Maximizing Brain Performance

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Goal Today

IDENTIFY

- MENTAL
- EMOTIONAL
- BEHAVIORAL

STRATEGIES TO MAXIMIZE DAILY BRAIN PERFORMANCE

OBJECTIVES TODAY

DR. CASSIDY

Overview of Brain & Cognition

3 Strategies to promote optimal memory and other thinking skills

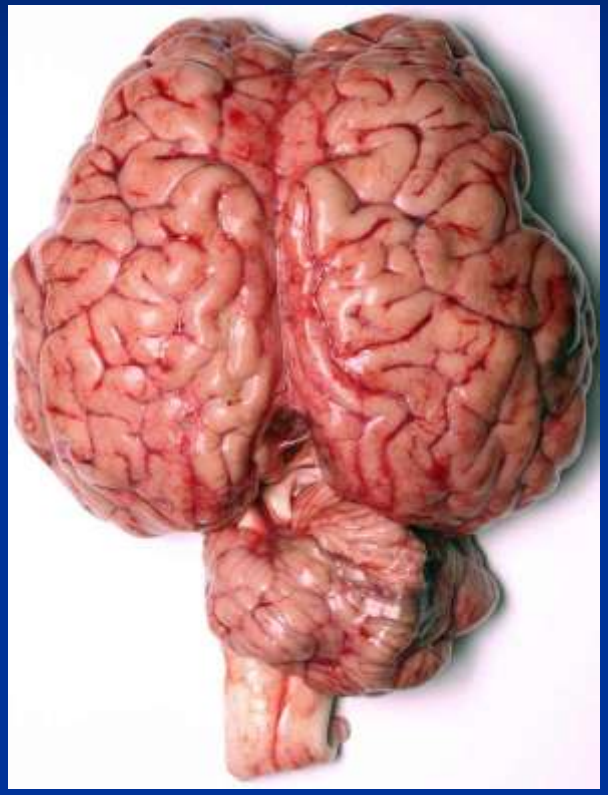
DR. COMPTON

Impact of mood, emotions, & stress on memory & concentration

3 Strategies for maintaining a positive mood and minimizing stress.

