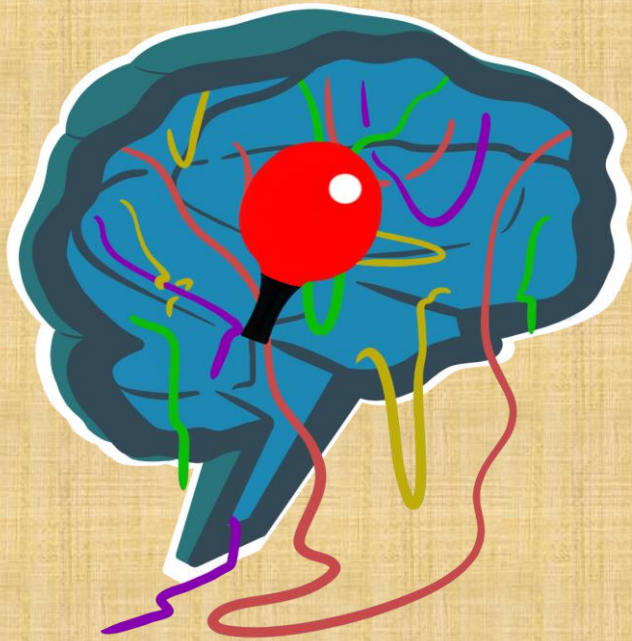


NeuroPong™

Project



**Table Tennis as form of
prehabilitation/rehabilitation
for people living with
Parkinson's.**

Antonino Barbera, MD

- Clinical Professor, Ob-Gyn, School of Medicine, Anschutz Medical Campus
- Movement Disorders Center, School of Medicine, Anschutz Medical Campus, Member
- International Parkinson and Movement Disorder Society, Member



Fort Collins, CO
September 6, 2023

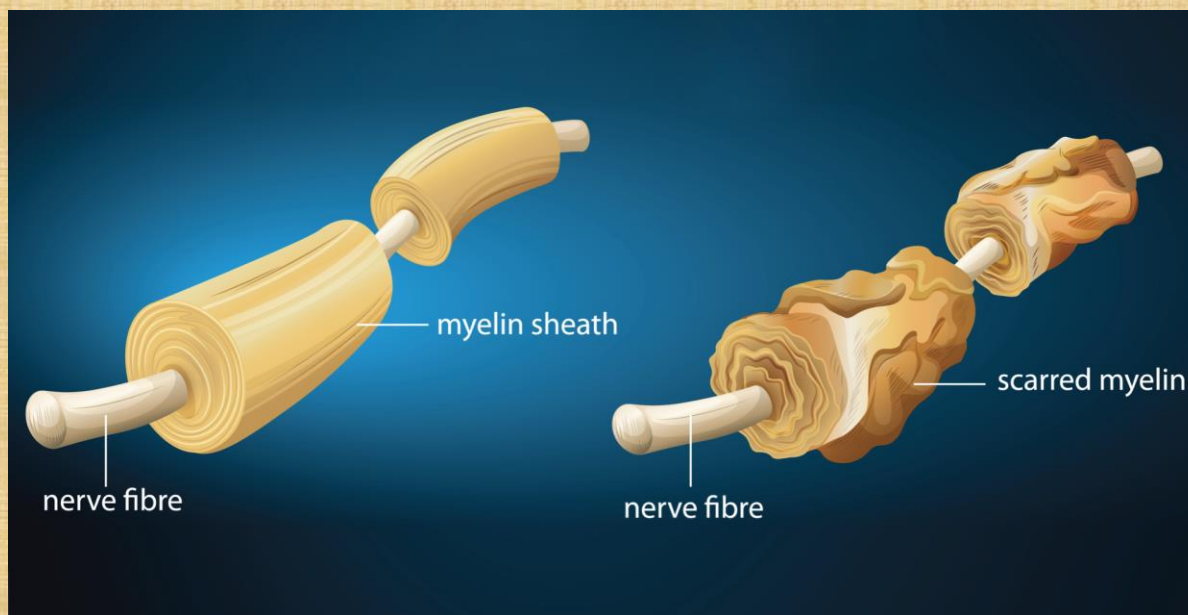
Antonio Barbera





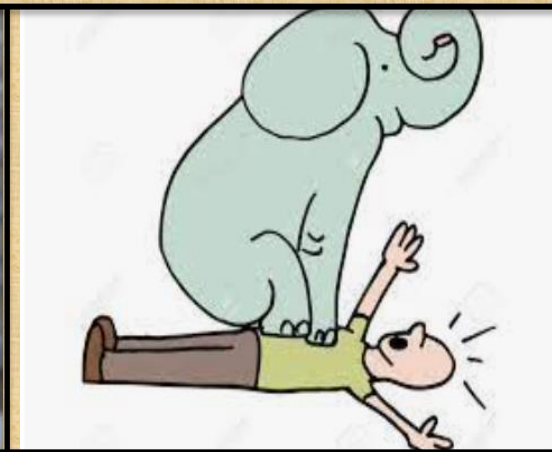
Multiple Sclerosis (MS)

Multiple Sclerosis (MS) is a disease of central nervous system secondary to a damages of the **myelin**, a protective layer of our nerves fibers that acts like the insulation of an electrical wire. As a result there is a interruption of communications signals, to and from the brain, responsible of the unpredictable symptoms.



