

Brain Health – Longevity & Peak Performance: What You Need to Know Right Now

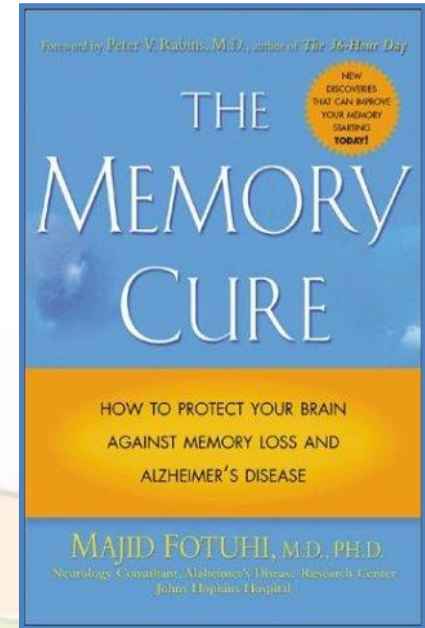
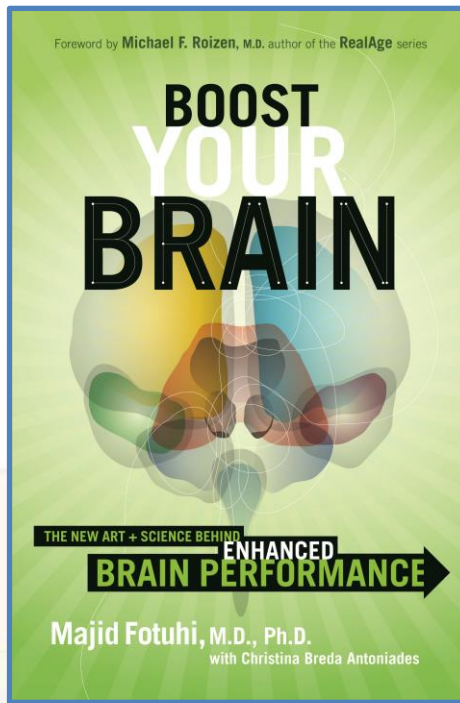
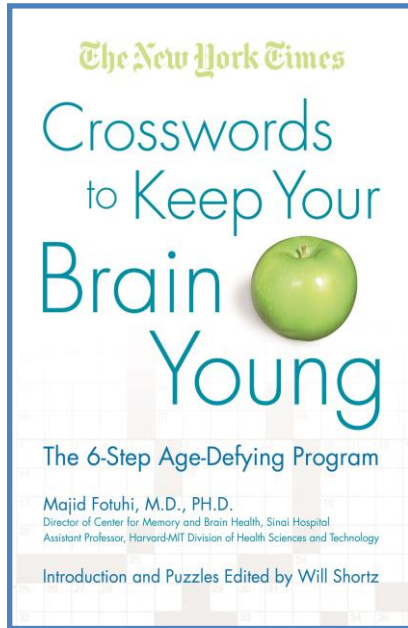
Majid Fotuhi, MD PhD

