

**Reduced Breast Cancer Risk:  
Physical Activity after Menopause Pays off**

**The breast cancer risk of women who are regularly physically active in the postmenopausal phase is reduced by about one third compared to relatively inactive women. This is the result of a study of the German Cancer Research Center (Deutsches Krebsforschungszentrum, DKFZ) and the University Hospitals of Hamburg-Eppendorf.**

Several studies had previously suggested that regular physical exercise reduces the breast cancer risk of women. However, it had been unknown just how much exercise women should take in which period in life in order to benefit from this protective effect. Moreover, little was known about which particular type of breast cancer is influenced by physical activity.

Answers to these questions are now provided by the results of the MARIE study, in which 3,464 breast cancer patients and 6,657 healthy women between the ages of 50 and 74 years were questioned in order to explore the connections between life style and breast cancer risk. Participants of the study, which was headed by Professor Dr. Jenny Chang-Claude and conducted at the German Cancer Research Center and the University Hospitals of Hamburg-Eppendorf, were questioned about their physical activity during two periods in life: from 30 to 49 years of age and after 50.

A comparison between control subjects and breast cancer patients showed that women in the control group had been physically more active than patients. The scientists calculated the relative breast cancer risks taking account of the effect of other risk factors. Results show that the risk of developing breast cancer after menopause was lower by about one third in the physically most active MARIE participants compared to women who had generally taken little physical exercise.

For this reduced risk it is not necessary to work out hard at the gym. The women in the physically most active group, for example, walked for two hours every day and cycled for one hour, while the most inactive study participants walked for only about 30 minutes every day. The epidemiologists also discovered that physical activity in the postmenopausal period is particularly beneficial for reducing breast cancer risk.

A closer look at the types of breast cancer revealed that physically active women are less frequently affected, in particular, by tumors that form receptors for the two female sexual hormones, estrogen and progesterone. These malignant 'hormone receptor positive tumors' accounted for 62.5 percent of breast cancers among MARIE participants. Other tumor markers, such as HER2 receptor formation or differentiation stage of cancer cells, were found to be unrelated to physical activity.

The effect of physical activity was independent of weight gain, total energy intake or body mass index. Therefore, researchers assume that physical exercise reduces the risk of cancer through hormonal mechanisms instead merely by a reduction of body fat or other changes in physical constitution, as it has often been assumed.

"It doesn't always have to be sports," says Associate Professor Dr. Karen Steindorf of DKFZ, who has headed this analysis. "In our calculations we have also taken account of activities such as gardening, cycling or walking to the shops. Our advice to all women is therefore to

stay or become physically active also in the second half of your life. You will not only reduce your risk of breast cancer, but it has been proven that your bones, heart and brain also benefit from it.”

Martina E. Schmidt, Karen Steindorf, Elke Mutschelknauss, Tracy Slinger, Silke Kropp, Nadia Obi, Dieter Flesch-Janys and Jenny Chang-Claude: Physical Activity and Postmenopausal Breast Cancer: Effect Modification by Breast Cancer Subtypes and Effective Periods in Life. *Cancer Epidemiology Biomarkers and Prevention* 2008, DOI: 10.1158/1055-9965.EPI-08-0479

The German Cancer Research Center (Deutsches Krebsforschungszentrum, DKFZ) is the largest biomedical research institute in Germany and is a member of the Helmholtz Association of National Research Centers. More than 2,000 staff members, including 850 scientists, are investigating the mechanisms of cancer and are working to identify cancer risk factors. They provide the foundations for developing novel approaches in the prevention, diagnosis, and treatment of cancer. In addition, the staff of the Cancer Information Service (KID) offers information about the widespread disease of cancer for patients, their families, and the general public. The Center is funded by the German Federal Ministry of Education and Research (90%) and the State of Baden-Württemberg (10%).

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