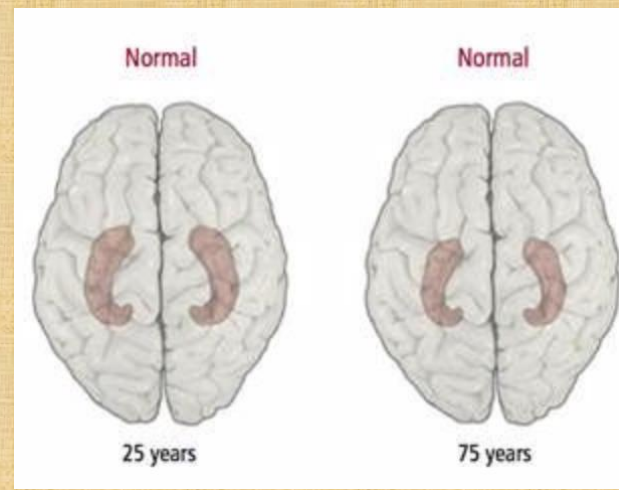
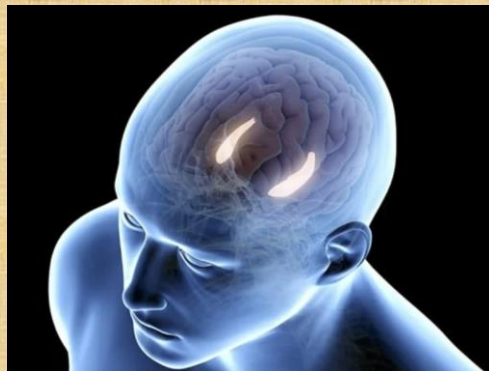
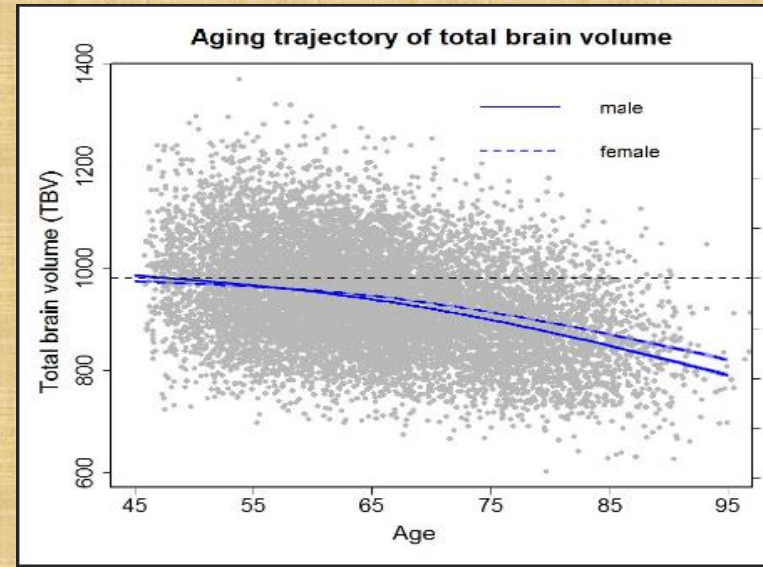
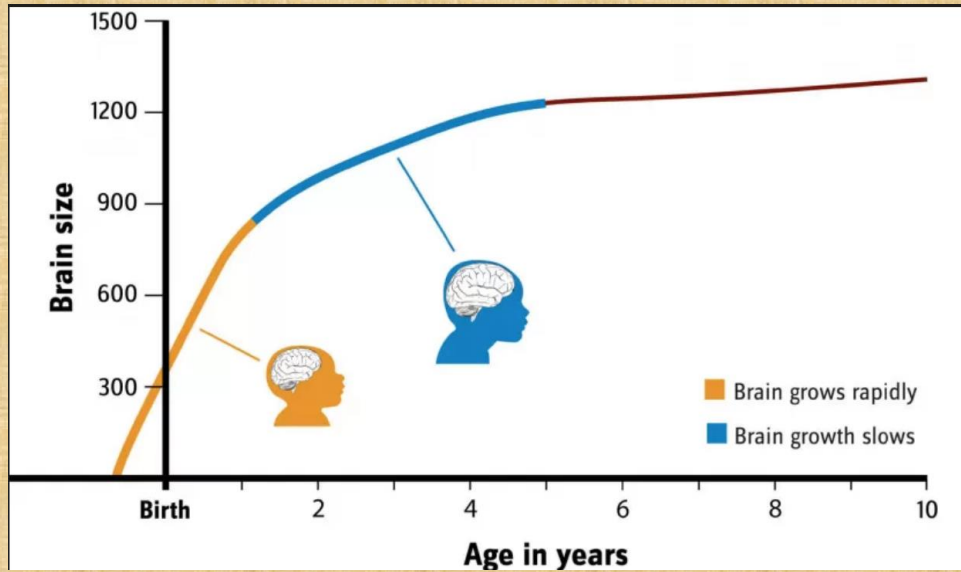