BRAIN POWER
Dr. Jill Bolte Taylor
Indiana State University

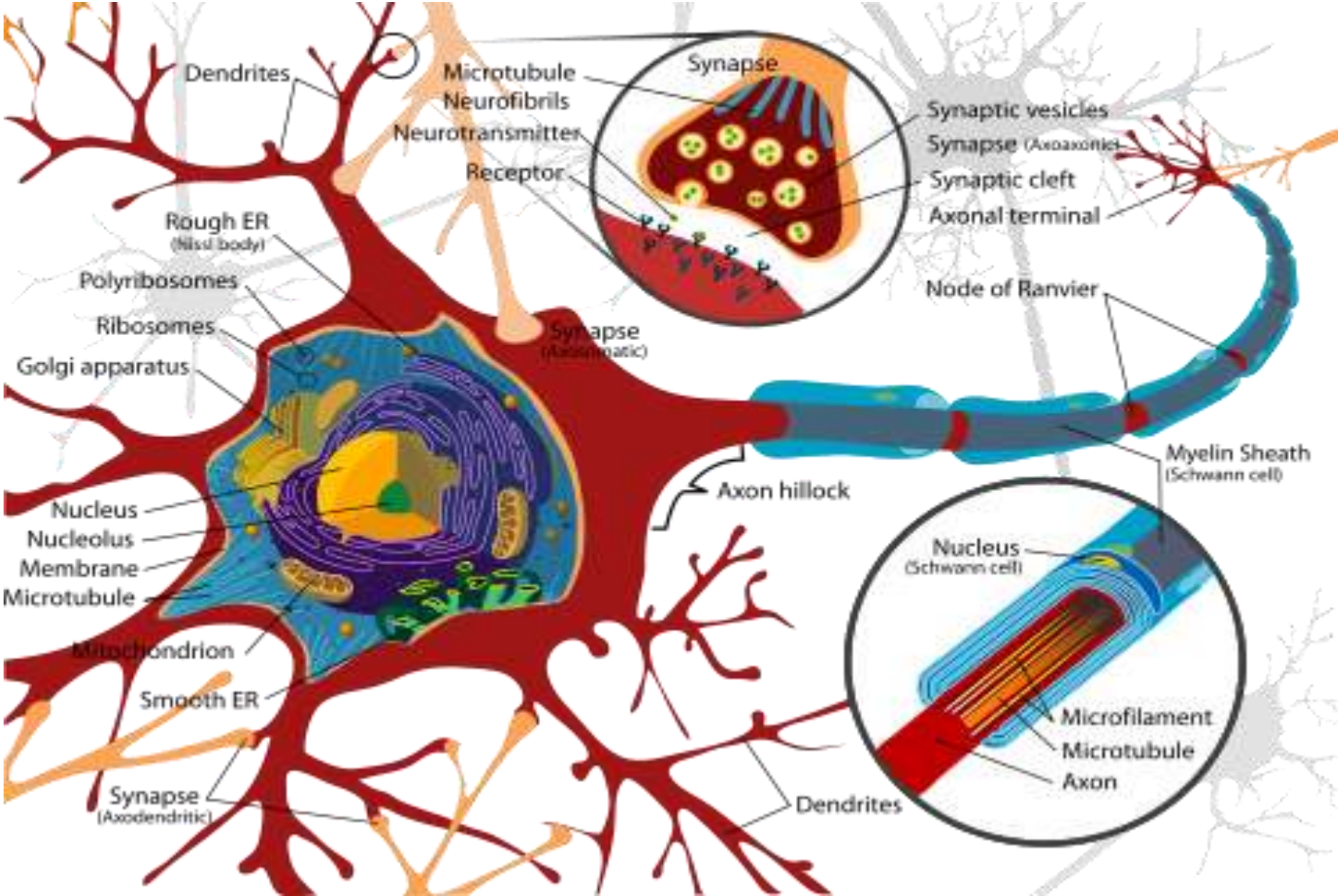
Brain's Gray Matter & White Matter



Gray Matter =
Cortical Brain Layer

White Matter =
Subcortical Brain Layer

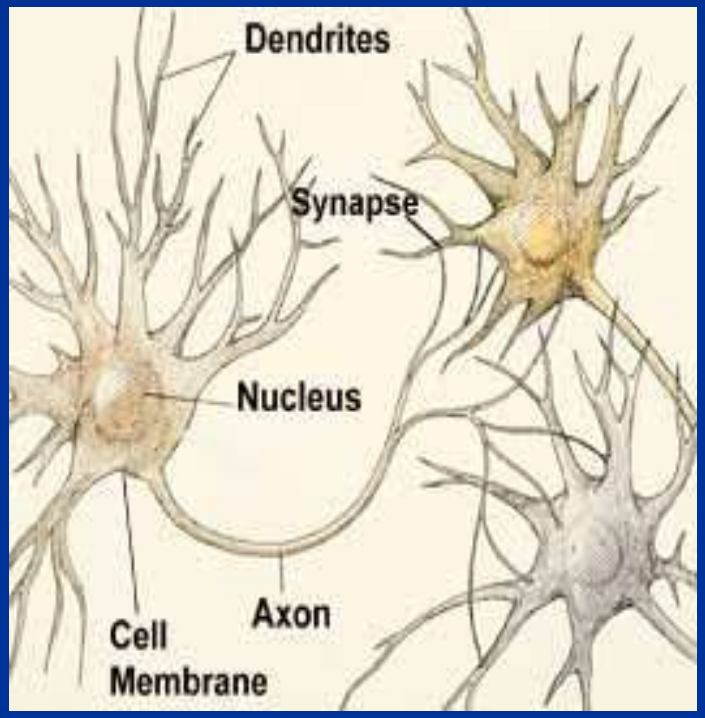
Your Brain Neurons

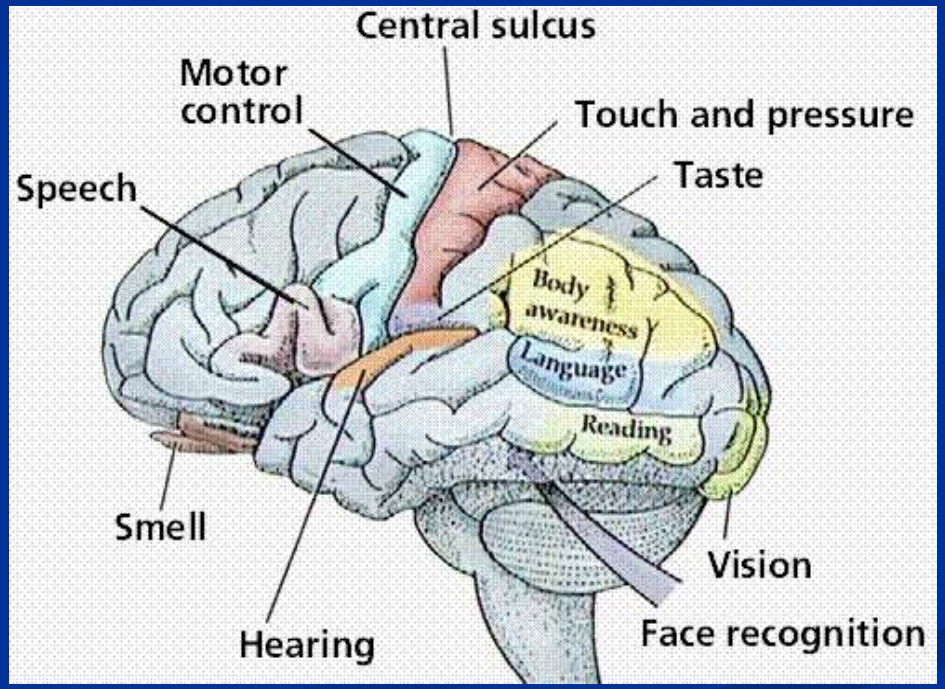


BRAIN DEVELOPMENT

Starts from Conception
Growth
Discovery
Maturation
Atrophy →
Slowing in Thinking
Healthy Brain Wisdom

