

# Exercise could give margin of safety to women who want to delay preventive mastectomy

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Regular physical activity could play a role in helping women at high-risk of breast cancer delay the need for drastic preventive measures such as prophylactic mastectomy, according to new research led by the Perelman School of Medicine at the University of Pennsylvania. Results of the WISER Sister study help clarify the emerging connection between exercise and breast cancer risk. As a result of the new findings, the authors suggest that women who have an elevated breast cancer risk or worry about having such risk should consider doing 30 to 60 minutes of aerobic activity per day for five days per week. The results are available today in *Breast Cancer Research and Treatment*.

"Women who discover that they are at an increased risk of [breast cancer](#), perhaps from an inherited gene mutation, have no easy option for avoiding cancer. Double mastectomy is considered an effective method of prevention, but that's an incredibly difficult decision to make," said Kathryn H. Schmitz, PhD, MPH, FACSM, a professor of Epidemiology and a member of the Abramson Cancer Center at Penn Medicine.

"These new results show that for women in this high risk category, aerobic [exercise](#) has a striking ability to reduce the hormonally sensitive tissue in the breast that we worry about most for breast cancer."

Estrogen is likely a significant factor in the relationship between [aerobic exercise](#) and a reduced risk of breast cancer, as it normally stimulates an increase in [breast cells](#). The vast majority of [breast tumors](#) appear to

power their own spread in part by hijacking estrogen-signaling pathways. Moreover, studies have suggested that even moderate exercise can significantly lower estrogen levels, and intense exercise, such as that practiced by female athletes, commonly leads to sharp drops in estrogen levels, breast shrinkage, and irregular or even absent periods. "It makes sense that if your body is too busy doing other things, such as exercising regularly, it's going to know that it can't sustain other estrogen-dependent functions - including spreading cancerous cells - and thus will start to shut them down," Schmitz said.

In the study, the team recruited 139 premenopausal women aged 18-50 who were all deemed high-risk for breast cancer due to genetic mutations or family history. The "low-dose" group performed a treadmill exercise 150 minutes per week. The "high-dose" group exercised twice that amount. A control group exercised for less than 75 minutes per week. Each woman provided blood and urine samples, and also underwent MRI breast imaging, before and after each of five menstrual cycles.

Over the course of the study, the control group showed a 20 percent increase in estrogen-sensitive breast tissue, as measured by MRI, whereas the low- and high-dose groups saw reductions of about eight and 12 percent respectively—implying a drop of about 10 percent per 100 minutes of exercise.

Until now, almost nothing has been known about the effect of exercise on breast cancer risk in women who have strong family histories of breast cancer or genetic mutations that increase the risk of a breast cancer diagnosis. Women with BRCA1 mutations face lifetime breast cancer risks that can be well over 50 percent, if they don't take preventive measures. Doctors and insurers commonly advise BRCA mutation carriers to cut their risk with mastectomy as well as the removal of their ovaries. Some women alternatively take drugs that

radically reduce estrogen signaling, and have menopause-like side effects, often sending young women into early menopause.

"This research shows one more potential benefit of exercise for women at high risk for breast cancer," said Sue Friedman, executive director of the nonprofit organization Facing Our Risk of Cancer Empowered (FORCE), which helped recruit women for the study. "We hope this will lead to further research on ways in which high risk women can reduce their [breast cancer risk](#)."

Schmitz and her colleagues are currently seeking funding for a similar study in premenopausal women who are not considered at high risk for breast cancer.

"We understand that exercise isn't a panacea that will prevent cancer from occurring in [women](#) at [high risk](#)," Schmitz said. "However, we do believe that exercise could delay the diagnosis, and reduce the stage and grade and severity of the tumor when it is diagnosed. I often meet woman who say 'I just found out I am BRCA positive—will exercise help me until I make my decision about my surgery?' And for years I had to say 'I don't know,'" said Schmitz, adding, "Now I can say the research suggests it's possible."

Provided by University of Pennsylvania School of Medicine

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