MS Hug and ... Table Tennis



Brain Aging

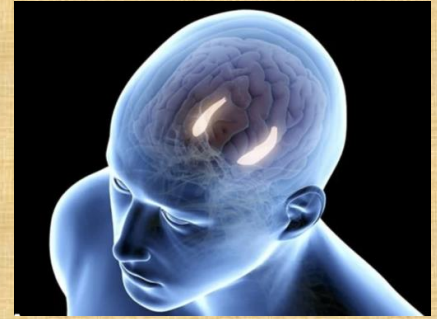
- 30 yo: 0.2%/year
- >70 yo: 0.5%/year





Brain Aging

Hippocampus

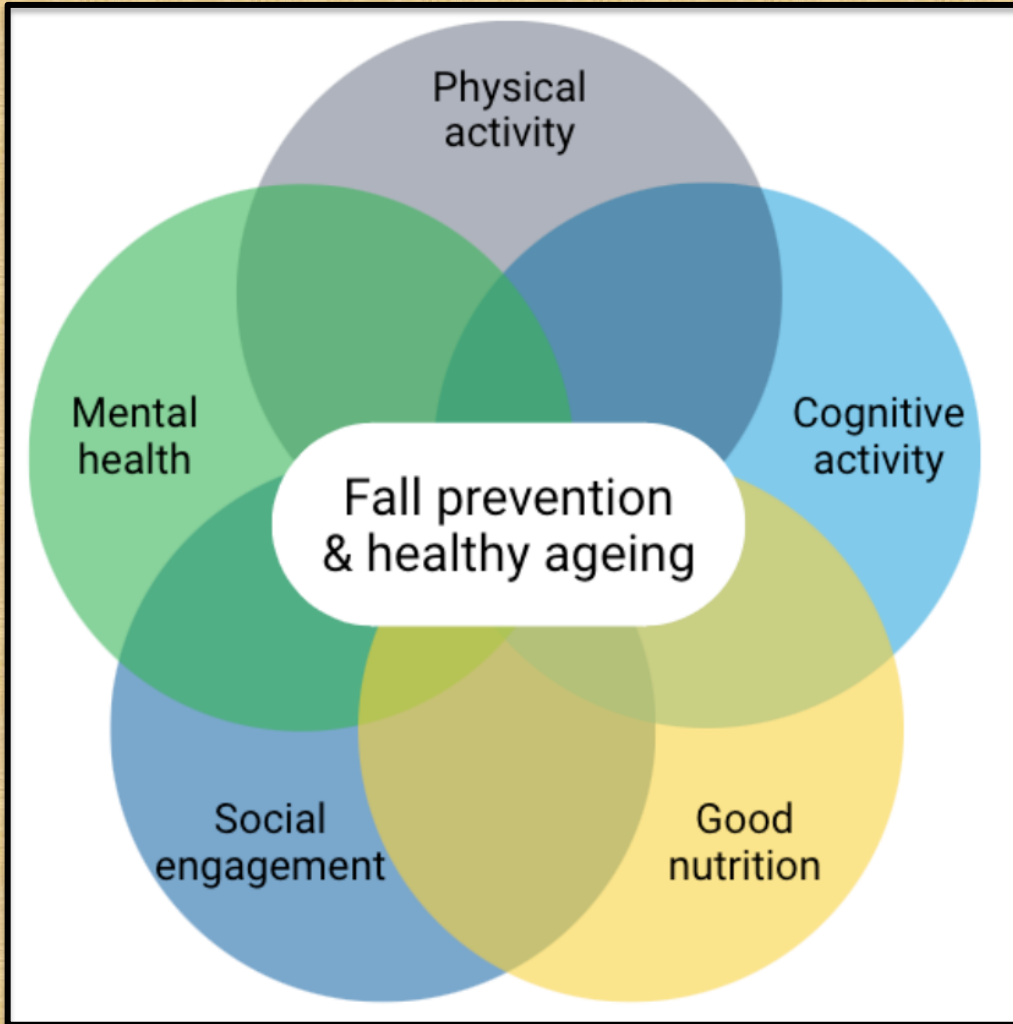


- Implicated in olfaction
- Memory (short-term; long-term)
- Neurogenesis even in adult life
- Spatial navigation
- Emotional behavior
- Regulation of hypothalamic function

Neuroplasticity

- The brain's ability to reorganize itself by **forming new neural connections**:
 - new cells (neurogenesis)
 - new connections (synaptogenesis)
- Synaptic restructuring:
 - **new** shape
 - **new** function
- Mechanism(s) by which the **brain encodes experience** and **learns new behaviors**.
- Mechanism(s) by which the damaged brain **relearns lost behavior** in response to rehab/exercise.

Brain Aging



"Right now, there is no substitute for regular exercise to help with neurogenesis"
(Dr. Tanzi)



GETTING YOUR SWEAT ON CAN...



Increase functional activity of the **temporal lobe**, which is responsible for **storing sensory memories**.



Improve **learning** and **mental performance**.



Help prevent and treat **Dementia, Alzheimer's** and **brain aging**.



Encourage the **pituitary gland** to release **endorphins**.