NEUROPLASTICITY

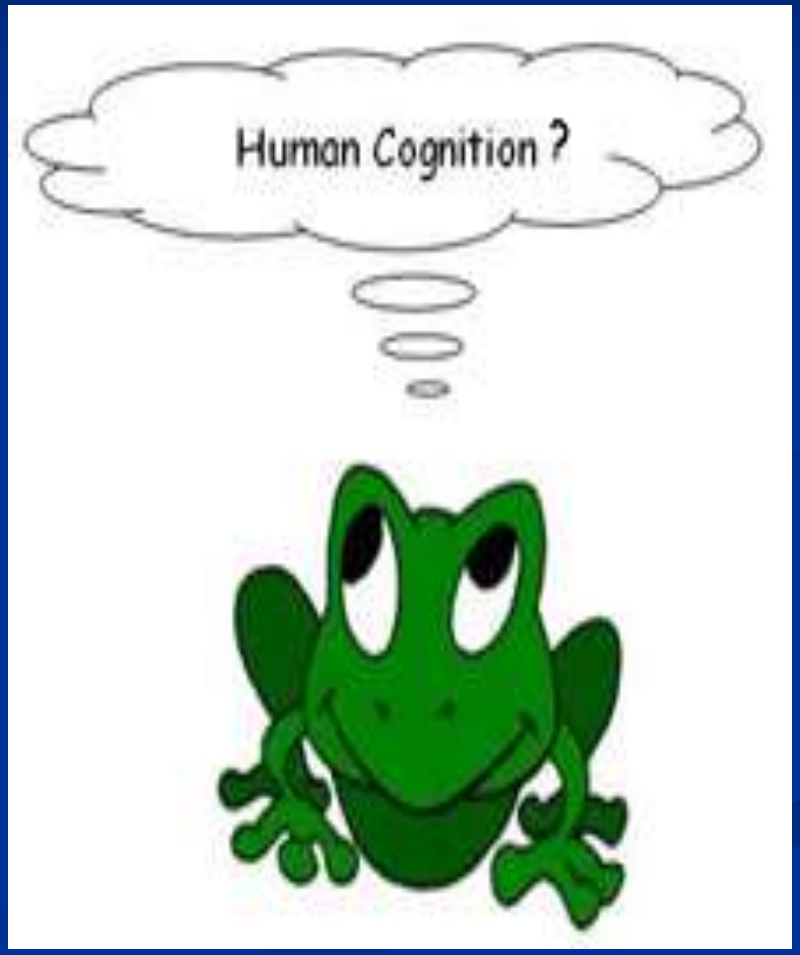




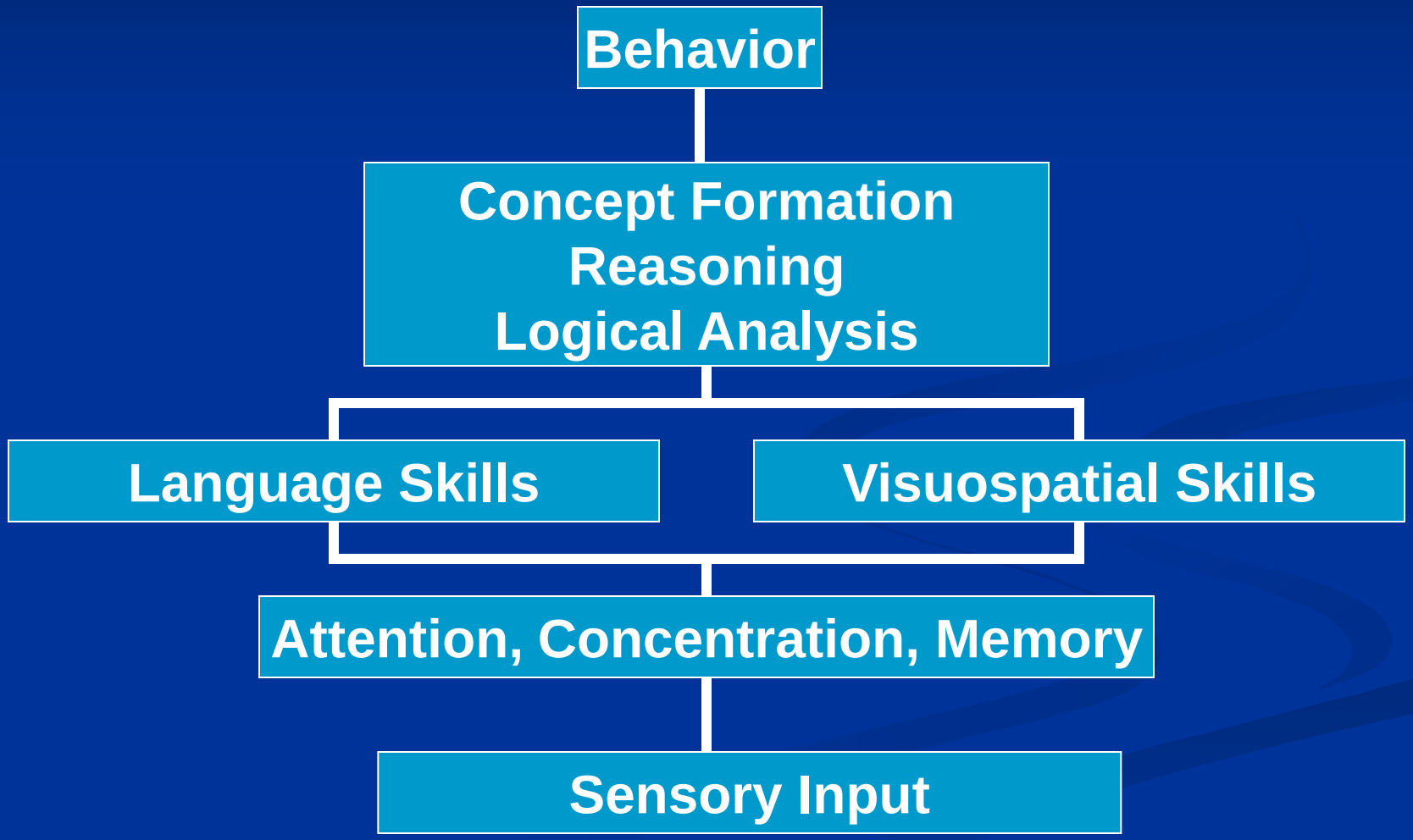
SO – WHAT IS COGNITION?

Mental Processes involving:

- **Being aware (attention)**
- **Perceiving (sensation)**
- **Thinking**
- **Learning**
- **Remembering**
- **Knowing**
- **Reasoning & Judging**
- **Communicating**
- **Coordination of Movement**



COGNITIVE DOMAINS



3 Strategies to Maximize Cognitive Brain Performance

1. Weight Management & Brain Nutrition
2. Physical & Cognitive Stimulation
3. Organization & Use of External Tools

OBJECTIVE 1

Weight Management & Brain Nutrition

Weight Management & Healthy Brain Nutrition

- Healthy brain > 60% fat (30% is DHA)
- Your are & will become <u>what</u> & <u>how much</u> you eat
- Too much fat & too much sugar are detrimental to brain health
- Important to know how much and what foods & nutrient nourish our brains
- Obesity → Cognitive decline

Weight Management

- Determine your current Body Mass Index
- Underweight = <18.5
- Normal weight = 18.5–24.9
- Overweight = 25–29.9
- Obesity = BMI of 30 or greater

