

Letter to the Editor

Unbalanced Cancer Status May Undermine Results on Insulin and Insulin-like Growth Factor

In Response: We thank Dr. Wolf and colleagues for their interest in our paper. They are correct that later-stage cancer is a risk factor for increased cancer recurrence and death, and insulin and insulin-like growth factor (IGF) levels have also been associated with poor prognosis (1). In our 6-month randomized trial of aerobic exercise, we observed reductions in insulin and IGF levels among breast cancer survivors randomized to exercise versus slight increases among survivors randomized to usual care (2). Results were similar even after adjusting for disease stage (baseline to 6-month change for exercisers versus usual care: -1.57 versus 3.29 $\mu\text{U}/\text{mL}$, $P = 0.098$ for insulin; -9.26 versus 14.8 ng/mL , $P = 0.0084$ for IGF-I; and -0.20 versus 0.16 $\mu\text{g}/\text{mL}$, $P = 0.0055$ for IGF binding protein-3). Further, these results occurred even though weight loss was modest. These between-group differences of 19.2%, 10.7%, and 8.4% for insulin, IGF-I, and IGF binding protein-3, respectively, are clinically meaningful and a result of performing primarily brisk walking for approximately 2 hours per week. In summary, we posit that exercise may improve breast

cancer survival directly and indirectly through multiple, interrelated actions of hormonal concentrations and actions. Given the high level of physical inactivity in the population, this low-cost intervention has the potential to benefit a large number of breast cancer survivors.

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Disclosure of Potential Conflicts of Interest

No potential conflicts of interest were disclosed.

References

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2. Irwin ML, et al. Randomized controlled trial of aerobic exercise on insulin and insulin-like growth factors in breast cancer survivors: the Yale Exercise and Survivorship Study. *Cancer Epidemiol Biomarkers Prev* 2009;18:306–13.

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