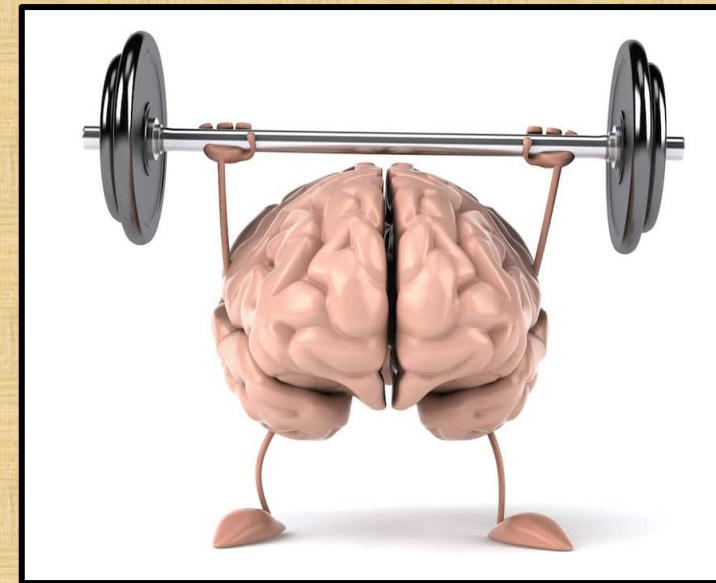
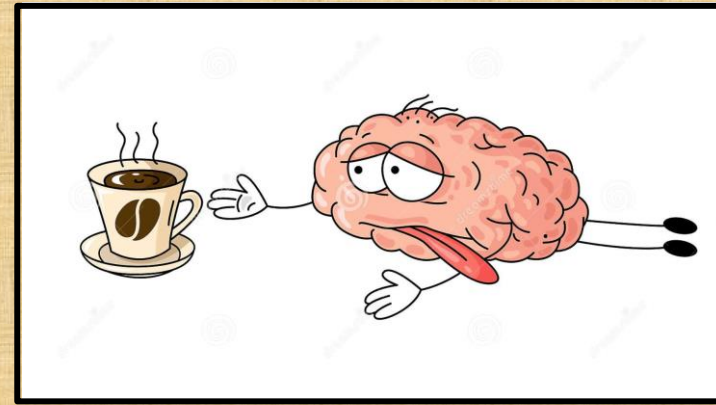
Reduce sensitivity to **stress, depression** and **anxiety**.



Reduce the impairment of brain cells and **loss of coordination** related to **Parkinson's disease**.



Increase levels of **brain-derived neurotrophic factor (BDNF)**, which maintains and regenerates **adult nerve cells**.



Neurodegenerative Conditions

Interventions to Possibly Reduce Risk...

Research suggests combining multiple healthy factors may be the most impactful



Physical Activity



Cognitive & Social Stimulation

Healthy Diet

ALZHEIMER'S ASSOCIATION

MS and Exercise



MS
National Multiple Sclerosis Society

Exercise and physical activity can improve many motor and non-motor Parkinson's symptoms:



