

A pill to replace exercise? It may not be as farfetched as it sounds

Exercise is one of the best-studied and most powerful ways of protecting the brain from age-related cognitive decline. Exercise has been shown to improve cognition in individuals at risk of neurodegenerative diseases such as Alzheimer's disease (AD) and frontotemporal dementia.

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[Researchers Alana] Horowitz and [Xuelai] Fan took blood from aged mice who had exercised regularly for seven weeks and [administered it to sedentary aged mice](#). They found that four weeks of this treatment produced dramatic improvements in learning and memory in the older mice, similar to that seen in the mice who had exercised regularly. When they examined the animals' brains, they found evidence of enhanced production of new neurons in the hippocampus, a well-documented proxy for the rejuvenating benefits of exercise.

To discover what specific biological factors in the blood might be behind these effects, Horowitz, Fan, and colleagues measured the amounts of different soluble proteins in the blood of active versus sedentary mice. They identified 30 candidate proteins, 19 of which, to their surprise, were predominantly derived from the liver and many of which had previously been linked to functions in controlling the body's metabolism.

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The hope is to identify specific targets for therapeutics that could one day confer many of the protective benefits of exercise for the aging brain.

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