

# Six Healthy Lifestyle Habits Linked to Slowed Memory Decline

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Adhering to six healthy lifestyle behaviors is linked to slower memory decline in older adults, a large, population-based study suggests.

Investigators found that a healthy diet, cognitive activity, regular physical exercise, not smoking, and abstaining from alcohol were significantly linked to slowed cognitive decline irrespective of *APOE4* status.

After adjusting for health and socioeconomic factors, investigators found that each individual healthy behavior was associated with a slower-than-average decline in memory over a decade. A healthy diet emerged as the strongest deterrent, followed by cognitive activity and physical exercise.

"A healthy lifestyle is associated with slower memory decline, even in the presence of the *APOE4* allele," study investigators led by Jianping Jia, MD, PhD, of the Innovation Center for Neurological Disorders and the Department of Neurology, Xuan Wu Hospital, Capital Medical University, Beijing, China, write.

"This study might offer important information to protect older adults against memory decline," they add.

The study was [published online](#) January 25 in *The BMJ*.

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## Preventing Memory Decline

Memory "continuously declines as people age," but age-related memory decline is not necessarily a prodrome of dementia and can "merely be senescent forgetfulness," the investigators note. This can be "reversed or [can] become stable," instead of progressing to a pathologic state.

Factors affecting memory include aging, *APOE4* genotype, chronic diseases, and lifestyle patterns, with lifestyle "receiving increasing attention as a modifiable behavior."

Nevertheless, few studies have focused on the impact of lifestyle on memory; and those that have are mostly cross-sectional and also "did not consider the interaction between a healthy lifestyle and genetic risk," the researchers note.

To investigate, the researchers conducted a longitudinal study, known as the China Cognition and Aging Study, that considered genetic risk as well as lifestyle factors.

The study began in 2009 and concluded in 2019. Participants were evaluated and underwent neuropsychological testing in 2012, 2014, 2016, and at the study's conclusion.

Participants (n = 29,072; mean [SD] age, 72.23 [6.61] years; 48.54% women; 20.43% *APOE4* carriers) were required to have normal cognitive function at baseline. Data on those whose condition progressed to mild cognitive impairment (MCI) or dementia during the follow-up period were excluded after their diagnosis.

The Mini-Mental State Examination was used to assess global cognitive function. Memory function was assessed using the World Health Organization/University of California-Los Angeles Auditory Verbal Learning Test.

"Lifestyle" consisted of six modifiable factors:

- Physical exercise (weekly frequency and total time)
- Smoking (current, former, or never-smokers)
- Alcohol consumption (never drank, drank occasionally, low to excess drinking, and heavy drinking)
- Diet (daily intake of 12 food items: fruits, vegetables, fish, meat, dairy products, salt, oil, eggs, cereals, legumes, nuts, tea)
- Cognitive activity (writing, reading, playing cards, mahjong, other games)
- Social contact (participating in meetings, attending parties, visiting friends/relatives, traveling, chatting online)

Participants' lifestyle was scored on the basis of the number of healthy factors they engaged in.

Lifestyle	Number of healthy factors	Number of participants
Favorable	4 – 6	5556
Average	2 – 3	16,549
Unfavorable	1 – 2	6967

Participants were also stratified by *APOE* genotype into *APOE4* carriers and noncarriers.

Demographic and other items of health information, including the presence of medical illness, were used as covariates. The researchers also included the "learning effect of each participant as a covariate, due to repeated cognitive assessments."

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## Important for Public Health

During the 10-year period, 7164 participants died, and 3567 stopped participating.

Participants in the favorable and average groups showed slower memory decline per increased year of age (0.007 [0.005 – 0.009],  $P < .001$ ; and 0.002 [0.000 – 0.003],  $P = .033$  points higher, respectively), compared to those in the unfavorable group.

Healthy diet had the strongest protective effect on memory.

Lifestyle factor	$\beta$ (95% CI)	<i>P</i> value
Healthy diet	0.016 (.014 – 0.017)	< .001
Active cognitive activity	0.010 (.008 – 0.012)	< .001
Regular physical exercise	0.007 (.005 – 0.009)	< .001
Active social contact	0.004 (.002 – 0.006)	< .001
Never/former smoking	0.004 (.000 – 0.008)	= .026
Never drinking	0.002 (0.000 – 0.004)	= .048

Memory decline occurred faster in *APOE4* vs non-*APOE4* carriers (0.002 points/year [95% CI, 0.001 – 0.003];  $P = .007$ ).

But *APOE4* carriers with favorable and average lifestyles showed slower memory decline (0.027 [0.023 – 0.031] and 0.014 [0.010 – 0.019], respectively), compared to those with unfavorable lifestyles. Similar findings were obtained in non-*APOE4* carriers.

Those with favorable or average lifestyle were respectively almost 90% and 30% less likely to develop dementia or MCI, compared to those with an unfavorable lifestyle.

The authors acknowledge the study's limitations, including its observational design and the potential for measurement errors, owing to self-reporting of lifestyle factors. Additionally, some participants did not return for follow-up evaluations, leading to potential selection bias.

Nevertheless, the findings "might offer important information for public health to protect older against memory decline," they note — especially since the study "provides evidence that these effects also include individuals with the *APOE4* allele."

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## "Important, Encouraging" Research

Commenting for *Medscape Medical News*, Severine Sabia, PhD, a senior researcher at the Université Paris Cité, INSERM Institut National de la Santé et de la Recherche Médicale, France, called the findings "important and encouraging."

However, said Sabia, who was not involved with the study, "there remain important research questions that need to be investigated in order to identify key behaviors, which combination, the cutoff of risk, and when to intervene."

Future research on prevention "should examine a wider range of possible risk factors" and should also "identify specific exposures associated with the greatest risk, while also considering the risk threshold and age at exposure for each one."

In an accompanying editorial, Sabia and co-author Archana Singh-Manoux, PhD, note that the risk of cognitive decline and dementia are probably determined by multiple factors.

They liken it to the "multifactorial risk paradigm introduced by the Framingham study," which has "led to a substantial reduction in cardiovascular disease." A similar approach could be used with dementia prevention, they suggest.

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