Consult your physician regarding any weight loss plan – medications may need adjustment

Learn & Practice Behavior Modification

Establish a support network

BRAIN FOODS

- Oily Fish/Omega 3 –Anchovies, Salmon, Sardines, Tuna
- Seeds/Nuts – Walnuts, Flax Seeds, Black Sesame Seeds
- Deep Green & Colorful Vegetables/Fruits – Spinach, Kale, Collards, Watercress, Onions, Avocado, Red Peppers, Green Peppers, Eggplant, Tomato, Blueberries, Acai, Plums, Pomegranates, Grapes
- Beans – Red beans, Black Beans
- Spices/Oils – Ginger, Rosemary, Tumeric, Curry, Olive oil, Garlic
- Eggs
- Whole Grains/Wheat Germ
- Beverages – Green Tea, Black Tea, Coffee, Red Wine (in moderation)

BRAIN SUPPLEMENTS

- Exercise Caution towards Advertising Claims
- Not FDA Regulated – May include harmful compounds or interact with prescription medications
- Consult with your Physician regarding whether supplements are ok with medications
- Omega 3, Omega 6, EPA and DHA, vitamins B6 and B12, vitamin D, and folic acid
- Acetyl-L-Carnitine, Ginkgo Biloba Extract, Alpha-Lipoic Acid (ALA), Huperzine A, N-Acetyl-L-Cysteine (NAC), Phosphatidyl Serine, Vinpocetine, Piracetam, Oxiracetam, Aniracetam, Pyritinol, Idebenone

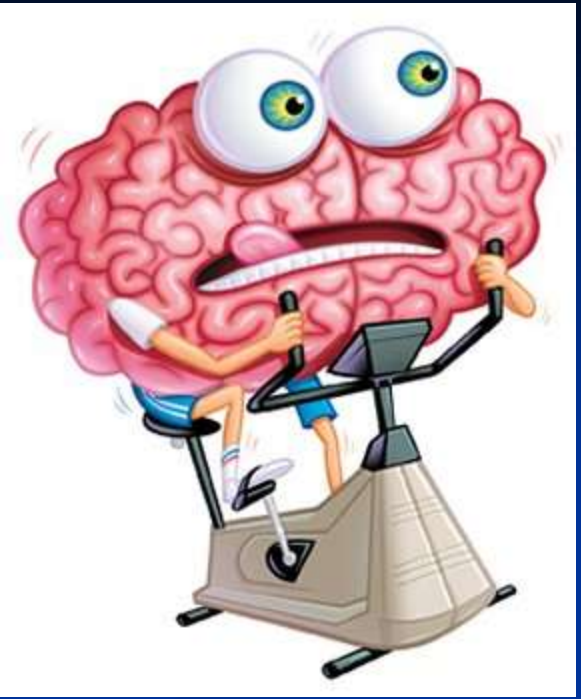
OBJECTIVE 2

Physical & Cognitive Stimulation

EXERCISE MAXIMIZES BRAIN HEALTH THROUGHOUT THE LIFE SPAN

- Increases production of neurotransmitters & hormones that promote brain cell repair
- Promotes growth of new nerve cell connections
- Increases blood flow & oxygen to areas of brain involving memory

BRAIN AEROBICS



- Lengthen Attention Span
- Improve ability to Multitask
- Improve Memory
- Improve Decision-making

Enjoy Physical Activity

- Consult your physician for exercise recommendations
- Exercise Daily if Possible (Prioritize & Schedule your exercise time)
- Start slow and gradually increase time and briskness of exercise
- AMA recommends 150 minutes of moderate level activity per week

Cognitive Training: What is it?

- Learning Attention and Memory Strategies
- Practice of Strategies and Rehearsal of Information
- Feedback from Others and from Environment on our effectiveness
- Adjusting these thinking strategies to new situations - Novelty

DOES COGNITIVE TRAINING WORK?

