

Fit Body, Fit Brain: The Key to Keeping Your Mind Young

One of my favorite verses to share in my fitness books and at speaking engagements is 1 Thessalonians 5:23:

*“Now may the God of peace make you holy in every way, and may your whole **spirit** and **soul** and **body** be kept blameless until our Lord Jesus Christ comes again” (NLT, emphasis mine).*

I love it because it makes unequivocally clear that the well-being of every part of us—not just our souls—is important to God. While it’s true that only our spirit and soul (comprising our mind, will, and emotions) are eternal entities, our body is what carries them through our time on earth, literally providing the hands and feet by which we serve and impact the world. These facts should greatly motivate us to take care of ourselves the way Paul instructs us to in 1 Corinthians 6:19, as precious temples of the Holy Spirit.

Many of us know that exercise boasts a plethora of benefits that far exceed simply looking better in your clothes. Not only does working out control your weight, it helps prevent certain ailments such as heart disease, type 2 diabetes, certain types of cancers, and arthritis. It also boosts our mood, increases energy, promotes better sleep, and improves our sex life! But according to recent research, exercise also helps our gray matter stay bright, helping us enjoy an active and fulfilling intellectual life well into old age. For those reading who don’t care much about the state of their body, maybe after reading this they’ll hit the pavement or grab some weights for the sake of their minds.

In the latest volume of the brain function journal *NeuroImage*, a fascinating new study showed a *distinct relationship between brain activity and physical fitness* in a

group of older Japanese men, between the ages of 64 and 75. The study found that the fitter men performed better mentally than the less fit men by using parts of their brains in the same ways they did when they were young.

Did you know that when we age, we use different parts of our brain than we did in our younger years? For example, when we're young, mental tasks involving short-term memory, understanding words' meaning, and recognizing events, people, and objects are performed primarily by the left side of our prefrontal cortex (PFC). When we're older, we begin using the equivalent parts of the PFC on the right side of our brain for the same tasks. This phenomenon has been cleverly coined "HAROLD," which stands for hemispheric asymmetry reduction in older adults, and reflects the reorganization of the brain.

Why does the brain reorganize itself, you may ask? Because it needs to compensate for reduced brain capacity and efficiency due to age-related decline. But, as the study showed, fitter people are able to stave off the effects of "HAROLD."

In the *NeuroImage* study, the 60 older men underwent an exercise test to measure their aerobic fitness. The men, whose physical fitness varied widely, then performed a test to measure their selective attention, executive function, and reaction time. You might be familiar with this test, known as the "color-word matching Stroop test."

In the Stroop test, you're shown words meaning color, such as blue, green, and red, but asked to name the color of the letters rather than read the word itself. This is a lot harder than it sounds. When the color of the letters does not match the word, it takes the brain longer to react. This reaction time is used as a measurement of brain function.

Activity in the PFC region of the men's brains was measured throughout the test using a unique neuroimaging technique called functional near infrared spectroscopy, or fNIRS. In a

nutshell, fNIRS measures the changes in color between oxygenated red blood and blue deoxygenated blood and thus indirectly measures brain activity.

The results from these tests were extensively analyzed to explore the associations between aerobic fitness, Stroop reaction time, and brain activity during the Stroop test. As the hypothesis predicted for older adults, during the Stroop test both sides of the PFC were active, with no difference between right and left, verifying the HAROLD phenomenon among this group of men. Previous studies have shown that young adults mainly use the left side of the PFC for this task.

The relationship between brain activity and Stroop reaction time revealed that the men who favored the left side of the PFC while performing the Stroop test had faster reaction times. This tells us that older adults who use the more youth-like, task-related side of the brain perform better in this test.

Next, the association between aerobic fitness and Stroop reaction time was analyzed. *Without question, the fitter men had shorter reaction times.*

So how do the men do this? Professor Hideaki Soya, who led the study, says “one possible explanation suggested by the research is that the volume and integrity of the white matter in the part of brain that links the two sides declines with age. There is some evidence to support the theory that fitter adults are able to better maintain this white matter than less fit adults, but further study is needed to confirm this theory.”

If you're a woman like me, you may be curious to know whether these results can be applied to your female brain. The results aren't in, but I think it'd be in our best interest to keep our bodies moving. It couldn't hurt.

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Faith: A Christian Woman's Guide to Total Fitness, Perfect Fit: Weekly Wisdom and Workouts for Women of Faith and Fitness, *and her latest book*, Immeasurable: Diving into the Depths of God's Love. *Her popular website can be found at and she is the owner and a coach at CrossFit 925.*

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