
- Attention and calculation
- Recall
- Naming
- Repetition
- Comprehension
- Reading
- Writing
- Drawing
- Scores range from 0-30

When is the optimal time to begin an acetylcholine esterase inhibitor?

- Molinuevo et al. (2011) found that patients with more mild Alzheimer’s (MMSE ≥ 21) responded better than people with more severe Alzheimer’s (MMSE < 21) in terms of memory, language, and IADLs (e.g., telephone, preparing meals, managing meds, finances, etc.).
Symptoms of Dementia

- No two cases are the same but here are some common signs or co-morbid conditions:
  - Depression
  - Left vs. Right Hemispheric Damage
    “Patients who have disease of the left frontal lobe often are sad, anxious and depressed,” explains Dr. Kenneth Heilman, a neurologist at the University of Florida College of Medicine. “In contrast ... patients with right-hemisphere disease often (appear) indifferent or euphoric and have inappropriate (jocularity).”

- Depression
- Anxiety
- Paranoia
- Inappropriate social behavior
- Anger
- Emotional perseveration
- What is the commonality?

Probable Diagnosis of Alzheimer’s Disease

1. Presence of memory impairment and one of the following: aphasia, apraxia, agnosia (inability to identify objects), or disturbances in executive functioning.
2. The above deficits significantly impair daily functioning and represent a decline from previous performance.
3. There has been a gradual onset with continued decline.
4. The cognitive deficits need to be unrelated to other central nervous system conditions, delirium, medical conditions known to induce cognitive decline, or a substance-induced condition.
5. Cognitive deficits cannot be attributable to other psychiatric conditions such as schizophrenia or major depressive disorder.
Most Common Types of Dementia

- Alzheimer's
  - Early vs. late-onset (and genetics)
- Vascular (multi-infarct dementia)
- Parkinson's Associated
- Lewy Bodies
- Frontal temporal lobe degeneration (including Pick's Disease)

Dementia w/ Lewy Bodies

- A recent study concluded that DLB is associated with worse visuospatial and executive dysfunction.
- We also see visual hallucinations, spontaneous Parkinsonism, and alterations in alertness and attention with DLB.
- The visual hallucinations can be quite severe and medications that are typically used to treat hallucinations and agitation associated with other conditions (i.e., antipsychotic and anti-anxiety medications) often don't work with people who have DLB; they may even exacerbate the symptoms.

Picks Disease and Frontotemporal Dementia

Frontotemporal dementias, including Pick's disease, are often difficult to differentiate from Alzheimer's disease.

- personality change
- language impairment
- Apraxia
- impulsivity
- apathy
- carbohydrate craving
- mania
- grandiose illusions

From Rogan & Lippa (2002)
Picks Disease and Frontotemporal Dementia

It may be worthwhile to try to differentiate Pick’s from other types of dementia because the most common class of pharmaceuticals used to treat dementia-related symptoms (i.e., acetylcholine enhancers) may not help the patient with Pick’s disease as much. Moreover, these patients may have adverse reactions to acetylcholine enhancers.

Developing Your Own Cognitive Enhancement Program

- Not reminiscing (unless used to facilitate social interaction)
- What is cognitively stimulating?
  - Simple rule

Website

Website: gwi.northwestrehab.com
- Username: instructors
- Password: trainbrains
- You will need Adobe Reader, MS Word, and possibly MS PowerPoint
- Please email me any suggestions, errors found, or materials you want uploaded.
- Email: rob.winningham@gmail.com
Cognitive Enhancement Activities

- Facts of the Day
- Memory and Attention Activities
- Homework Activities
- Touch Activities
- Tongue Twisters
- Poetry Activities
- Instructions for Many Activities
- 10 "Easy" Sudoku Puzzles

Facts of the Day

- Develop a list of interesting but lesser known facts (see website). Present the fact at the beginning of cognitive enhancement classes. Ask participants at the 1, 4, 10, 20 and 50 minute marks what the fact of the day is. If no one remembers the fact of the day then give them a cue. If after a cue, no one remembers try to phrase a question in a multiple choice format as even early stage dementia patients have relative preservation of their recognition abilities.

Fact of the Day: The brain has 86 billion neurons.