Aerobic Activity



Strength Training

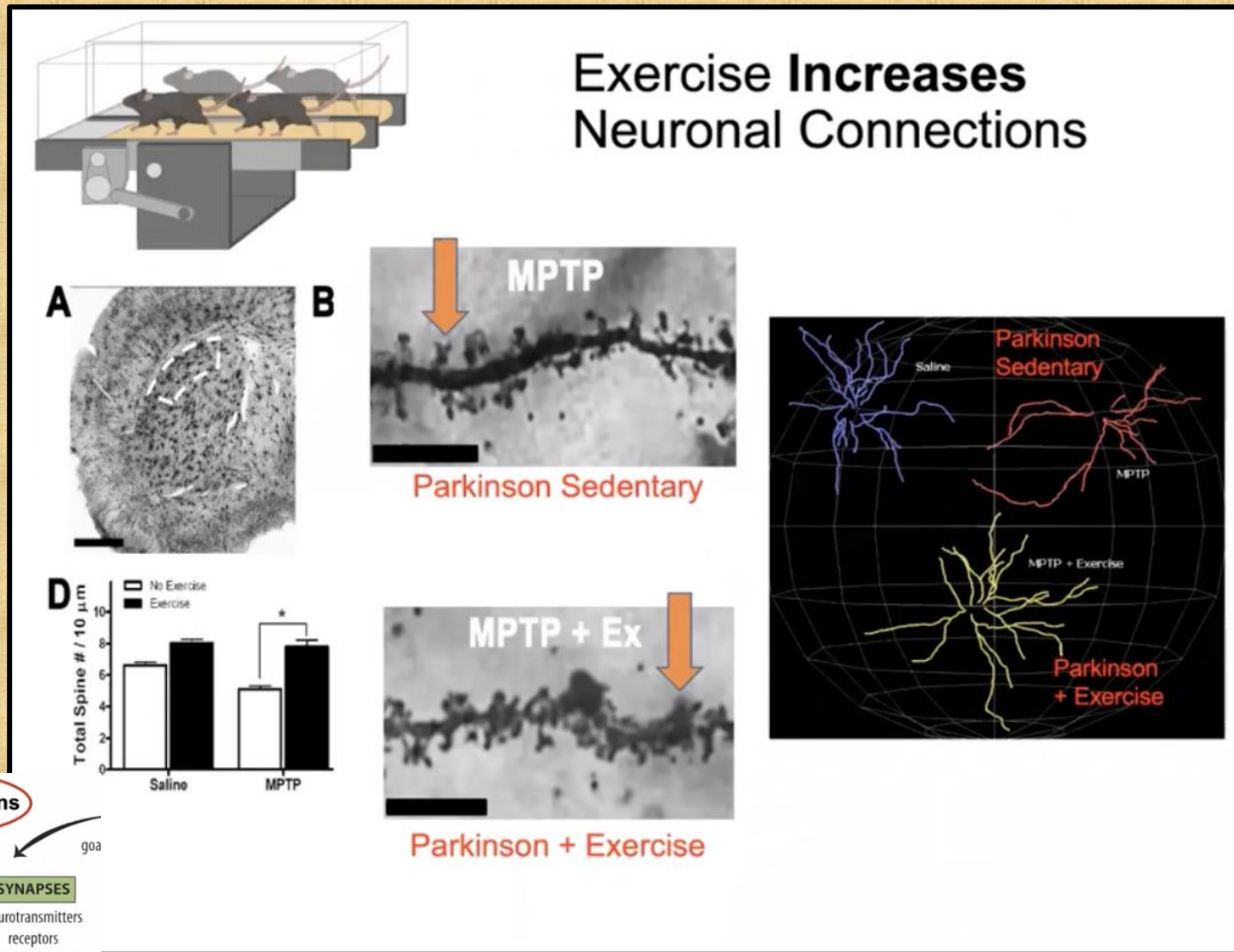


Balance, Agility & Multitasking

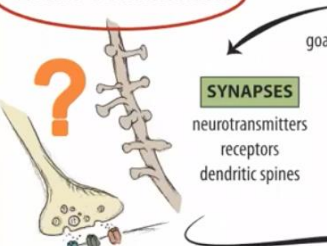


Stretching

The Neuroplastic Effects of Exercise

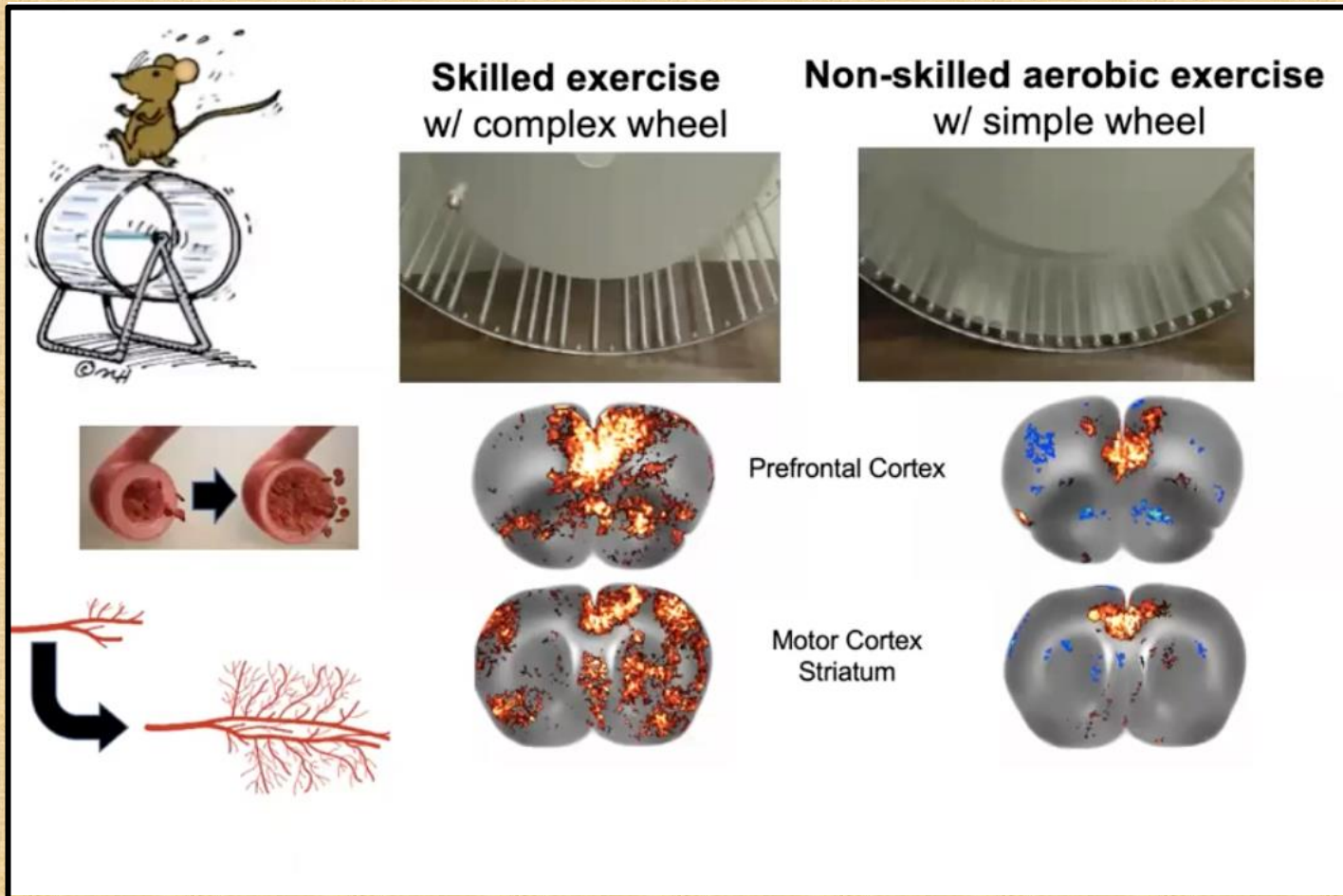
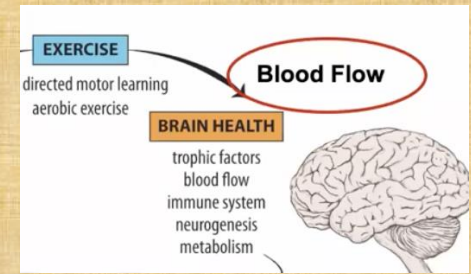