NeuroGrow Brain Fitness Center

Johns Hopkins Medicine

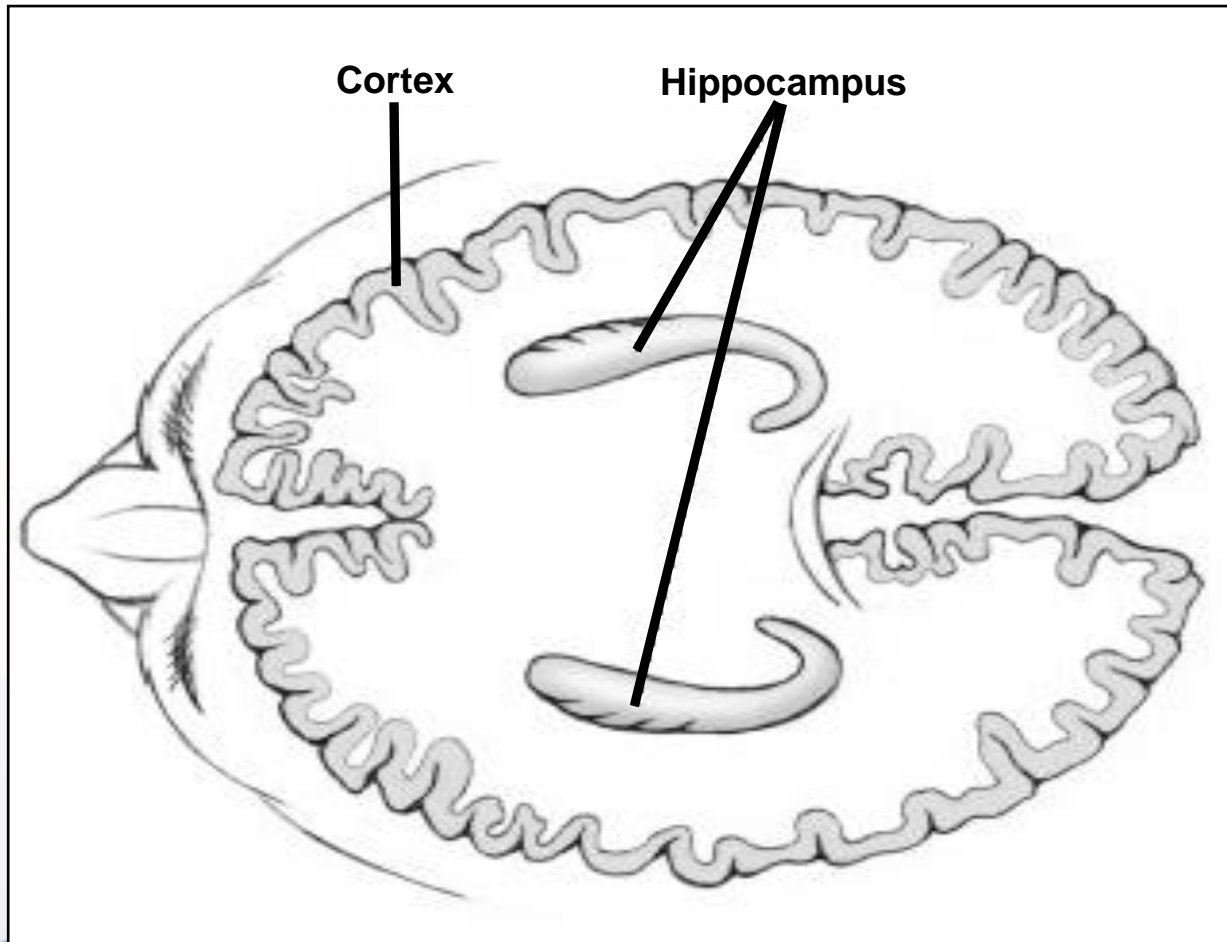




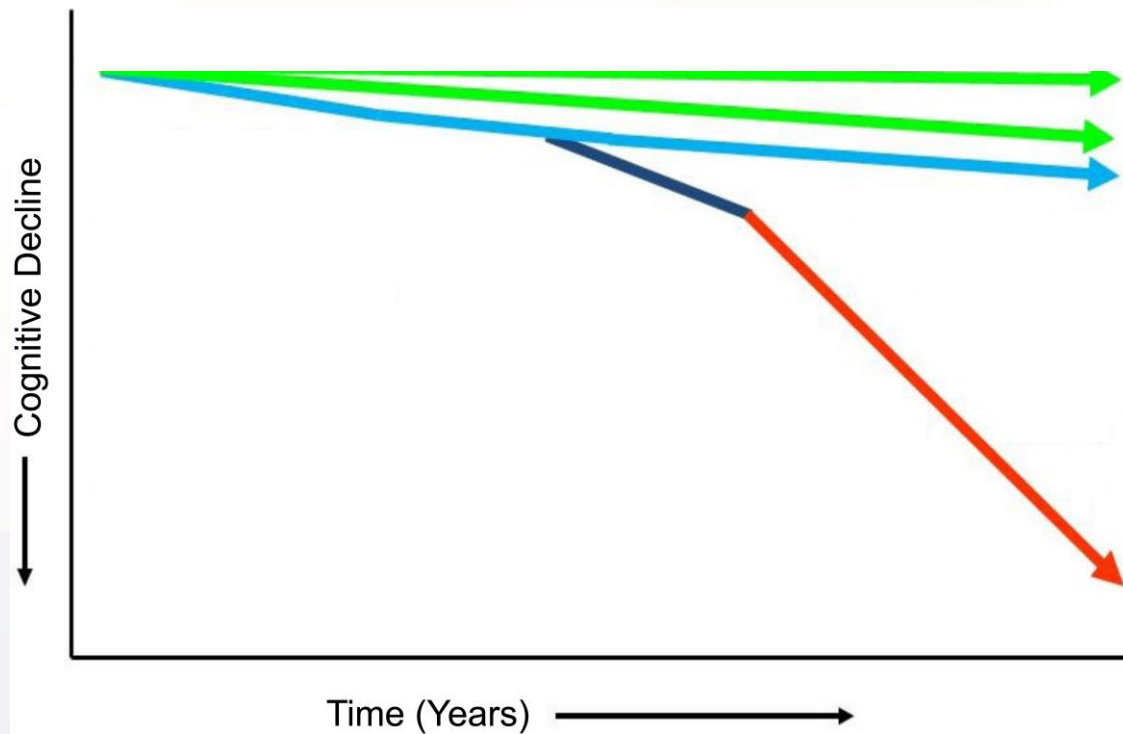


Hippocampus: Short-term Memory