- Ask: What is the fact of the day?
- If no one correctly responds:
  - Ask: What is the fact of the day? It has something to do with the brain
  - If no one correctly responds:
    - Ask: How many neurons do we have in our brains?
    - If no one correctly responds:
      - Do our brains have 860,000, 86 million, or 86 billion neurons. (More impaired patients may benefit from have the alternatives written out.)
Facts of the Day

• Quiz people the next session about previous facts

• Writing it down is ok but try to get them to make a memory

Memory and Attention

• Alphabetization Activities
• Anagram Activities
• Brain Hieroglyphics
• Buzz
• Creative Brainstorming
• Homophones
• Mind-Bending Quiz
• Newspaper Activities
• Ping, Ping, Pong
• Theory of Mind Activities
• Split Words
• Word Generation Activities
• Root-onym
• Slide Fun
• Stroop Activity
• Trigger-Word Activity

Buzz

• Have participants count, beginning in a clockwise direction such that the first person says “one”, the second person say “two” and so on. Instruct people to say “buzz” instead of the number if the number is a multiple of seven (e.g., 7, 14, 21, 28, 35, 42, 49, 56, 63 and so on) or if the number has a seven in the number (e.g., 17, 27, 37, etc.). The direction reverses when someone says buzz in place of the number. Even participants with moderate memory problems can learn this activity, if they do it during every session. This activity requires attention and used the frontal lobes and the right parietal lobe. To make the activity more challenging, split a large group into smaller groups; the noise of the adjacent groups require even greater use of attentional resources.
An Idea for More Impaired or School Children

• Say A, B, Cs (or count) in a group and point to the next person in the sequence.
• Everyone has to engage in sustained attention.

Creative Brain Storming: Think of as many uses for a BLANK.
Participants will generate as many possible uses for a common everyday object. The goal is to try to think as creatively as possible. This activity is challenging for people with Mild Cognitive Impairment and almost impossible for people with dementia (therefore it is probably an excellent activity to prevent future memory problems). Give participants examples of creative ideas to show them that they don’t need to generate common uses. For example, if the topic is “Use for old newspapers…”, then give creative examples such as: use it for insulation, use it to soak up an oil leak under a car, line a cat litter box, use it to cut letters out and make a ransom note, etc. After participants have worked on the activity for 3-5 minutes, ask them to try and determine which of their responses were the most unique (i.e., no one else generated the answer(s)).

- old rowboat
- dime
- old car tires
- old refrigerators
- cereal boxes
- paperclip
- plastic milk cartons
## Alphabetization Activities

- Give each participant an envelope full of words. The participant will dump out the words and attempt to put them in alphabetical order.

**Variations:**

For beginners, the first letters of each word should be different and the first letter of each word separated by at least 2 letters in the alphabet (i.e., don't have words that begin with R and S).

For advanced participants, give them words that begin with the same letter or even the first two letters, also try giving them more words.

---

## Newspaper Activities

- The Newspaper Activity actually involves several different tasks. First, get as many newspapers as you have participants. The newspapers don’t necessarily have to be the same; try to get large newspapers (e.g., New York Times or Sunday papers) for high functioning participants and smaller newspapers (e.g., local ones or mid-week papers) for lower functioning participants. Scramble the order of each newspaper, such that all the original pages are there but in random order. Then, give each participant a scrambled paper and ask them to put the pages in the original order, just as they would be if they just purchased the paper.

- After the participants have completed the above task, ask them to find and circle all the 'm's on the first page. This task can be made more difficult for non-demented participants by asking them to keep a running total of the number of letters they have circled. They should count aloud so participants have to inhibit listening to others. The task can be made even more difficult by having them find and circle 2 or even 3 letters at a time, which is very appropriate for non-cognitively impaired participants.

- Then, after the above task is complete, you can give participants scissors, tape, and blank paper. Ask them to cut out words or letters to make a sentence or poem. The participants can tape the words or letters from the newspaper onto the blank paper.
Theory of Mind

• Skit
• Cartoon Caption Activities

Ping Pang Pong

• Always go clockwise. The first person says Ping, the second person says Pang, and the third person simultaneously says Pong and points to someone. The person who has been pointed to starts over and says Ping…

• Also zip, zap, zup…

Word Generation Activities

• A-Z Activity
• Antonym Activities
• Name Generation Activities
• Think of as Many Blank as You Can
• Think of Things in the Color…
• Verb Generation Activities
A-Z

• First names
• Last names
• Female first names
• Male first names
• Animals
• Countries
• Verbs
• Things to are alive
• Things that are not alive (inanimate objects)

Fill in the blank using the letter provided as the first letter. Think of things that are alive for each letter provided.

Example:  M________

A________ N________
B________ P________
C________ Q________
D________ R________
E________ S________
F________ T________
G________ U________
H________ V________
I________ W________
J________ X________
K________ Y________
L________ Z________

Think of as many ________ as you can.

