

Getting fit to counteract cognitive aging: evidence and future directions.

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It is commonly said that what is good for your heart is good for your brain, and exercise is no exception. Yet, key mechanisms driving brain and cognitive benefits of exercise during development and aging have not been specified well enough to understand who benefits most from different types of exercise and why. My lab applies magnetic resonance imaging (MRI) to examine exercise effects on anatomically distinct brain regions and networks across the lifespan. In cross-sectional and intervention designs, after either minutes or months of aerobic exercise, there is specificity in how exercise affects human brain systems critical for cognitive development and which are negatively affected by aging. For instance, benefits are not global across frontal and temporal lobes, and instead networks involving specific sub-regions of the hippocampus, insula, and prefrontal cortices are affected by greater cardiorespiratory fitness and aerobic exercise. In this talk I will present an overall framework we have proposed for understanding how physical activity can slow brain and cognitive aging, based on empirical support for a chain of protective effects of cardiorespiratory fitness on the aging brain, starting with preserved vascular compliance and regulation of cerebral perfusion that enables maintenance and repair through metabolic and trophic support to the most metabolically demanding connector hub brain regions scaffolding brain network organization and flexibility to directly affect the extent and severity of cognitive aging. Understanding key mechanistic pathways between exercise and brain health, and testable markers of their acute and chronic response to exercise in humans, would move us closer to the causal explanations needed for more personalized recommendations of how to be active for cognitive benefits across the lifespan.



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UT Austin campus, NHB 1.720, Zoom option also available
(Please be signed into your zoom account to join)

<https://utexas.zoom.us/j/92901092973>

Hosted by Mike Freedberg, Ph.D.

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