- Mixed results in Research Literature
- Initially problems with studies using too small of a sample size to evaluate statistical significance
- Early research also used diverse outcome measures decreasing ability to compare results
- More recently – multi-site studies increased # of subjects with consistent outcome measures
- Still working on issue of generalizability to daily function

Advanced Cognitive Training for Independent and Vital Elderly (ACTIVE)

2802 Adults age 65 & up

3 Cognitive Training Programs – 10 sessions & 4 booster sessions @ 11 & 35 months

- EPISODIC VERBAL MEMORY (26%)
- INDUCTIVE REASONING (74%)
- VISUAL SEARCH & IDENTIFICATION PROCESSING SPEED (87%)

Advanced Cognitive Training for Independent and Vital Elderly (ACTIVE)

- For Reasoning and Speed training, better performance on targeted cognitive ability, durable through 5 years.
- For Speed training, better performance on Everyday Speed of Processing at 5 years.
  - Maintain driving (controls drive less)
  - Maintenance of driving space
  - No increase in driving difficulty relative to controls

IMPACT PROGRAM FOR OLDER COMMUNITY DWELLING ADULTS

(2009) Smith et al Journal American Geriatric Society

- Improvement in Memory with Plasticity-based Adaptive Cognitive Training
- A cognitive training program "Brain Fitness Program", Posit Science, San Francisco, CA)
- 487 Adults ages 65 & up (Avg age of 75) with normal cognition were randomly assigned to control or experimental groups.
- Six computerized exercises (15 min duration per session) designed to improve the speed and accuracy of auditory information processing.
- Training was 1 hour per day, 5 days per week, for 8 weeks, for a total of 40 hours Adherence was measured via internet
- Outcome measure were Neuropsychological tests used in clinical assessment

Attention & Processing Speed

Research shows our cognitive exercises improve specific abilities related to attention.

- Focusing on important tasks throughout your day
- Avoiding distractions
- Productivity at work or at home
- Concentrating on new challenges
- Accuracy in sports like golf or tennis
- Driving safely and Peripheral vision

Information Processing Speed

Speed includes a variety of cognitive skills that well-designed brain training can enhance.

- Reaction times
- Decision-making in time-sensitive situations
- Adapting to changing environments

MEMORY TEST

I am going to read a list of words to you. Listen carefully because when I have finished reading the list I would like you to write down as many words as you recall.

Please do not write down words during my reading of the list.

MEMORY TEST

How many words did you recall?

10 Memory Improvement Tips

1. Consciously focus your attention on the information you are learning.
2. Avoid cramming learning into one session – plan time for repeated study.
3. Structure and organize the information you want to learn.
4. Utilize mnemonic devices to remember information, such as SIGECAPS.
5. Elaborate and rehearse the information you are learning.

10 Memory Improvement Tips

6. Relate and link new information to things you already know.

7. Visualize concepts to improve memory and recall.

8. Use multiple sensory processes when learning new information.

9. Teach new concepts to another person.

10. Vary your study routine.

Daily Memory Training

Each of the following skills involves the use of memory. Which strategies would you use to increase your effectiveness for the following tasks?

- Remembering names after the first introduction
- Navigating a new city using mental directions
- Learning new subjects quickly and accurately
- Recalling the location of objects
- Calculating figures in your head
- Remembering visual patterns

Cognitive Stimulation

- Keep learning new things
- Crossword Puzzles
- Word Searches/Scrabble
- Jigsaw Puzzles
- Music
- Art, Crafts
- Brain Teasers
- Computer Games
- Tasks that require speed

OBJECTIVE 3

Organization & Use of External Tools

Organization & External Tools

1. Simplify your home & work environment
2. Get rid of clutter
3. Designate 1 place for items easily misplaced
4. Organize Bills & Medical Records in Files
5. Use a day planner or I-Pad to keep activities, ideas, communications in 1 structured place
6. Use alarms, pill organizers, white boards for reminders

3 Strategies to Maximize Cognitive Brain Performance

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You Choose Your Future Quality of Life Brain & Body Maintenance

- Optimal Attention → Improved math, reading, & memory performance
- Optimal Working Memory → Ability to effectively mentally manipulate information
- Optimal Memory → Necessary for all cognitive domains

Cognitive Performance Software

- Posit Science "DriveSharp" Brain Fitness Software
- Posit Science Brain Fitness Software
- Nintendo Brain Age 1 & 2
- Big Brain Academy
- Brain Boost
- Brain Challenge

Brain Fitness Websites

http://www.sharpbrains.com/

http://www.positscience.com/

http://www.happy-neuron.com/

http://www.cognifit.com/

http://www.lumosity.com/

www.fitbrains.com/

http://www.mindsparke.com/

http://www.biof.com/onlinestore/brainbuilder.asp?redirect=yes

STRETCH BREAK

UP NEXT

DR. DENISE COMPTON

Impact of mood, emotions, & stress on memory & concentration