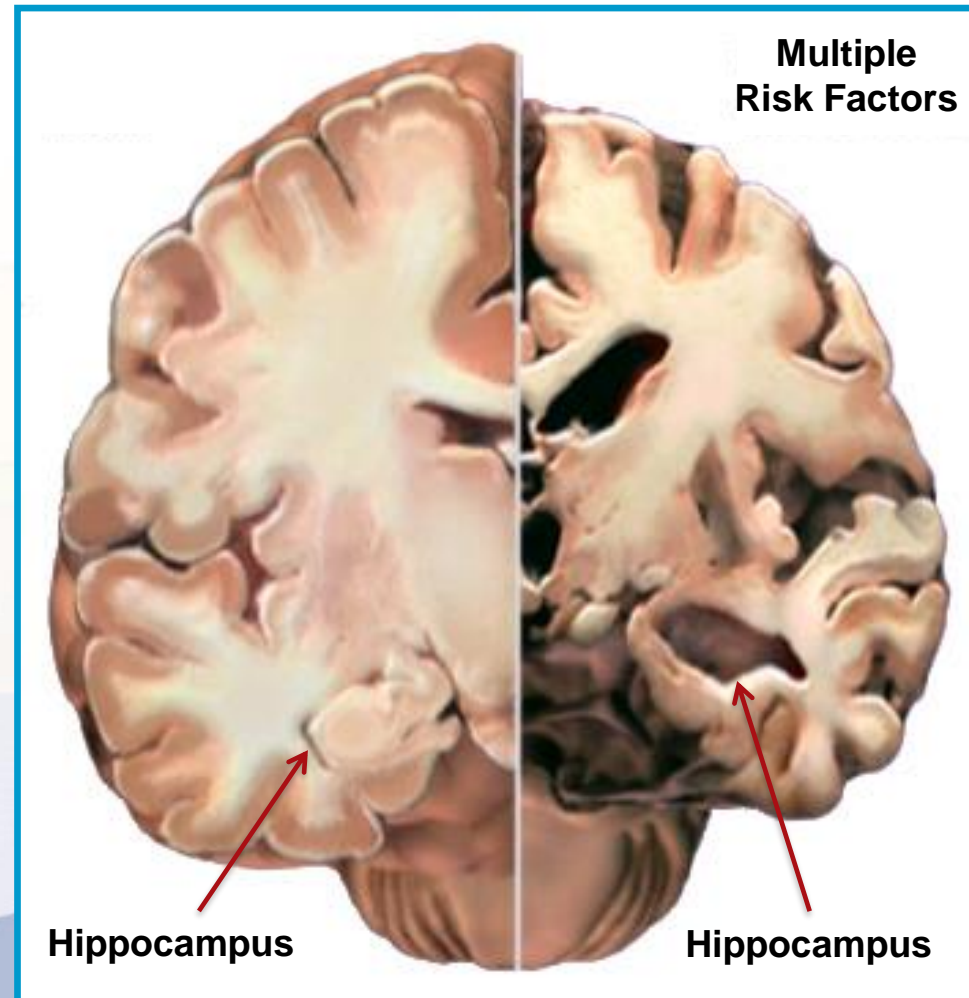
Cortex: Long-term Memory



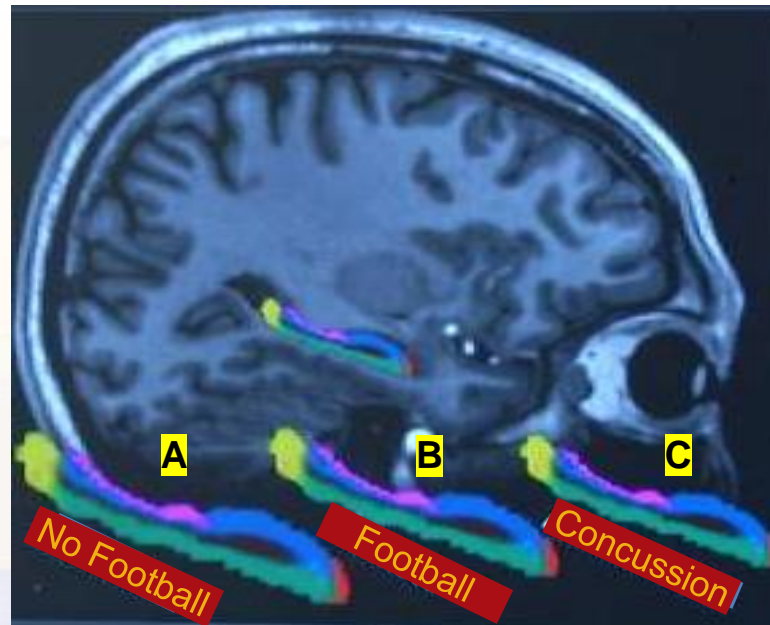
Hippocampus and Cortex Shrink by About 0.5% per Year After Age 50



