

Exercise and breast cancer

By Teresa Petrella, MD, MSc, FRCPC, Medical Oncologist, Odette Cancer Centre

HOT SPOT

Breast cancer is a prevalent disease with more than 22,000 cases diagnosed this year in Canada (Canadian Cancer Society, 2009). Many of these women will undergo surgery followed by adjuvant therapy. With the advent of new and more effective adjuvant therapies for breast cancer, treatment is becoming more complex and prolonged, and may last many years. As a result of their treatment, many women will face long-term consequences such as early menopause, compromise in cardiopulmonary and functional capacity and weight gain. In addition, decreased function, fatigue and weight gain has a significant negative impact on the quality of life of these breast cancer patients (Galalae, Michel, Siebmann, Kuchler, Eilf, & Kimmig, 2005).

Physical activity is a modifiable risk factor for many diseases. These include cardiovascular disease, diabetes, osteoporosis, hypertension, depression and cancer; specifically breast cancer. Evidence suggests that 1/3 of the more than 500,000 cancer deaths that occur in the U.S. each year can be attributed to diet and physical activity habits (Kushi, Byers, Doyle, Bandera, McCullough, Gansler, et al., and the American Cancer Society 2006 Nutrition and Physical Activity Guidelines Advisory Committee). Despite this, the relative acceptance that exists within other medical and scientific communities of the benefits of exercise has not translated to active promotion of physical activity in cancer care.

Primary prevention

- Routine physical activity is associated with reductions in the risk of breast cancer
- Data from epidemiologic studies shows that physically active women have a 20% to 30% reduction in the relative risk of breast cancer compared with their inactive counterparts (Lee, 2003)
- Also, there is consistent evidence that increased body weight or weight gain in adulthood is associated with increased risk of breast cancer (Ballard-Barbash et al.,

2009); exercise can be beneficial in maintaining a healthy weight

- American Cancer Society (ACS) (Kushi, Byers, Doyle, Bandera, McCullough, Gansler, et al., 2006), has published guidelines on nutrition and physical activity for cancer prevention
- ACS recommends adopting a physically active lifestyle: at least 30 minutes of moderate to vigorous physical activity on five or more days of the week. Some examples of moderate and vigorous activities are listed in Table One.

Secondary prevention

- A recent Canadian Community Health Survey revealed that fewer than 22% of Canadian cancer survivors (16.6% of breast cancer survivors) were physically active and more than 18% were obese (Courneya, Katzmarzyk, & Bacon, 2008)
- A Nurses Health Study (Holmes, 2005) suggested improvement in survival with physical exercise post-breast cancer diagnosis:
 - breast cancer survivors who reported higher levels of physical activity had a

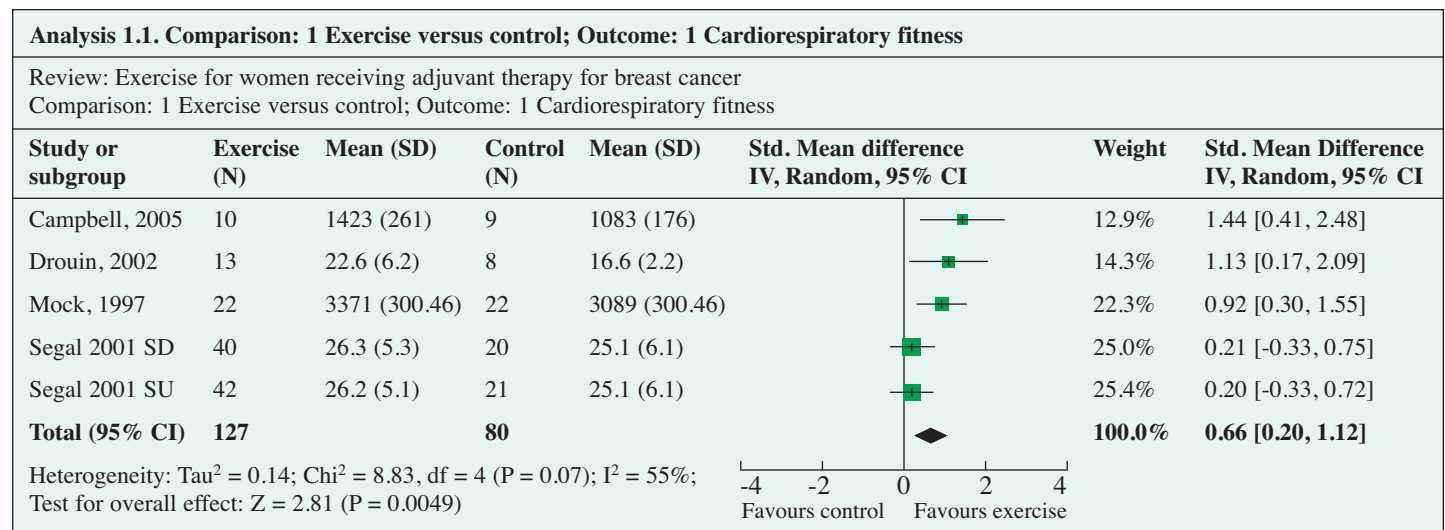
reduced risk of disease recurrence, a decrease in cancer-specific mortality and all-cause mortality

- those who engaged in moderate exercise had an adjusted RR of 0.50 (95% CI 0.31–0.82) with a five-year survival 97% versus 93% compared to those less active, and a 10-year survival of 92% versus 86%.

