

The Healthy Brain

What Money Can't Buy!

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Physical Benefits of Exercise

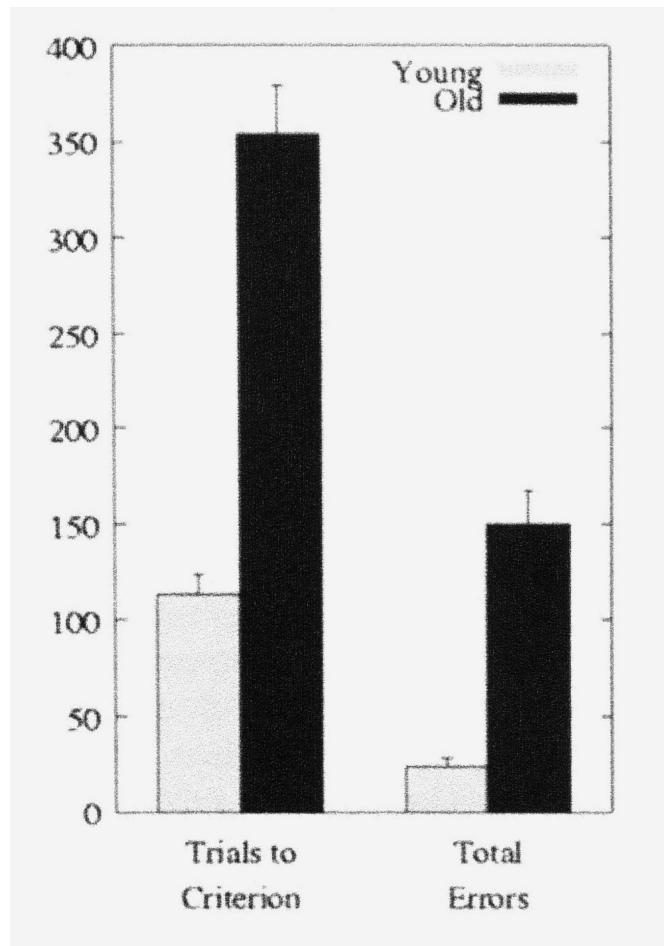
- ***Increased***

- Endurance
- Strength
- Flexibility
- Balance & posture
- Restful sleep
- Resistance to stress
- Overall cardiovascular fitness

- ***Decreased***

- Hypertension
- Heart disease
- Type II diabetes
- Osteoporosis
- Falls
- Risk for cardiovascular disease

Cognition & Aging



Deficits in performance are correlated with decreased hippocampal volume during aging!

From The Aging Hippocampus: Cognitive, Biochemical and Structural Findings, Cerebral Cortex, 2003

Hippocampal Formation



- **Consists of the hippocampus, the subiculum, and the *dentate gyrus* (all part of those “medial temporal lobe structures” involved in memory)**
- **Critically involved in Learning & Memory, especially declarative memory (memory of facts and events)**
- **Considered one of the most “vulnerable” and “plastic” structures in the human brain**

***Plasticity:* molecular, cellular or systems level changes in the brain that underlie adaptability, learning and memory**

- **Plasticity comes in many forms!**
 - “Learning” is a form of plasticity; using past experience (“memory”) to modify/inform future action/thought *is* plasticity
 - Can result from changes in neurotransmitter release, sensitivity of receptors, number of synapses, generation of “new” neurons, increased myelination of axons, etc.

Cognitive Benefits of Physical Exercise

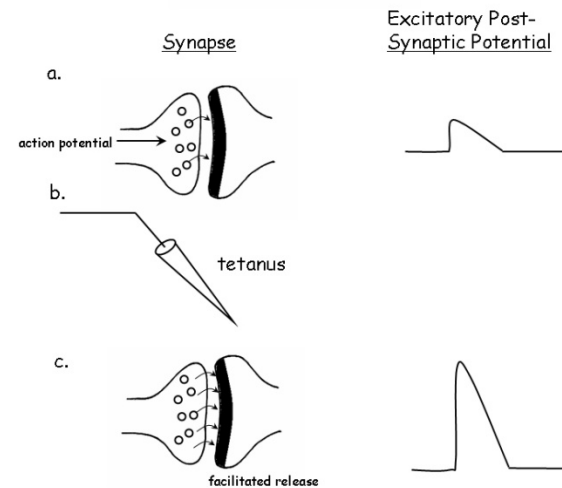
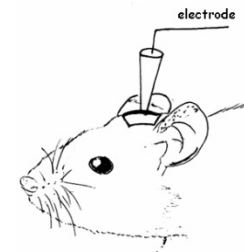
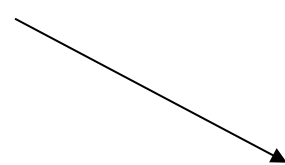
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 - **Attention and arousal (nor-epinephrine)**
 - **Mood (5-HT or serotonin)**
 - **Over-all feelings of well-being (dopamine)**

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 - **Risk of Alzheimer's disease and possibly other neurodegenerative diseases**



Factors that Decrease Risk for Alzheimer's Disease

- ***Not under your control***
 - Choosing good parents 😊
 - Aging (too late!)
- ***Under your control***
 - Continuing mental challenge
 - Maintaining strong social & personal connections
 - Eating food rich in omega-3 fats, maintaining low blood LDLs, etc.
 - Eating a diet rich in anti-oxidants like flavenoids
 - Maintaining a healthy weight
 - **PHYSICAL EXERCISE (aerobic, strength, stretching)**

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It's a "No-Brainer"!

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- CHALLENGE YOURSELF MENTALLY!
- STAY SOCIALLY CONNECTED!
- EAT YOUR BLUEBERRIES!
- BE ALERT & ATTENTIVE TO YOUR MENTAL NEEDS!

Oh, and did I mention exercise? ♥