Multiple Risk Factors, Much Smaller Cortex & Hippocampus

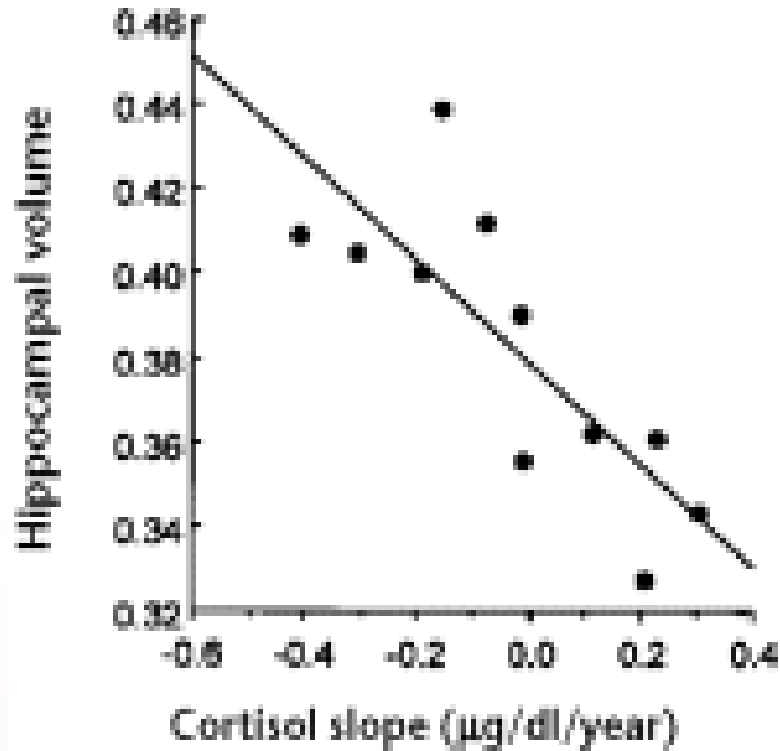


More Concussions in Football, Smaller Hippocampus

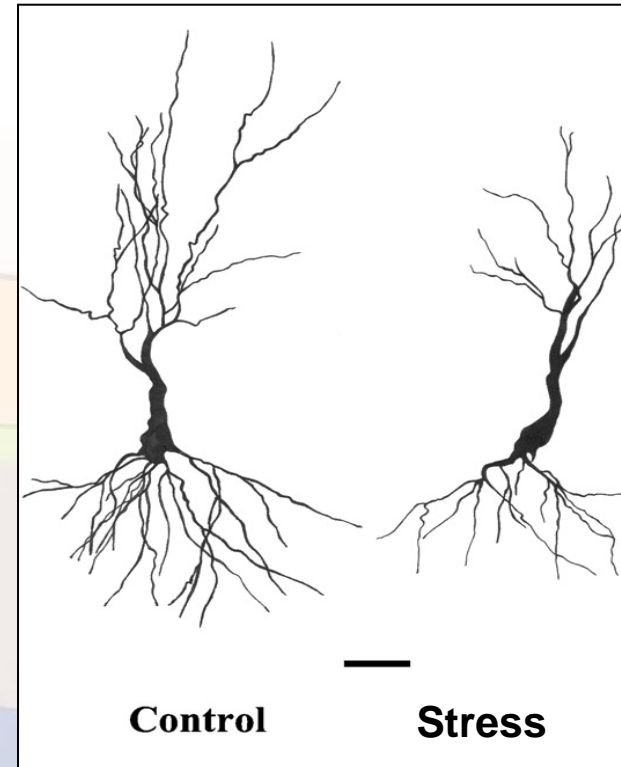


Singh, JAMA Neurology, 2014

More Stress and Anxiety, Smaller Hippocampus

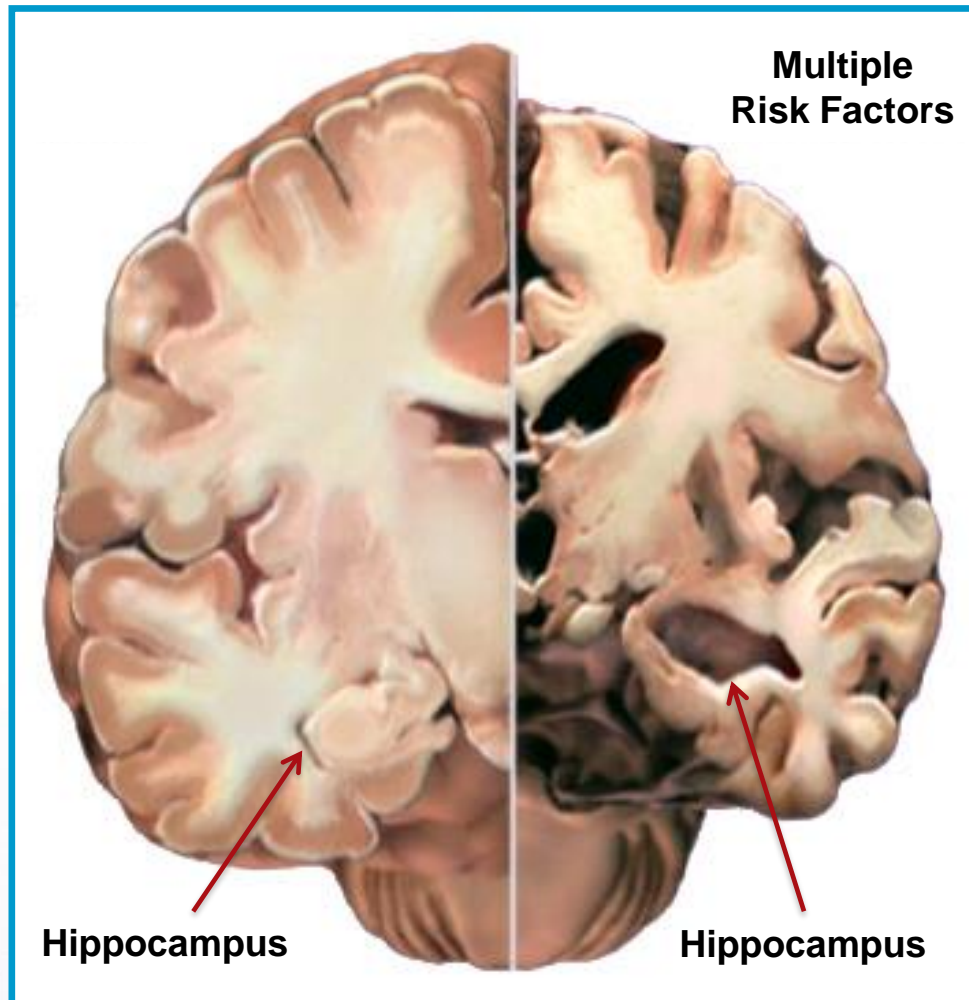


3- Lupien et al (1998), Nature NeuroSci 1 (1), 69-73





Multiple Risk Factors, Much Smaller Cortex & Hippocampus



