

A Prospective Study of Age-Specific Physical Activity and Premenopausal Breast Cancer

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Abstract (Summary)

Background: Physical activity has been consistently associated with lower risk of postmenopausal breast cancer, but its relationship with premenopausal breast cancer is unclear. We investigated whether physical activity is associated with reduced incidence of premenopausal breast cancer, and, if so, what age period and intensity of activity are critical. **Methods:** A total of 64 777 premenopausal women in the Nurses' Health Study II reported, starting on the 1997 questionnaire, their leisure-time physical activity from age 12 to current age. Cox regression models were used to examine the relationship between physical activity, categorized by age period (adolescence, adulthood, and lifetime) and intensity (strenuous, moderate, walking, and total), and risk of invasive premenopausal breast cancer. **Results:** During 6 years of follow-up, 550 premenopausal women developed breast cancer. The strongest associations were for total leisure-time activity during participants' lifetimes rather than for any one intensity or age period. Active women engaging in 39 or more metabolic equivalent hours per week (MET-h/wk) of total activity on average during their lifetime had a 23% lower risk of premenopausal breast cancer (relative risk = 0.77; 95% confidence interval = 0.64 to 0.93) than women reporting less activity. This level of total activity is equivalent to 3.25 h/wk of running or 13 h/wk of walking. The age-adjusted incidence rates of breast cancer for the highest (≥ 54 MET-h/wk) and lowest (< 21 MET-h/wk) total lifetime physical activity categories were 136 and 194 per 100 000 person-years, respectively. High levels of physical activity during ages 12-22 years contributed most strongly to the association. **Conclusions:** Leisure-time physical activity was associated with a reduced risk for premenopausal breast cancer in this cohort. Premenopausal women regularly engaging in high amounts of physical activity during both adolescence and adulthood may derive the most benefit.