Reviewer's report

Title: Physical activity and the risk of postmenopausal breast cancer - the Norwegian Women and Cancer Study

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The paper reports on the association between physical activity at young age and adulthood and the risk of postmenopausal breast cancer. The basis for the study is a follow-up of 80,202 women during a median of 8.2 years. 1,767 invasive breast cancer cases were identified. The study design as well as end-point ascertainment, and data analyses are fully satisfactory. The weakest point in the study is the method used for ascertaining the physical activity. The authors have discussed this and refer to other study settings where these methods have shown to be of reasonable validity. My major concern is the seemingly inconsistency between the Conclusion paragraph in the Abstract and that in the main paper.

The conclusion in the abstract is the following:
This study shows a weak inverse relationship of physical activity in adulthood on the risk of ER+/PR+ breast tumors, although the relationship between low physical activity levels at young age and adulthood unexpectedly reduced the risk of postmenopausal breast cancer. However, after correction for multiple testing, the results were no longer statistically significant.

Whereas in the main article one reads:
PA does not appear to be strongly associated with breast cancer in postmenopausal women given the inconsistency in our findings over different time periods of life from this large cohort.

For future research, information on PA during follow-up is essential. PA is indeed an important modifiable lifestyle factor with the potential to reduce the risk of breast cancer, although our study failed to detect a consistent inverse effect of PA on the risk of breast cancer.

The reader is left wondering what the authors really mean. My conclusion after
having scrutinized the paper is that there is no consistent pattern between PA and breast cancer incidence. I recommend the authors to think again regarding their conclusions.

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** No, the manuscript does not need to be seen by a statistician.