Brain Connections

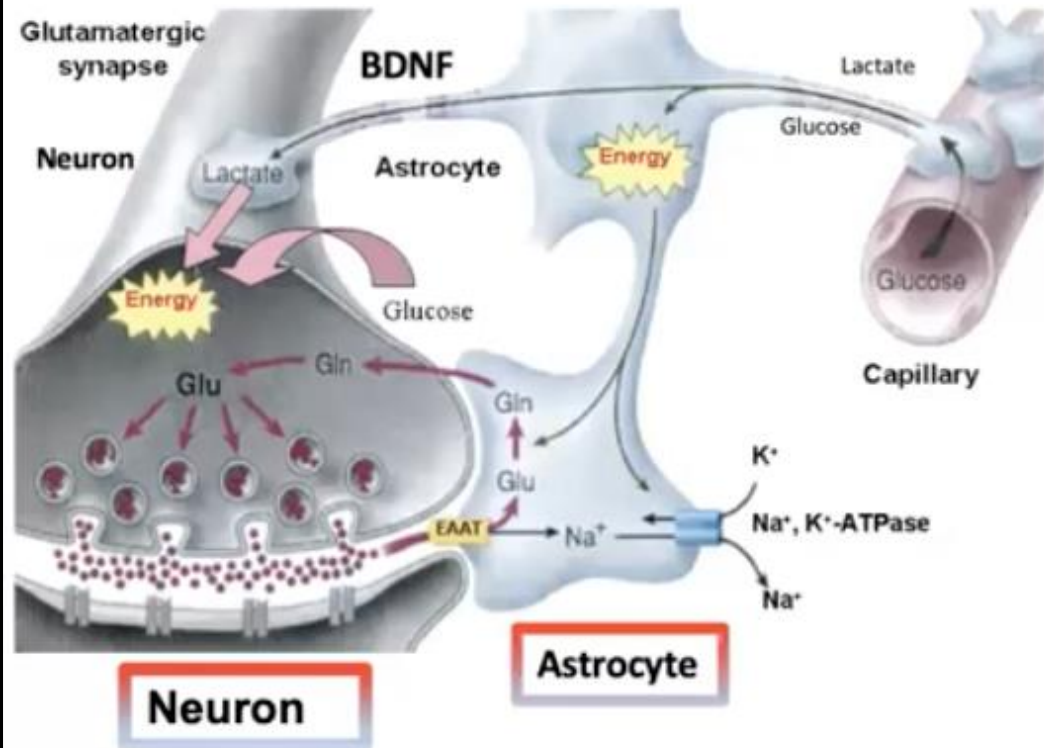
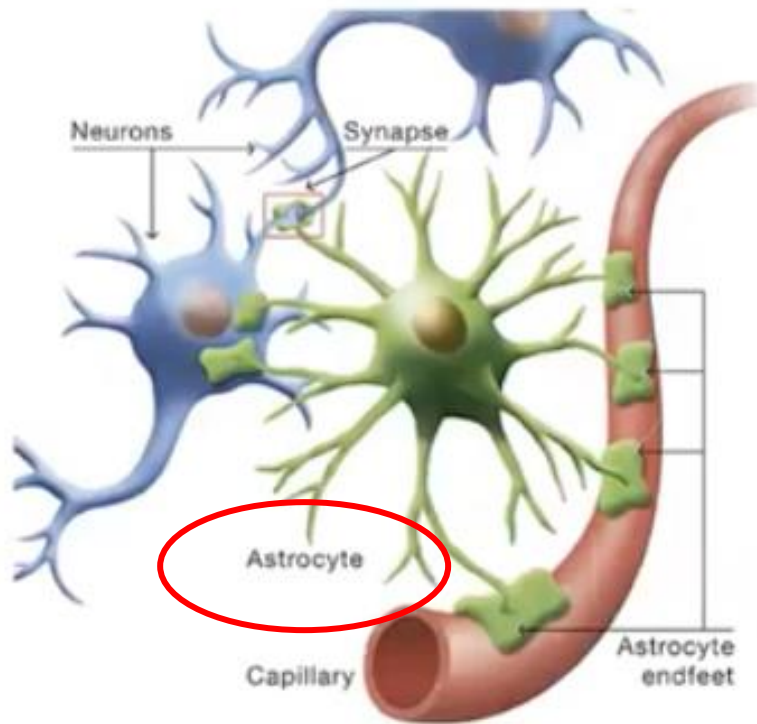