• Examples:
  – animals
  – presidents
  – flowers
  – car types
  – book titles
  – actors
  – male names
  – female names
  – types of dogs and cats
  – desserts
  – countries
• Generating verbs is a challenging linguistic activity that exercises attention, executive functioning, and word fluency. Recent research suggests that an inability to generate verbs may be a sign of Alzheimer's Disease. Therefore, generating verbs may act in a preventative fashion. This activity is not appropriate for people with some types of dementia. If participants are having a difficult time with this task, remind them that any behavior is ok (e.g., talk, walk, sees)

Split Words

• Begin by printing out sheets linked below, each sheet has approximately 12 words in large font. Cut each word out then cut the word in half. For example, take the word FAMILY and cut it into FAM and ILY. Place all word halves into an envelope. Make enough envelopes for each participant and be sure to label the envelope (e.g., Split Word #1), so you can keep track of which ones you have used and possibly reuse them at other facilities or in 6-12 months. The lists provided are appropriate for people with mild cognitive impairment, they are relative long words and the first letter is capitalized. You can make the task more difficult by using shorter words and/or not capitalizing the first letter.

Homework

• Cognitive stimulation is probably dose dependent
• Homework
  – Important component
  – How much?
• At least one assignment per class
• 38 homework assignments on the website
Anagrams

• An anagram is word or phrase formed by rearranging the letters of another word or phrase. For example, Elvis to Lives.

• This is a fun addition to any cognitive enhancement program. We also have a related activity called word mines.

Spatial Activities

• Mental Rotation
• Tangrams
Simple Math Problems

• In this activity participants simply complete 24 simple math problems as fast as they can. You can time participants each time and see if they are improving (i.e., taking less time to complete the math problems). This activity is appropriate for most people regardless of the presence of dementia, as doing simple arithmetic is a procedural memory for most people and not affected by dementia too much (unless there was a stroke that affected a discrete brain area).

Other Activities

• Dual tasking
  – Mobility and cognition
• Touch
• Smell
• Pictures of participants (new and/or old, close up of face parts)
• Tray of items (Kim’s Game)
• Count in Roman Numerals (“I”, “II”, “III”, “IV”, “V”).
• Others?
Developing Your Own Cognitive Stimulation Program

- Screening?
- Levels?

Screening participants

- Meet with potential participants
- Use the MMSE or better yet SLUMS
- Cut off scores (MMSE)
  - Advanced 25-26+
  - Beginning 16-24
- Cut off scores (SLUMS)
  - Advanced 21-22+
  - Beginning 12-20
- Personality and social skills
- Sometimes you will have to turn away a potential participant who could benefit from the class

Recommended Apps for Cognitive Stimulation

robwinningham.com

- Fit Brains
- Lumosity
- Tetris
- Sudoku2
- Memory Block
- Stroop Effect
- Visual Attention
- Brain Lab
Using iPads for Cognitive Stimulation

• We recently did a feasibility study using iPads with older adults
  – Favorite apps
  – Lessons learned

Use a Powerpoint Presentation for Groups

• People were starting apps before they were explained and not paying attention to instructions
• Easily made using “screen shots”, powerpoint, and “shapes” in powerpoint (Google the above for instructions)

Click on Fit Brains
How can we overcome the effects of depression, apathy, and amotivation in order to maximize program efficacy?

• Increase motivation for the rehabilitation process.
  – Increase self efficacy
  – Increase perceived outcome expectations (What is in it for me?)

Self Efficacy

• Self efficacy is the belief that one has the capability to manage the demands of a challenging situation in such a way as to attain a desired outcome (Bandura, 1977).
• Patients who have a higher self efficacy will be more likely to fully participate in the rehabilitation process.

General Self-Efficacy Scale

• I can always manage to solve difficult problems if I try hard enough.
• If someone opposes me, I can find the ways and means to get what I want.
• It is easy for me to stick to my aims and accomplish my goals.
• I am confident that I could deal efficiently with unexpected events.
• Thanks to my resourcefulness, I know how to handle unforeseen situations.
• I can solve most problems if I invest the necessary effort.
• I can remain calm when facing difficulties because I can rely on my coping abilities.
• When I am confronted with a problem, I can usually find several solutions.
• If I am in trouble, I can usually think of a solution.
• I can usually handle whatever comes my way.
Self Efficacy

• You can help patients' increase their self efficacy by providing opportunities for them to succeed
• Show them objective measures of their success they have had.

