

# Physical activity does not influence breast density: Protective effect against breast cancer is due to other mechanisms

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Micrograph showing a lymph node invaded by ductal breast carcinoma, with extension of the tumour beyond the lymph node. Credit: Nephron/Wikipedia

Danish researchers have found no link between physical activity and breast density, and believe that the protective effect of physical activity on breast cancer must be through other mechanisms. This finding is unexpected because it was believed that reducing BMI and fatty tissue would increase breast density.

Women whose breasts are more dense have a greater risk of developing breast cancer than those with less [breast density](#), and [physical activity](#) is known to have a protective effect against the disease. However, studies into the relationship between physical activity and breast density have reported inconsistent results to date. Now, for the first time in a large-scale, detailed study, a group of Danish researchers have found no link between the two, and say that their findings imply that the [protective effect](#) of physical activity on breast cancer might be through other mechanisms than breast density.

Speaking at the 10th European Breast Cancer Conference (EBCC-10) tomorrow (Thursday) Ms Shadi Azam, MSc, a researcher at the University of Southern Denmark, Esbjerg, Denmark, will report results from an analysis of the physical activity of 5,703 pre- and post-menopausal Danish women who participated in [breast screening](#) between 1991 and 2001, and who formed part of the Danish prospective Diet, Cancer and Health (DCH) study group.

The researchers collected data on leisure, transport, and occupation-related physical activities. These activities were reported by number of hours per week, and amounts categorised as none, and up to two, four, and more than four hours per week, respectively. The information on occupational-related activities was then categorised further into sedentary, standing, manual, and heavy manual activity.

"We know that breast density is one of the strongest risk factors for [breast cancer risk](#). Women with high density breasts—more than 75%

mammographic density—have a four to six times' higher risk of developing the disease than do those women with a breast density of lower than 25%. This is because increased breast density reduces the sensitivity of mammograms and makes it is far more difficult to spot small tumours. It is also because breast density per se can lead to an increased risk of most of the cellular abnormalities that lead to breast cancer," says Ms Azam.

The screening took place at one hospital in Copenhagen, and all screens were evaluated independently by two radiologists. Breast density was categorised into fatty (the least dense) breast, and mixed/dense breast, and then validated according to the Breast Imaging and Data System (BI-RADS) assessment tool. The screens were linked to the group studied via the personal identification number of the Danish Civil Registration System, and mammographic density assessed at first screening was used for the categorisation. "The ability to link these breast density data to such a large group of women and information on their leisure-time, transport, and occupational-related physical activity is unique to Denmark," says Ms Azam.

In the study group, mammography showed that 56.3% of women had mixed or dense breasts; 47.5% of them participated in sports, 70.1% cycled, 52.2% did gardening, and 92.7% walked. "We initially found a significant association between participation in sports and cycling with the chances of having denser breasts, but the odds of having dense breasts were reduced and did not reach a significant level after we adjusted for other factors.

"In addition we did not find any association for walking and only a very weak one for gardening after adjustment. Neither was there any association between the time spent on physical activity and breast density, and this also held true for occupational activity," Ms Azam will say.

Physical activity is an important modifiable factor in breast [cancer risk](#). "In the light of our findings, we believe that further studies should now be focused on other mechanisms that might explain the association between physical activity and breast cancer risk," says Ms Azam.

Recent studies have shown that not all women with dense breasts are at a high risk of breast cancer, and that breast density should not be the only criterion when looking at the desirability of extra screening. Some women with high breast density can, in any event, modify their risk of developing breast cancer through lifestyle changes. A high consumption of fruit and vegetables can lower their breast cancer risk, whereas alcohol, smoking, a high intake of red and processed meats, sweets and high-fat dairy products, lack of physical activity, weight gain, obesity (especially during menopause) and hormone replacement therapy all increase the risk, and should be avoided.

"We would be very interested to see our research replicated in another large study group in order to provide further certainty," Ms Azam will conclude. "We would encourage all women to undertake the lifestyle changes that can reduce their risk of breast cancer."

Chair of the conference, Professor Fatima Cardoso, Director of the Breast Unit of the Champalimaud Clinical Centre in Lisbon, Portugal, said: "This is a very interesting new insight into the relationship between breast density and [breast cancer](#) risk. One might expect that undertaking physical activity and hence reducing BMI and fatty tissue would increase breast density, but this study shows that this is not the case. Untangling these complex associations will help not only determine whether extra screening is required for some women, but also aid us in refining preventive strategies."

Provided by ECCO-the European CanCer Organisation

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