

## Study fuels debate over whether exercise and body size influence ovarian cancer risk

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A new study adds fuel to the debate over whether being fat or inactive affects the risk of developing ovarian cancer. The study, presented by Australian researchers today (Thursday) at the European Cancer Conference (ECCO 14) in Barcelona, found some evidence suggesting exercise might increase the risk. It found no link with body measurements.

The study included 24,479 Australian women aged between 27 and 75, followed for an average of 13 years. Body measurements such as waist circumference, weight, fat mass and non-fat mass were taken and the women were questioned about the frequency and intensity of their physical activity outside of work. Those answers were combined into a formula to score physical activity levels. During the study, 90 of the women were diagnosed with ovarian cancer. Thirteen of those women did no exercise, 21 reported low levels of physical activity, 37 reported medium levels and 19 were classified as engaging in high levels of physical activity.

“After adjusting for other risk factors for ovarian cancer, we found that women with high levels of physical activity were the most likely to develop ovarian cancer, with over twice the risk of those engaging in no physical activity,” said the study’s presenter, Dr. Fiona Chionh, a medical oncology registrar at Geelong Hospital and researcher at the Cancer Council Victoria, both in Australia. “Women with medium levels had the second highest risk, and those with low levels also had an elevated risk compared with those with no exercise. Our results suggest

there may be a dose-response effect of physical activity on ovarian cancer risk, although the statistical test for this did not quite reach significant levels. Only the finding on medium levels of physical activity was statistically significant.”

Previous studies investigating any links between physical activity or body measurements and the risk of ovarian cancer have produced conflicting results. For exercise, some have found a protective effect while others saw an increased risk or no relation at all. Findings on a link between weight or adult body mass index, or BMI, and ovarian cancer risk have been similarly inconclusive.

“Two strengths of our study were that while most other studies of this type have used self-reported weight and height to calculate BMI, we directly measured these in all of our participants. Unlike most other studies, we also directly measured fat mass,” Chionh said. “This approach makes the measurements more reliable.”

Scientists have evidence that regular exercise protects against bowel and breast cancers, and possibly endometrial and prostate cancers, but it has also been difficult to ascertain the influence of exercise on other types of cancer, Chionh said.

“This is probably due to measurement error when estimating levels of physical activity and exercise,” she said. “We believe the methods we used help bring us closer to the truth about risk factors for ovarian cancer, but further study is still needed to determine if there is a real causal relationship between exercise and an increased risk.”

Several hypotheses support the biological plausibility of an increased ovarian cancer risk with higher levels of physical activity, Chionh said.

Some studies have shown that higher levels of physical activity are

linked with decreased oestrogen levels in women. This may trigger the pituitary gland to release more gonadotropin hormones, which have been theorised to lead to possible development of ovarian cancer by stimulating oestrogen or oestrogen precursors that cause excessive proliferation of ovarian cells.

Another study has shown that higher levels of physical activity are linked with increased androgen levels, which have also been hypothesised to play a role in ovarian cancer development.

A third hypothesis is linked with a study showing that higher levels of vigorous exercise lead to an increased frequency of ovulation. Scientists have hypothesised that after each ovulation, there is a proliferation and repair of ovarian cells, which leads to recurrent minor trauma. Therefore, with more ovulatory cycles, there is an increased risk of developing ovarian cancer.

Chionh said that, alone, the findings should not alter current recommendations for exercise, given the evidence that physical activity reduces the risk of more common cancers, obesity, heart disease, stroke and death from all causes. She said that a meta-analysis, which statistically combines results from multiple studies, could help clarify the effect of physical activity on ovarian cancer risk.

Source: ECCO-the European CanCer Conference

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