Self Efficacy

• Use video to document improvement (e.g., walking)
• Start and end with a successful experience
• Use appropriate cues to facilitate success
  – Free recall
  – Cued recall
  – Recognition

Recommendations for Patients with Low Self Efficacy

– Experiences in mastering new skills and overcoming obstacles will increase self efficacy.
– Vicarious experiences provided by successful models who are similar to oneself.
– Stories of similar participants who have succeeded. Put success stories in the newsletters.
– Encouragement and persuasion can also increase self efficacy.
The Other Half of the Motivation Equation

• Perceived Outcomes or “What is in it for me?”

Make sure people know the benefits of a certain behavior or therapy

• Make the therapy relevant to the depressed patient.
  – Work
  – Parenting
  – School
  – Pets
  – Spouse
  – Hobbies
  – Live independently
  – Maintain some independence
  – Maintain mobility
  – Reduce pain
• Ask the patient what their goals are (“What do you want?”)
• Are you going to get better?

What happens if they don’t do therapy or seriously engage activity programming?

• Protection Motivation Theory
• It is another strategy
How Can Bill for Cognitive Rehab?

• Working on “sustained attention for moderately difficult problem solving”

• How many cues do they need?

How Can Bill for Cognitive Rehab?

• Write goals that involve education or a home exercise program as well or education/assessment of use of strategy in functional environment
  – Pt. will demonstrate use of compensatory sequencing/problem solving strategy 3 times (such as use of check list) during functional ADL activity
  – Pt. will independently use executive functioning skills to complete functional activities such as planning and organizing current medications

How Can Bill for Cognitive Rehab?

• Write goals that involve education or a home exercise program as well or education/assessment of use of strategy in functional environment
  – Pt. will demonstrate ability to perform cognitive home exercise program targeting executive functioning with independent initiation of exercises and independent use of log to track completion
  – Pt. will perform functional and structured problem solving tasks with 80% accuracy
How Can Bill for Cognitive Rehab?

Consider long term goal and rationale for skilled services by documenting: “Recommend continued skilled speech therapy services for ongoing assessment and treatment for safe communication and cognition skills to complete ADL activities.”

The “skill” is selection of treatment materials to fit the linguistic and cognitive ability of the particular patient that is appropriate for challenging cognitive communicative function without causing frustration and that will be motivating/relevant to the patient.

How Can We Bill for Cognitive Rehab?

1. Pt. will provide reasonable solutions to ADL problems with 80% accuracy across three treatment sessions to increase safety in the environment.
2. Pt. will identify safe versus unsafe ADL situations with 80% accuracy during a structured problem solving task across three treatment sessions to increase safety awareness.
3. Pt. will increase insight into rehabilitative process by recalling two therapies and two goals across three treatment sessions.

Other Factors That Affect Memory Ability

- We must take a holistic and multifactorial approach to preventing memory problems and maximizing cognitive functioning:
  - Physical exercise
  - Nutrition
  - Social support
  - Mood and depression
  - Stress and anxiety
  - Control weight and diabetes
Other Factors That Affect Memory Ability

• We must take a holistic and multifactorial approach to preventing memory problems and maximizing cognitive functioning:
  – Physical exercise
  – Nutrition
  – Social support
  – Mood and depression
  – Stress and anxiety
  – Control weight and diabetes

Exercise and Cognition

• Colcombe and Kramer (2003) reported the results of an 18-study meta-analyses on the effects of exercise on cognition.
• They found that, on average, exercise programs lead to a .5 standard deviation increase in cognitive abilities (e.g., I.Q. of 100 versus 108).

Exercise and Cognition

• Kramer et al. (2001) found that participating in a six month walking program led to increased attention in 60-75 year old adults.
• Scarmeas et al., (2009) found that older adults (mean age 77 years) who were in the top third in terms of getting physical exercise were 61% less likely to get dementia
Exercise and Cognition

- Liu-Ambrose et al. (2010) reported that 12 months of weekly resistance training resulted in an 11% increase in executive functioning, in an older adult population.

What type of exercise is best?

- Nagamatsu et al. (2012) found that twice a week resistance training in 70 to 80 year old women, with Mild Cognitive Impairment, led to significant improvement in attention and memory ability.

Nutrition and Cognition

- Fats
- Antioxidants
“Good Fat”

- Omega-3 fatty acids or "good fat" has been linked to improved cognitive functioning in older adults.
- Fish, nuts, olive oil, canola oil, and green leafy vegetables are high in Omega-3 fatty lipids.

