

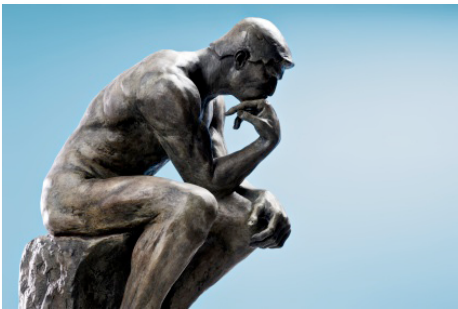
## Expert Consensus on Brain Health

*Sponsored by the Stanford Center on Longevity & the Max Planck Institute for Human Development*

There is no greater concern among aging people than the prospect of diminished capacity and the loss of independence. The potential loss of mental abilities may be the most worrisome of all. As we age, even relatively benign losses associated with normal aging, like forgetting where you put something or having a word on the tip of your tongue but just out of reach, generates considerable anxiety. Many of us wonder if these normal signs of aging portend more sinister changes to come. We worry about our aging parents and hope our own futures, and the futures of our children, will not include Alzheimer's disease or other forms of dementia.

Apprehension about the future leaves many people looking for magic bullets that will prevent our minds from failing us, and some makers of "brain boosting" products are all too happy to claim they have magic bullet solutions. A burgeoning market now includes nutritional supplements, games and software products. Some of the claims are reasonable but untested, others are far-fetched and some are blatantly false.

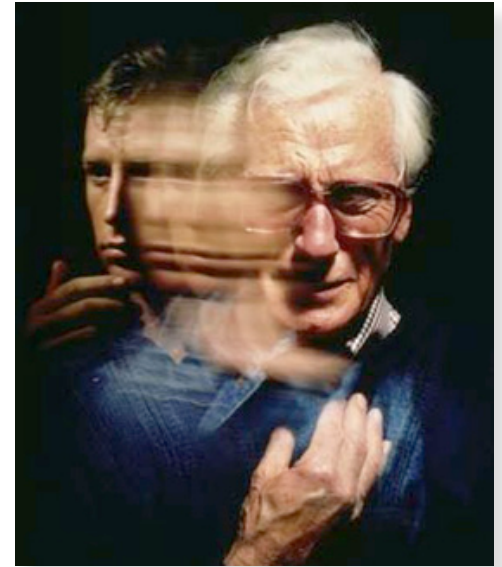
On the one hand, it would be incorrect to conclude that nothing can be done to improve mental fitness. Research shows that the brain is highly responsive to the environment and displays impressive capacity to compensate for damage. Indeed, many excellent scientists are investigating the potential of technology-based software products and other approaches, like physical exercise, that may be useful in maintaining cognitive fitness. On the other hand, because the brain-training industry is completely unregulated and its quasi-scientific claims are not vetted by any third party, prospective consumers face the challenge of separating wild claims from serious science.



We strongly encourage research that compares the efficacy and the cost-effectiveness of different approaches to maintaining cognitive fitness. In the meantime, to help the public make informed decisions in this growing marketplace, the Stanford Center on Longevity and the Max Planck Institute for Human Development, Berlin, convened some of the world's finest cognitive scientists to produce a consensus statement for the public regarding the state of science for such products. Since that time, other

distinguished neuroscientists, ethicists, and aging experts have added their names to the consensus as well. Here is what they say:

- There is reason for optimism. Cognitive performance in many older adults appears to be improving over historical time. For example, a recent study with a national U.S. sample, found that older people today show less cognitive impairment than earlier cohorts. The fact that so many people do perform well in old age and can learn new skills also shows that positive outcomes are possible. Researchers are attempting to identify factors that contribute to both low and high performance.
- Although based on plausible biochemical reasoning, to date, clinical research has produced no evidence that dietary supplements such as Ginkgo biloba enhance cognitive performance or reduce the rate of cognitive loss. Few dietary supplements have been subjected to large randomized controlled trials that have been published in leading journals. We encourage more investigation into potential effects of dietary supplements.



• Software-based cognitive training and brain games have been shown to improve users' performance on trained tasks. The important caveat is that very few training programs have shown evidence that such gains translate into improved performance in the complex realm of everyday life. A program might train you to memorize lists of words, for example, but this particular skill is not likely to help you remember where you left your car keys or the time of an upcoming appointment. We strongly support research on software based training and encourage interested people to participate in clinical trials investigating its potential.



• Consumers should look for products that can substantiate their claims with evidence from research. A study conducted and reported by a company that has not been independently verified has limited value; consumers should look for further studies that have been published in peer reviewed journals. This means that the study design and results have been reviewed by multiple experts. If the study also has been conducted by independent researchers, has been replicated at multiple sites and has been funded by independent sources, these factors add to the credence of the study results. We encourage more independent research on potentially promising intervention techniques and on existing products on the market.



• Be leery of anyone who claims to cure or prevent Alzheimer's disease or other forms of dementia or pre-dementia. Any such products would need FDA approval to properly make such claims, and no currently available products have obtained approval. There is no evidence that software products on the market or any other cognitive or social interventions available today can delay or prevent disease. On the other hand, taking good care of your health, especially blood pressure and blood sugar, can aid cognitive performance.

• Understand that there is a difference between short-term improvements and changes in long-term trajectories. If your goal is to improve your chances of remembering peoples' names at an upcoming party, there are many proven ways to do this. However, no intervention to date has shown that once undertaken it can reduce the rate of cognitive decline over several years or decades.

• Learning stimulates the brain and contributes to one's general sense of competence. However, there is no evidence that any particular formal training or practice regime is required. Before settling on a particular method and investing time and sometimes money in a particular product, consumers need to consider hidden costs beyond dollars and cents: every hour spent doing solo software drills is an hour not spent hiking, learning Italian, making a new recipe, or playing with your grandchildren. Other avenues for cognitive enhancement, such as participating in your community and exploring your passions may also stimulate your mind while producing socially meaningful outcomes.

• Physical exercise is not only a low-cost and effective way to improve your health but also an important key to improving brain fitness. Scientists have found that regular aerobic exercise increases blood flow to the brain, and helps to support formation of new neural and vascular connections. Physical exercise has been shown to improve attention, reasoning and components of memory. We view exercise as a promising approach to cognitive improvement and endorse continuing independent research in that area.



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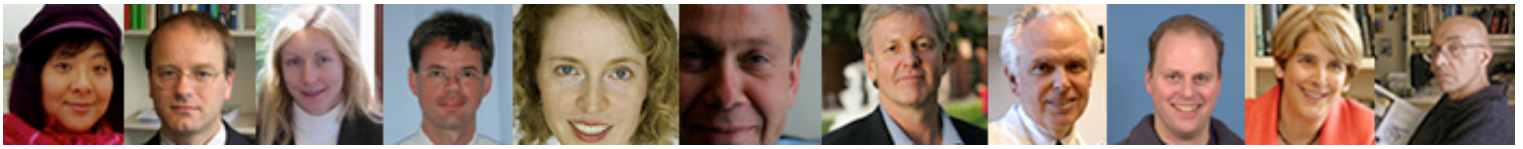
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