

## Physical Activity at Midlife Associated with Better Health in Later Years

Sun QI, Townsend MK, Okereke OI, et al. *Physical activity at midlife in relation to successful survival in women at age 70 years or older. Arch Intern Med* 2010;170:194–201.

### Study Overview

**Objective.** To examine whether physical activity among women during the midlife years predicts healthy survival to older ages.

**Design.** Prospective cohort study.

**Setting and participants.** Data from the Nurses' Health Study, a large cohort of women health professionals, was used to identify 13,535 women in 1986 (baseline) who were not diagnosed with a major chronic disease and age 70 or older as of the 1995–2001 study period. To measure physical activity, energy expenditure for each study participant in metabolic-equivalent tasks (METs) was calculated in hours per week at baseline. Study participants were grouped into quintiles of total METs expended. Since the mean age for the study participants at baseline was 60, midlife was defined as 60 years of age in the study results.

**Main outcome measures.** The authors defined "successful survival" as those women who reached the age of 70 with no history of (1) any of 10 major chronic diseases; (2) coronary artery bypass graft surgery; (3) cognitive impairment; (4) physical impairment; or (5) mental health limitations.

**Main results.** Higher physical activity levels at midlife (age 60) were associated with a better likelihood of successful survival. At baseline, successful survivors were more active than usual ( $P < 0.001$ ), leaner ( $P < 0.001$ ), less likely to smoke ( $P < 0.001$ ), and had a lower prevalence of hypertension ( $P < 0.001$ ) or high cholesterol levels ( $P < 0.001$ ) compared with usual survivors. Statistically significant increases in successful survival began at the third quintile of activity (3rd quintile odds ratio [OR] = 1.37 [95% confidence interval {CI}, 1.13–1.65]; 4th quintile OR = 1.34 [95% CI, 1.11–1.61]; and 5th quintile OR = 1.99 [95% CI, 1.66–2.38]; global  $P$  value  $< 0.001$ ). Increased energy expenditure from walking was associated with similar increases in successful survival. Even adjusting for baseline body mass index (BMI), greater baseline activity was associated with higher odds of successful survival.

**Conclusion.** The findings suggest that higher levels of physical activity among women at midlife may be associ-

ated with better health status among women who survive to older ages. The results add further evidence that physicians should be counseling patients about physical activity at all ages, irrespective of weight.

### Commentary

There is strong consensus that physical activity plays an important role in reducing the risks of chronic disease and improving overall health status [1–3]. However, the evidence base to support greater physical activity at midlife to promote better health in the later years is mixed and does not delineate the impact of the intensity of physical activity [4,5]. With an increasingly aging population, identifying whether greater physical activity, especially in the midlife years, can help people age more successfully with fewer chronic diseases has important public health implications. It is in this context that this study by Sun et al is so helpful.

The study by Sun et al adds modest evidence that moderate-intensity physical activity can increase the odds of being healthy and free of both chronic disease and cognitive decline as people enter their 70s. Several strengths of the study help lend confidence in the findings: the study included a large number of women health professionals, had detailed information about lifestyle and habits, and had terrific follow-up. However, 2 fundamental issues with the study should provide some caution in how these data are interpreted.

First, the authors did not have baseline physical and mental health status. This is potentially problematic because surely the biggest predictor of being healthy at age 70 (the end point) is being healthy at age 60 (baseline). Without adequately adjusting for baseline, it is difficult to know whether the differences observed were due to baseline health status or due to physical activity. In a second and related point, given that baseline physical activity is also likely to be related to baseline health status, the dose-response (ie, more physical activity related to higher odds of successful survival) does not fully account for this potential confounding.

### Applications for Clinical Practice

Despite its limitations, this study by Sun et al offers moderate evidence that physical activity, even at the age of 60, is likely to have important benefits for surviving into the

golden years. It is but another call for physicians to ensure that all their patients, regardless of baseline weight or age, are counseled to be active.

—Review by *Ashish K. Jha, MD, MPH*

### References

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