Research

- Research has found a positive correlation between Omega-3 fatty acids levels (e.g., DHA) and cognitive functioning in older adults.
- Individuals with dementia often have lower levels of DHA than non-demented controls.
- The more fish people eat, the less likely they are to show signs of Alzheimer’s Disease.


Albanese et al. (2009) studied 15,000 people in Latin America and Asia found that those who ate fish nearly every day were 20% less likely to get dementia as compared to those who ate it only a few times a week. Those who ate fish a few times per week were 20% less likely to get dementia than those who rarely ate fish.
Recent research has also shown that fish oil tablets can decrease the number of depressive symptoms in people diagnosed with major depression. Some studies have found that fish oil tablets are as effective as modern antidepressants.

The omega-3 fatty acids might reduce inflammation in the brain. Inflammation might be one of the causes of Alzheimer’s disease. It also may be that myelination of the axon is affected by our dietary intake of fat.

Why should you eat your fruit and vegetables?
Antioxidants

- Over time, our brain cells experience wear and tear from various oxidants known as free radicals (as well as cell division).
- Our bodies use antioxidants to combat the effects of free radicals.

The Top Antioxidant Fruits and Vegetables*

<table>
<thead>
<tr>
<th>Food</th>
<th>Antioxidant Power**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prunes</td>
<td>5770</td>
</tr>
<tr>
<td>Raisins</td>
<td>2830</td>
</tr>
<tr>
<td>Blueberries</td>
<td>2400</td>
</tr>
<tr>
<td>Blackberries</td>
<td>2040</td>
</tr>
<tr>
<td>Cranberries</td>
<td>1750</td>
</tr>
<tr>
<td>Strawberries</td>
<td>1540</td>
</tr>
<tr>
<td>Spinach</td>
<td>1260</td>
</tr>
<tr>
<td>Raspberries</td>
<td>1230</td>
</tr>
<tr>
<td>Brussels Sprouts</td>
<td>980</td>
</tr>
<tr>
<td>Plums</td>
<td>950</td>
</tr>
</tbody>
</table>

* - Based on Small (2002), p. 141-142
** - Oxygen Radical Absorbency Capacity (ORAC) per 3.5 ounces
Social Engagement is Stimulating

- July, 2008 - Berkman and her colleagues found that older adults who were most socially engaged had the least memory problems.

"The working hypothesis is that social engagement is what makes you mentally engaged," said Lisa F. Berkman, the study's senior author and director of the Harvard Center for Population and Development Studies. "You can't sit and withdraw if you're constantly talking and working on things and figuring out problems in your daily life. It's not just completing a crossword puzzle, it's living your life."

From: http://well.blogs.nytimes.com/2008/06/04/socializing-appears-to-delay-memory-problems/

Summary

- Multifactorial Approach to Maintaining Quality of Life in Older Adulthood.
  - Cognitive Stimulation
  - Physical Exercise
  - Nutrition
  - Social Support
  - Depression
  - Stress and Anxiety
  - Pharmacological Interventions
  - Maximize Motivation
Cognitive Stimulation/Rehab Website

Website: gwi.northwestrehab.com
- Username: instructors
- Password: trainbrains
- You will need Adobe Reader, MS Word, and possibly MS PowerPoint
- Please email me any suggestions, errors found, or materials you want uploaded.
- Email: rob.winningham@gmail.com

Certified Cognitive Stimulation Instructor Program
- After your free two year access to the cognitive stimulation/rehab website you can get three more years access and additional activities by completing any 2 of the 8+ training modules.
- Complete all 8 modules and testing to become a Certified Cognitive Stimulation Instructor.
- 25% discount if you use the brochure distributed today.

Activity Connection’s Website – Thousands of Activities Updated Monthly
- You can login to the site free of charge for 30 days by going to: www.activityconnection.com
- Username: dolor
- Password: actcon654
4 Websites

- www.robwinningham.com
  Open to the public
  Online CE courses
  Mini Sudokus
- gwi.northwestrehab.com
  2 years access, with username and pw in handout
- www.activityconnection.com
  30 days access, memory care
  Dr. Rob’s Cranium Crunches
  username: dolor
  pw: actcon654

© 2017, Dr. Rob Winningham All Rights Reserved

Contact Information

Dr. Rob Winningham
Professor of Psychology and Gerontology
Western Oregon University
345 N. Monmouth Ave
Monmouth, OR 97361
Email: rob.winningham@gmail.com

© 2017, Dr. Rob Winningham All Rights Reserved