Concussion

Stress

Sleep Apnea

Obesity

Insomnia

Depression

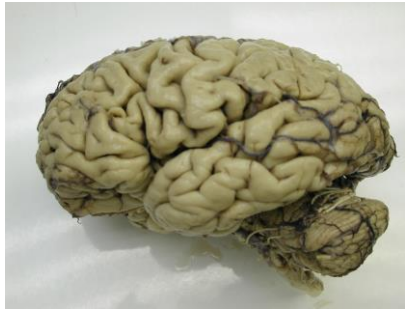
B12 Deficiency

Alzheimer's Disease



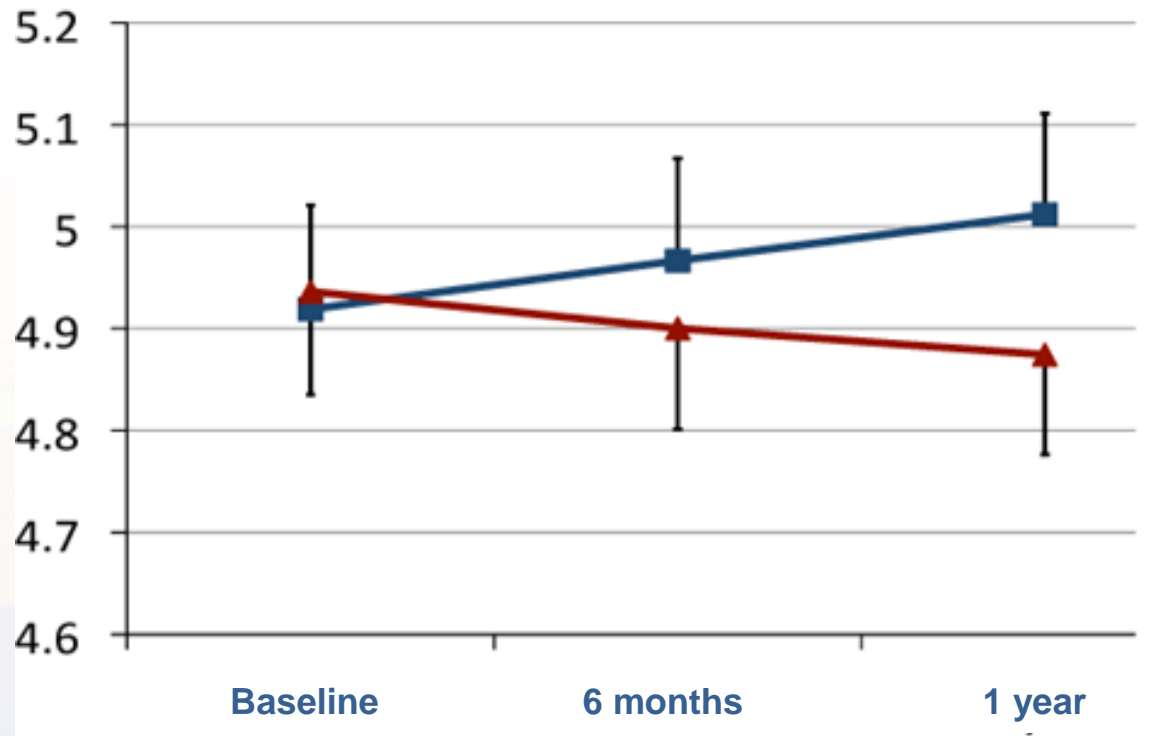
Top Seven Steps For Growing Your Cortex & Hippocampus

Exercise & Get Fit: The Brain Has Lots of Blood Vessels



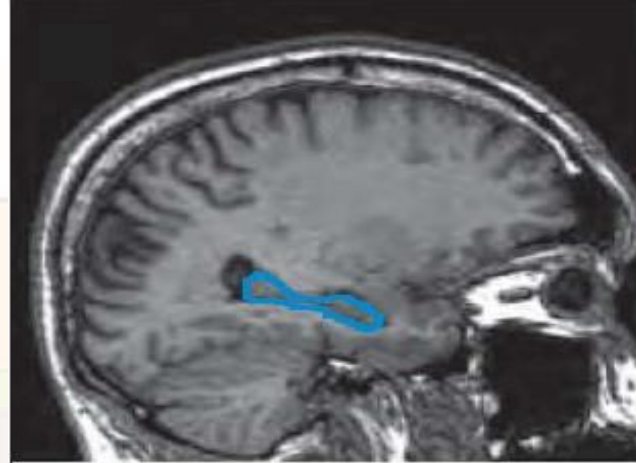
Zlokovic et al. Neurosurgery 43(4), 877–78, 1998

