

# Healthy living equals better brain function

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Credit: Peter Griffin/Public Domain

It should be obvious that those with greater self-control live a healthier lifestyle. After all, it takes self-control to exercise before work, or forego fried food for kale.

But new research suggests living a healthier lifestyle could also increase executive function, which is the ability to exert self-control, set and meet goals, resist temptation and solve problems. In effect, the study suggests a [feedback loop](#) exists where greater executive function enables people

to lead a healthier lifestyle, which in turn, improves their executive function.

"It seems that [physical activity](#) and EF are synergistic—they improve one another," according to the study, titled "A Bidirectional Relationship between Executive Function and Health Behaviors."

The study, published by researchers at the University of Aberdeen, the University of Stirling and the University College Dublin, used data collected from 4,555 adults through the English Longitudinal Study of Aging. Researchers analyzed the relationship between physical activity and executive function, adjusting for other variables such as age, gender, education, wealth and illness and found evidence that the relationship between the two is bidirectional. It is the first study of its kind to look at whether the effects are bidirectional and has expanded the understanding of such relationships.

Specifically, individuals with poor executive function showed subsequent decreases in their rates of participation in physical activity and older adults who engaged in sports and other physical activities tended to retain high levels of executive function over time.

Researchers noted that while the study focused on physical activity and its relationship to executive function, it's likely a positive feedback loop also exists between executive function and eating nutritious foods.

Similarly, it is likely that negative feedback loops also exist, in that unhealthy behaviors such as smoking or drinking too much alcohol will be both a result of and a predictor of declining executive function. This has implications, according to the study, for aging.

The older one gets, the more likely executive function is to decline, the study notes. Older people, then, may become more likely to engage in

[unhealthy behaviors](#) like remaining sedentary and less likely to maintain healthy but effortful behaviors like taking prescribed medication regularly. Conversely, the longer one can maintain high executive function, the longer and more easily that person can stave off behavior that will be detrimental to their health.

Dr. Julia Allan suggests that "people who make a change to their health behavior, like participating in physical activity, eating less processed food, or consuming more fruits and vegetables, can see an improvement in their brain function over time and increase their chances of remaining healthy as they age."

That may be why, researchers opined, those with higher executive function tend to avoid chronic illnesses and live longer after a chronic diagnosis than those who have weaker [executive function](#). With the world's population of elderly folks to hit 1.5 billion by 2050, as the study notes, the research could have major implications for the future of health care.

**More information:** Julia L. Allan et al, A Bidirectional Relationship between Executive Function and Health Behavior: Evidence, Implications, and Future Directions, *Frontiers in Neuroscience* (2016). [DOI: 10.3389/fnins.2016.00386](https://doi.org/10.3389/fnins.2016.00386)

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