

# Studies evaluate the association between physical activity and lower rates of cognitive impairment

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Engaging in regular physical activity is associated with less decline in cognitive function in older adults, according to two studies published Online First by *Archives of Internal Medicine*, one of the JAMA/Archives journals. The articles are being released on July 19 to coincide with the International Conference on Alzheimer's Disease in Paris and will be included in the July 25 print edition.

According to background information provided in the articles, previous research has suggested that [physical activity](#) is associated with reduced rates of [cognitive impairment](#) in older adults. However, much of this research has apparently been conducted among individuals who are generally in [good health](#). Further, many of these studies rely on self-reports of physical activity, which are not always accurate; and focus on moderate or [vigorous exercise](#), instead of low-intensity physical activity. The two articles being presented today seek to fill in these gaps in the research.

In one article, Marie-Noël Vercambre, Ph.D., from the Foundation of Public Health, Mutuelle Generale de l'Education Nationale, Paris, and colleagues examined data from the Women's Antioxidant Cardiovascular Study, which included women who had either prevalent vascular disease or three or more coronary risk factors. The researchers determined patients' physical activity levels at baseline (1995 to 1996) and every two years thereafter. Between 1998 and 2000, they conducted telephone

interviews with 2,809 women; the calls included tests of cognition, memory and category fluency, and followed up the tests three more times over the succeeding 5.4 years.

The researchers analyzed data to correlate cognitive score changes with total physical activity and energy expenditure from walking. As participants' energy expenditure increased, the rate of cognitive decline decreased. The amount of exercise equivalent to a brisk, 30-minute walk every day was associated with lower risk of cognitive impairment.

In another report, Laura E. Middleton, Ph.D., from the Heart and Stroke Foundation Centre for Stroke Recovery, Sunnybrook Research Institute, Toronto, and colleagues utilized data from the Health, Aging, and Body Composition study, an ongoing prospective cohort study. The researchers measured participants' total energy expenditure by using doubly labeled water, a technique that provides evidence of how much water a person loses and thus serves as an objective measure of metabolic activity. The authors calculated participants' activity energy expenditure (AEE), defined as 90 percent of total energy expenditure minus resting metabolic rate. The 197 participants, with an average age of 74.8 years, had no mobility or cognitive problems when the research began in 1998 to 1999. At that time, researchers assessed participants' cognitive function, and followed up two to five years later with the Modified Mini-Mental State Examination (MMMSE).

The authors adjusted the data for baseline MMMSE scores, demographics, fat-free mass, sleep duration, self-reported health and diabetes mellitus. When these variables were accounted for, participants who had the highest AEE scores tended to have lower odds of incident cognitive impairment. The authors also noticed a significant dose response between AEE and incidence of cognitive impairment.

The authors of both articles suggest that there is more to be learned

about the relationship between physical activity and cognitive function. "Various biologic mechanisms may explain the positive relation between physical activity and cognitive health," write Vercambre and colleagues. Middleton and co-authors state, "The mechanisms by which physical activity is related to late-life cognition are likely to be multifactorial." Both groups of researchers note that studies such as theirs point toward some possible answers. As Vercambre and co-authors comment, "If confirmed in future studies, physical activity recommendations could yield substantial public health benefits given the growing number of older persons with vascular conditions and their high risk of cognitive impairment." And Middleton and colleagues conclude, "We are optimistic that even low-intensity activity of daily living may be protective against incident cognitive impairment."

## **Commentary: Brains and Aging**

In a commentary accompanying the articles, Eric B. Larson, M.D., M.P.H., from Group Health Research Institute, Seattle, notes that these studies serve to "buttress growing evidence that habitual physical activity and fitness are associated with age-related changes in cognition and risk of dementia." The key finding of the Vercambre and colleagues study, he writes, "is that older women with high levels of vascular risk constitute a major risk group and that vascular risk is linked to cognitive decline." Of the work published by Middleton and colleagues, Larson observes, "The fact that the study used a validated measurement of [energy expenditure](#), not just self-report, makes the results of further importance." Such research, he states, is increasingly needed as the population ages and the health care field attempts to cope with higher rates of cognitive decline.

In this context, Larson suggests that articles such as the ones presented here "highlight a gradual but steady change in current thinking about risk factors for late-life dementias." Vascular risk factors such as limited

physical activity may be modifiable and represent a way to reduce the incidence of cognitive impairment among [older adults](#). Physical activity, growing scientific evidence suggests, could be one such avenue.

"I believe that these findings can inform practice and the advice that we give our aging patients," comments Larson. "We can tell them that ongoing maintenance of physical activity is definitely worthwhile and likely of increasing benefit as they advance into old age." In addition, Larson stresses the need for research into "programs that promote ongoing physical activity, especially in late life."

**More information:** *Arch Intern Med*. Published July 19, 2011.  
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