Hippocampus Grows When You Get Fit

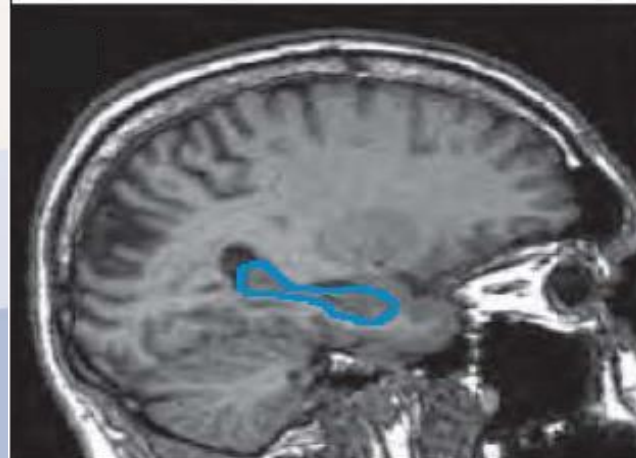


Three Months of Vigorous Exercise, Bigger Hippocampus

Before
Exercise

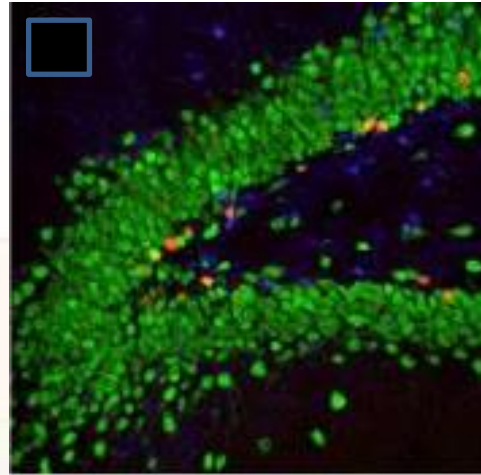


After
Exercise

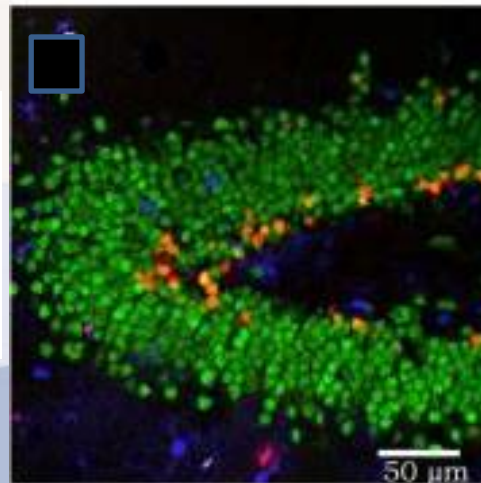


More Exercise, More New Brain Cells Born (Neurogenesis)