Vuckovic, Petzinger et al. Movement Disorders 2010

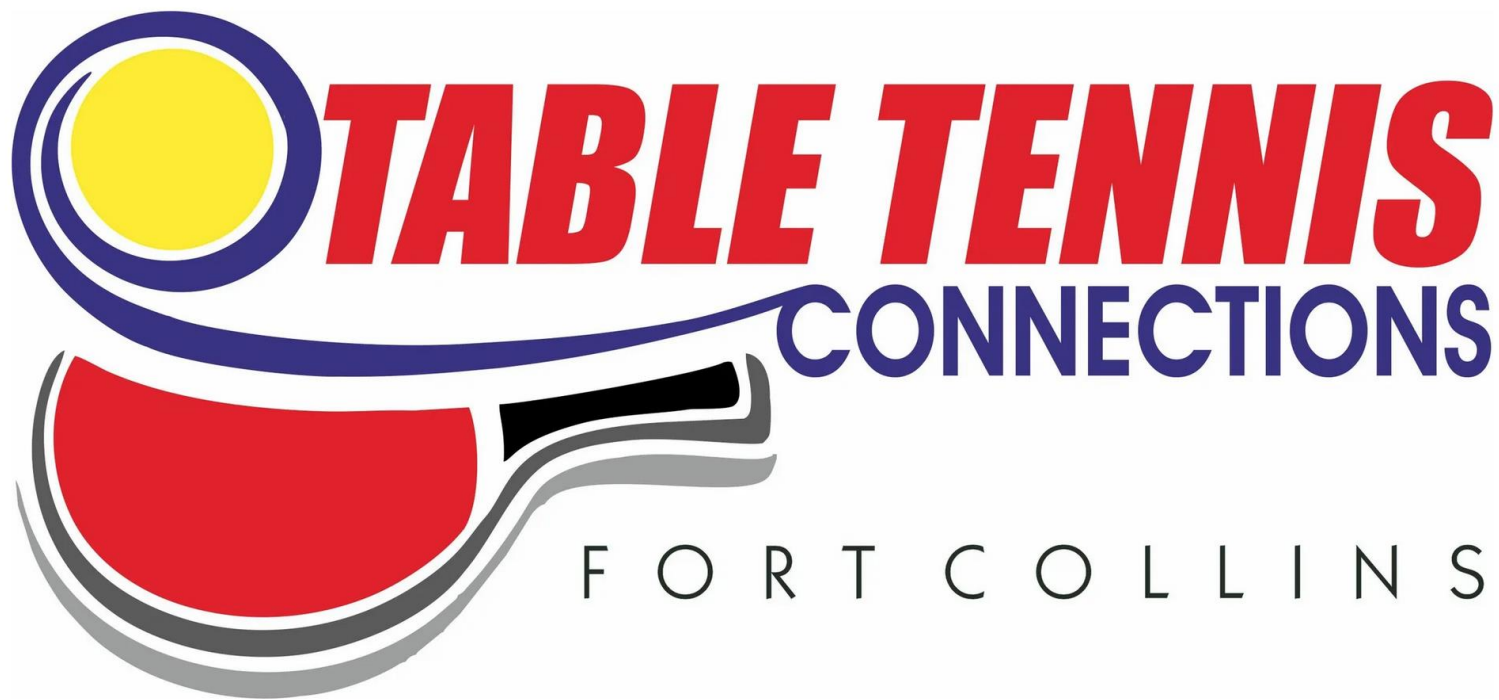
Exercise increases regional brain blood flow



Link between blood flow and exercise-enhanced neuroplasticity

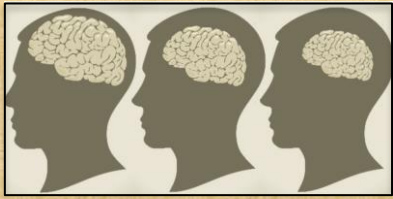


Welcome to a place where everybody can
connect around a ... blue table !



