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Breast Cancer, BRCA1 and Activity

It is estimated that up to 80% of women carrying the BRCA1 mutation will develop breast cancer in their lifetime. It is an ominous number, to be sure, but it also brings up an important question: what is different about that 20% who don't get breast cancer even though they have the mutation?

A new study has given some insight into that. First, a bit of background on BRCA.

This gene is involved in DNA repair. When it is working property the gene produces a protein that fixes something called "double-stranded breaks" in a cell's DNA. These kinds of breaks can be quite dangerous if not repaired.
Individuals with BRCA1 mutations produce much less of this protein, so these double-stranded DNA breaks can go un-fixed, and that greatly increases the risk of cell becoming cancerous.

The most recent study[1] on this looked at the impact of physical activity on the amount of protein produced by the BRCA1 gene. Most importantly, they measured it in women with and without the BRCA1 mutation associated with breast cancer. Their findings shouldn't surprise anyone.

Women who were the most sedentary had the lowest BRCA1 gene expression, regardless of their mutation status. Even in women carrying the BRCA1 mutation, they had significantly higher BRCA1 gene activity if they were physically active compared to their more sedentary counterparts.

Could it be that the 20% with the BRCA1 mutation who don't get breast cancer are those women who are the most physically active? We don't know yet, but it sure looks like physical activity is important. Only more studies will be able to clarify this issue.

In the meantime, what we know already is important: living a sedentary life slows down the BRCA1 gene's work of DNA repair.

Written by Dr. Greg Nigh, ND, LAc
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[1] https://cancerpreventionresearch.aacrjournals.org/content/9/1/83.abstract?etoc