Controls



Runners



Lazarov et al., Trends in Neurosciences, 2010

Multiple Protective Factors, Much Larger Cortex & Hippocampus

Exercise

Mediterranean Diet

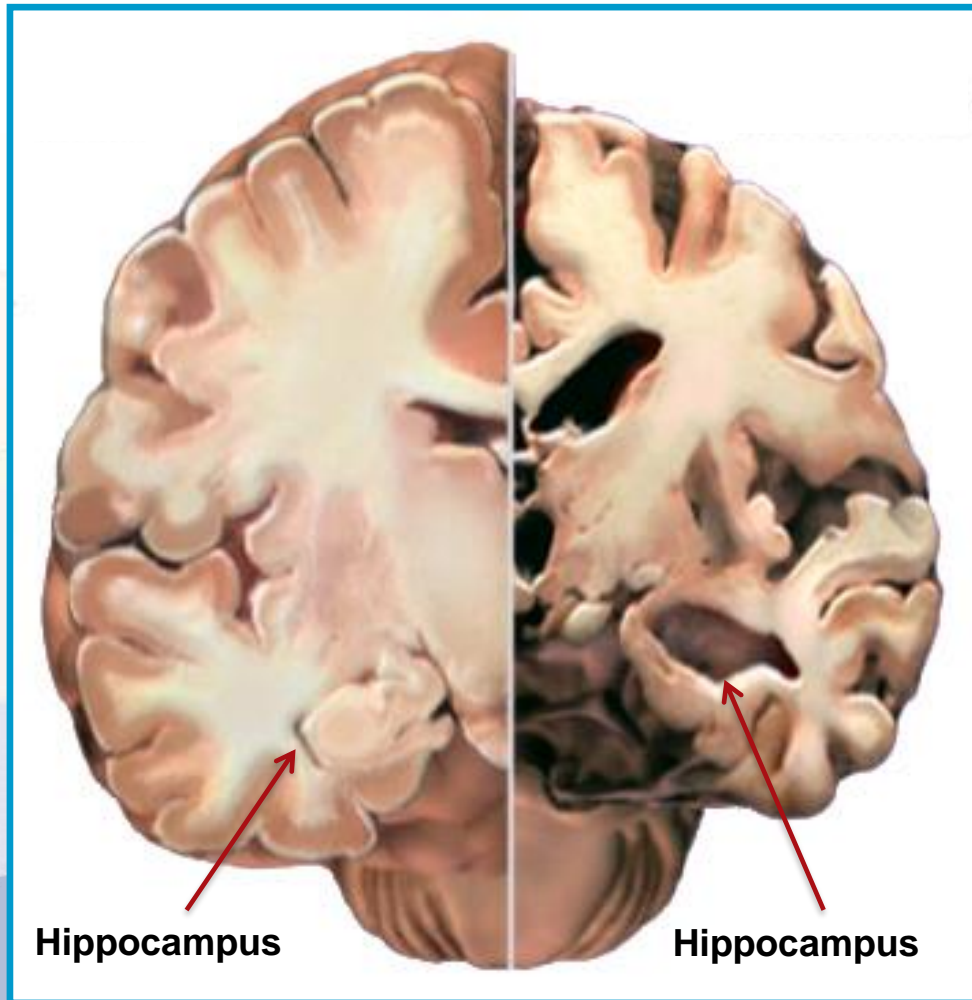
Omega-3 Supplements

Learning Something New

Sleeping Well

Meditation

Having a Purpose in Life



Brain Fitness Program: A Personalized Set of Interventions

Meditation Training



Brain Training



Sleep counseling



Diet Counseling



Exercise Training

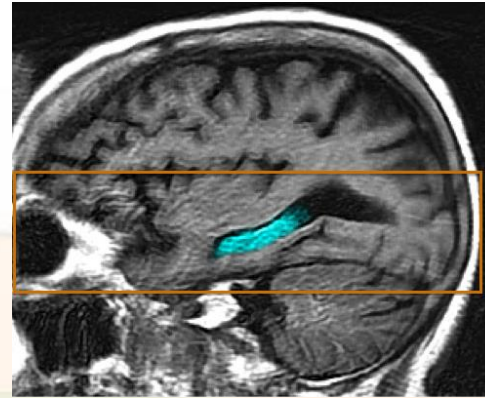


Weekly Monitoring

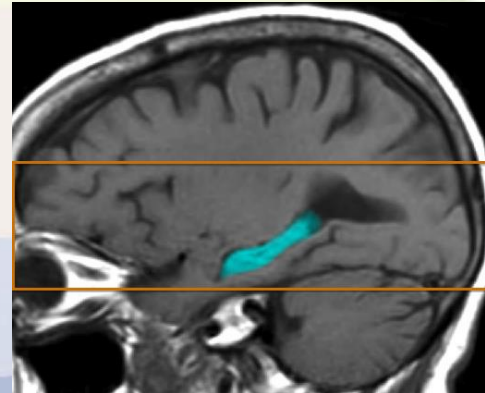


After 12 Weeks: Growth in the Size of Cortex and Hippocampus

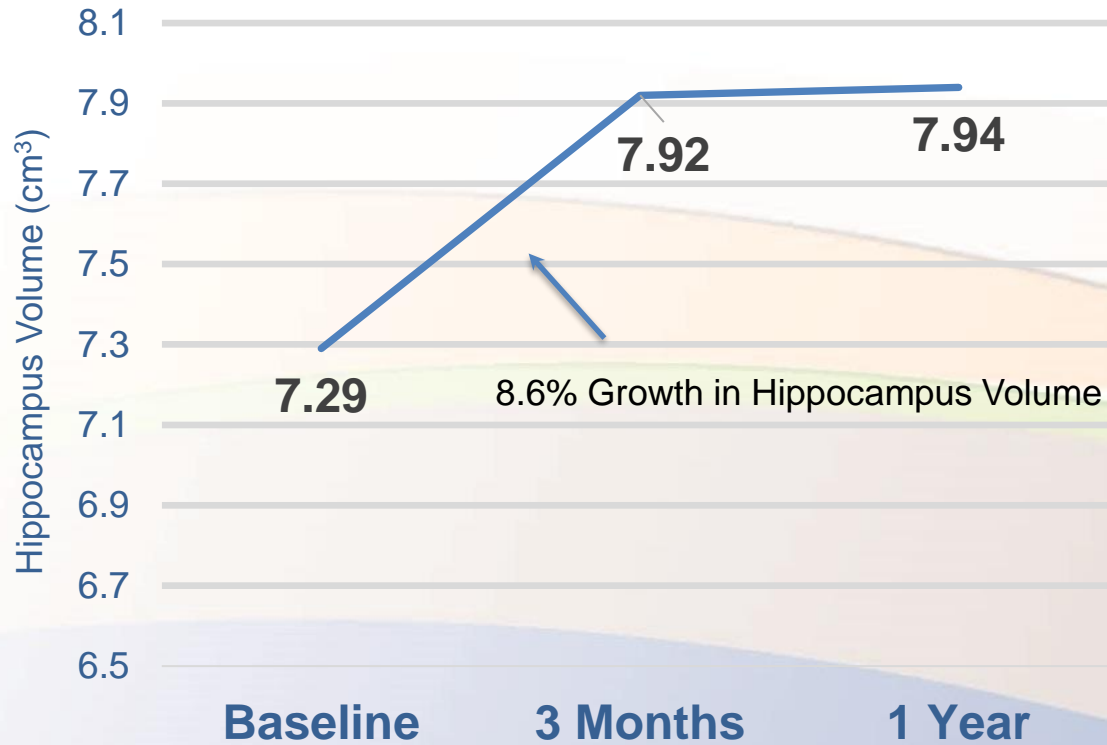
Before
Program



After
Program



Sustained Benefits One Year Later



Published in The Journal of Prevention of Alzheimer's Disease

The Journal of Prevention of Alzheimer's Disease - JPAD©

A Personalized 12-week “Brain Fitness Program” for Improving Cognitive Function and Increasing the Volume of Hippocampus in Elderly with Mild Cognitive Impairment

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TIME



Top 7 Steps for Brain Health & Peak Performance



Concussion
Stress/anxiety
Insomnia
Sleep Apnea
Obesity/diabetes
Depression

Exercise
Mediterranean Diet
Omega-3 Supplements
Learning New Things
Quality sleep
Meditation
Sense of Purpose

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