

**Schmitz et al. Weight lifting for women at risk for breast cancer-related lymphedema: A randomized trial. *JAMA*. 2010 Dec 22;304(24):2699-705. doi: 10.1001/jama.2010.1837. Epub 2010 Dec 8.**

**Context** Clinical guidelines for breast cancer survivors without lymphedema advise against upper body exercise, preventing them from obtaining established health benefits of weight lifting.

**Objective** To evaluate lymphedema onset after a 1-year weight lifting intervention vs no exercise (control) among survivors at risk for breast cancer–related lymphedema (BCRL).

**Design, Setting, and Participants** A randomized controlled equivalence trial (Physical Activity and Lymphedema trial) in the Philadelphia metropolitan area of 154 breast cancer survivors 1 to 5 years postunilateral breast cancer, with at least 2 lymph nodes removed and without clinical signs of BCRL at study entry. Participants were recruited between October 1, 2005, and February 2007, with data collection ending in August 2008.

**Intervention** Weight lifting intervention included a gym membership and 13 weeks of supervised instruction, with the remaining 9 months unsupervised, vs no exercise.

**Main Outcome Measures** Incident BCRL determined by increased arm swelling during 12 months (>5% increase in interlimb difference). Clinician-defined BCRL onset was also evaluated. Equivalence margin was defined as doubling of lymphedema incidence.

**Results** A total of 134 participants completed follow-up measures at 1 year. The proportion of women who experienced incident BCRL onset was 11% (8 of 72) in the weight lifting intervention group and 17% (13 of 75) in the control group (cumulative incidence difference [CID], -6.0%; 95% confidence interval [CI], -17.2% to 5.2%; *P* for equivalence=.04). Among women with 5 or more lymph nodes removed, the proportion who experienced incident BCRL onset was 7% (3 of 45) in the weight lifting intervention group and 22% (11 of 49) in the control group (CID, -15.0%; 95% CI, -18.6% to -11.4%; *P* for equivalence=.003). Clinician-defined BCRL onset occurred in 1 woman in the weight lifting intervention group and 3 women in the control group (1.5% vs 4.4%, *P* for equivalence=.12).

**Conclusion** In breast cancer survivors at risk for lymphedema, a program of slowly progressive weight lifting compared with no exercise did not result in increased incidence of lymphedema.

<https://www.ncbi.nlm.nih.gov/pubmed/21148134>

1. Lymphatic sparing procedures such as sentinel lymph node biopsy:
  - A. eliminate the possibility of breast cancer-related lymphedema.
  - B. do not eliminate the possibility of breast cancer-related lymphedema.
  - C. eliminate the possibility of women returning to a previous level of fitness.
  - D. do not allow for the possibility of women exceeding previous levels of fitness.
  
2. Activity avoidance in cancer survivors is:
  - A. the best way to avoid the onset of lymphedema.
  - B. one way to avoid cancer recurrence.
  - C. going to lead to deconditioning.
  - D. will improve survival rates.

3. The purpose of this study was to:
- A. promote weight lifting as a means of preventing cancer.
  - B. evaluate the incidence of lymphedema from weight lifting.
  - C. evaluate the results of the Physical Activity and Lymphedema trial.
  - D. assess the effects of weight lifting on women without lymphedema.
4. Which of the following was NOT included as an eligibility requirement for women in this study?
- A. Non-metastatic breast cancer diagnosis between 1 and 5 years before study.
  - B. Currently weight lifting or has been weight lifting in the last year.
  - C. No prior lymphedema diagnosis.
  - D. Currently cancer free.
5. What were the subjects required to wear during the intervention phase of this study?
- A. Custom-fitted compression garment.
  - B. Off-the-shelf compression garment.
  - C. Loose fitting clothing.
  - D. Cotton clothing.
6. To ensure that arm swelling changes were detected how often did trainers check participants?  
Asked \_\_\_\_\_ and measured \_\_\_\_\_.
- A. weekly, weekly
  - B. weekly, monthly
  - C. monthly, weekly
  - D. monthly, monthly

7. One of the results of the study was that women in the weight lifting intervention group:
- A. had no difference in strength compared to the no exercise group.
  - B. declined slightly in strength compared to the no exercise group.
  - C. were equal in strength to the no exercise group.
  - D. became stronger than the no exercise group.
8. This study demonstrated that among high risk women, exercise (weight lifting):
- A. can reduce the likelihood of increased arm swelling.
  - B. is too risky to attempt after breast cancer treatment.
  - C. did not change the chances of developing arm swelling.
  - D. should not be started for at least 5 years after cancer treatment.
9. In this study, how many pounds were the weights that participants started with in their training?
- A. 10
  - B. 6-8
  - C. 3 - 5
  - D. 1 – 2
10. How many times a week did participants lift weights and how long did participants remain in the study? \_\_\_\_\_ times per week and \_\_\_\_\_ years in the study.
- A. 5 and 1
  - B. 2 and 1
  - C. 1 and 5
  - D. 1 and 2