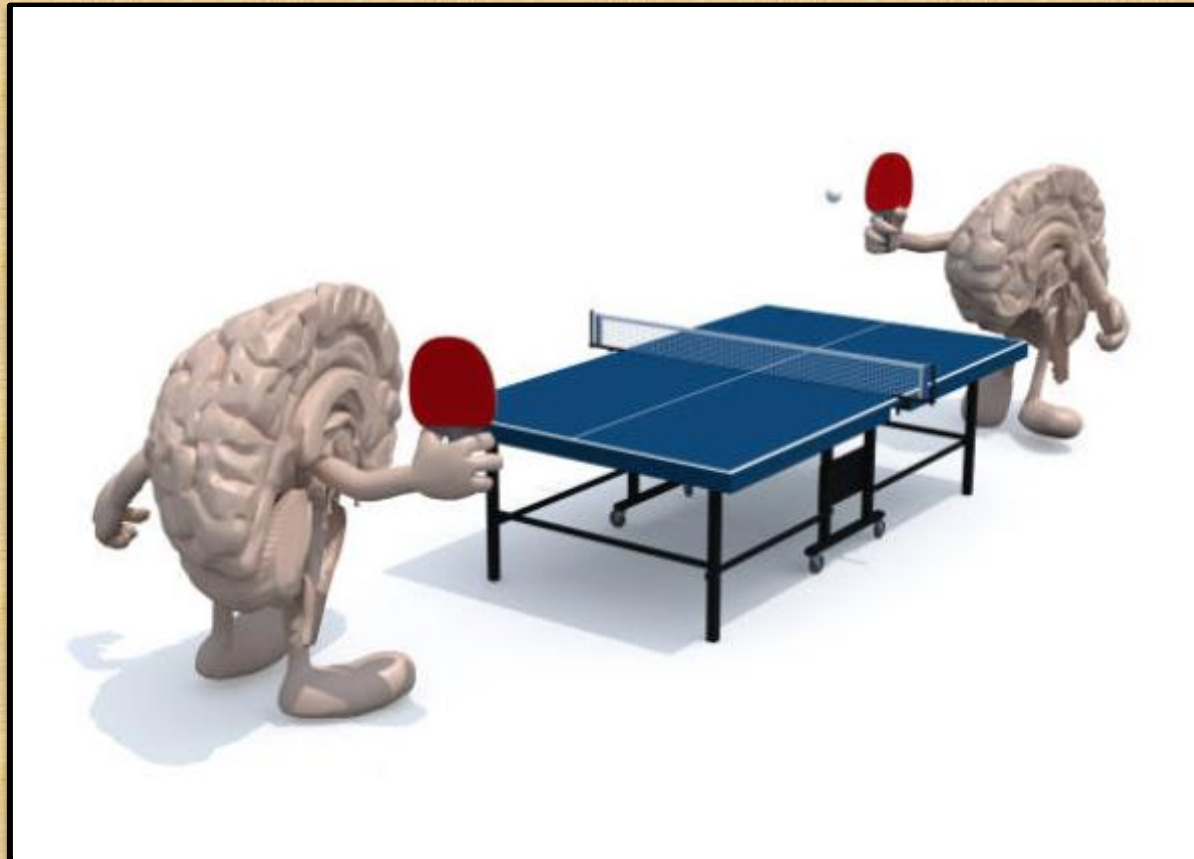
501(c)(3) Non-profit Organization





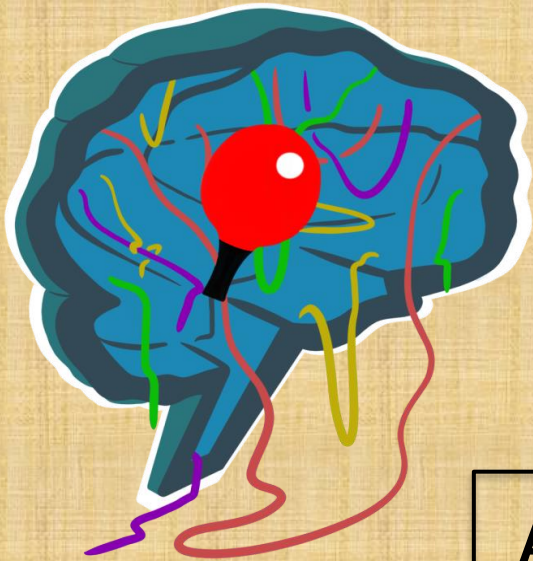
Brain Aging

Ping Pong/Table Tennis:
#1 BRAIN SPORT !!!



The NeuroPong™ Program

NeuroPong™ Project



◆ 12 weeks program, 2 session per week

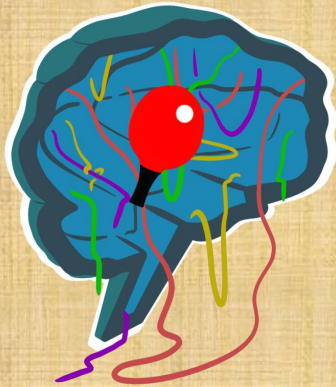
◆ Format:

- Initial clinical assessment
- 12 weeks of table tennis
- Final clinical assessment

And this is only the beginning !

Quality of Life

NeuroPong™
Project



- Balance control
- Mood stability
- Intergeneration interaction
- Stress management
- Brain blood flow
- Cardio-vascular health
- Reflexes
- Mental acuity
- Care givers
- Social interactions
- Healthy diet
- Joint health



The NeuroPong™ Program wants to be a novel form of neurological therapy to be offered to people living with MS, PD and AD at **any stage** of their condition (pre and re habilitation).



Locations: Fort Collins

Council Tree Covenant Church
4825 S Lemay Ave, Fort Collins, CO 80525



Tuesday: 9:00-11:00 am & 11:30-1:30
Thursday: 9:00-11:00 am
Friday: 9:00-11:00 am

NeuroPong™: Multiple Sclerosis



NeuroPong™: Multiple Sclerosis



NeuroPong™: Multiple Sclerosis



NeuroPong™: Parkinson's



NeuroPong™: Parkinson's



NeuroPong™: Parkinson's



NeuroPong™: Parkinson's