Benefits of exercise

- The majority of breast cancers are diagnosed at an early stage and treatment is, therefore, focused on cure and prevention of relapse due to micrometastatic disease
- The mainstay of treatment consists of surgery with or without radiation, along with systemic adjuvant therapy that includes chemotherapy, endocrine therapy, or a combination

	Moderate intensity activities	Vigorous intensity activities
Exercise and leisure	Walking, dancing, leisurely bicycling, ice and roller skating, horseback riding, canoeing, yoga	Jogging or running, fast bicycling, circuit weight training, aerobic dance, martial arts, jumping rope, swimming
Sports	Volleyball, golfing, softball, baseball, badminton, doubles tennis, downhill skiing	Soccer, field or ice hockey, lacrosse, singles tennis, racquetball, basketball, cross-country skiing
Home activities	Mowing the lawn, general yard and garden maintenance	Digging, carrying and hauling, masonry, carpentry
Occupational activity	Walking and lifting as part of the job (custodial work, farming, auto or machine repair)	Heavy manual labour (forestry, construction, firefighting)



- The side effects from these therapies can have a significant effect on QOL, as well as physical function and mood
- Lack of physical activity may also result in severe deconditioning and reduced physical function, which may prolong recovery
- Several randomized and non-randomized trials have examined exercise as a supportive intervention
- A recent meta-analysis of 14 breast cancer exercise trials showed significant improvements in QOL, physical functioning and fatigue (McNeely et al., 2006)
- Weight gain is also common and very distressing for breast cancer patients; exercise may aid in maintaining a healthy weight
- A recently published Cochrane review of exercise for women receiving adjuvant therapy also suggests that exercise improves cardiorespiratory fitness (Analysis 1.1 table), fatigue and helps control weight gain (Analysis 1.4 table) while on adjuvant therapy (Markes, Brockow, & Resch, 2009).

Recommendations

- Both the Canadian Cancer Society and the American Cancer Society provide information for cancer patients on exercise
- Wellspring also has an exercise program that is available to cancer patients

- Patients should check with their doctors before starting any exercise program
- Consult with a cancer exercise specialist if one is available
- Combination of both aerobic and resistance training exercises is ideal
- Engage in at least 30 minutes of moderate or vigorous exercise three to five times per week along with a healthy diet.

Summary

In summary, regular physical activity appears to confer a benefit both in prevention, management of side effects from therapy and in secondary prevention of breast cancer. Results from a recent survey show that Canadian cancer survivors have a low level of physical activity and many are overweight. This may place them at higher risk of recurrence and death from their disease, as well as worse supportive care outcomes. Receiving adjuvant therapy should no longer be thought of as a contraindication to exercise. Instead, it should be regarded as a feasible, safe and beneficial supportive care measure. Those at risk for breast cancer and breast cancer patients should be encouraged to exercise during, as well as post-treatment as part of a healthy lifestyle change. The challenge will be in instituting a behaviour change amongst patients and physicians. For behaviour

change to occur, exercise programs will need to focus on the barriers that prevent a healthy lifestyle change, as well as the underlying principles of behaviour theories.

References

- Ballard-Barbash, R., Hunsberger, S., Alciati, M.H., Blair, S.N., Goodwin, P.J., McTiernan, A., et al. (2009). Physical activity, weight control, and breast cancer risk and survival: Clinical trial rationale and design considerations. *J Natl Cancer Inst.*, **101**(9), 630–43.
- Canadian Cancer Society. (2009, Dec. 10). *Canadian Cancer Statistics 2009*. Toronto, ON: Author.
- Courneya, K.S., Katzmarzyk, P.T., & Bacon, E. (2008). Physical activity and obesity in Canadian Cancer Survivors. *Cancer*, **112**(11), 2475–82.
- Galalae, R.M., Michel, J., Siebmann, J.U., Küchler, T., Eilf, K., & Kimmig, B. (2005). Significant negative impact of adjuvant chemotherapy on health-related quality of life (HR-QoL) in women with breast cancer treated by conserving surgery and postoperative 3-D radiotherapy: A prospective measurement. *Strahlenther Onkol.*, **181**(10), 645–651.
- Holmes, M.D., Chen, W.Y. Feskanich, D., Kroenke, C.H., & Colditz, G.A. (2005).

Physical activity and survival after breast cancer diagnosis. *JAMA*, **293**(20), 2479–86.

Kushi, L.H., Byers, T., Doyle, C., Bandera, E.V., McCullough, M., Gansler, T., et al., and The American Cancer Society 2006 Nutrition and Physical Activity Guidelines Advisory Committee. (2006). American Cancer Society guidelines on nutrition and physical activity for cancer prevention: Reducing the risk of cancer with healthy food choices and physical activity. *CA Cancer J Clin*, **56**, 254–281.

Kushi, L.H., Lenart, E.B., & Willett, W.C. (1995). Health implications of Mediterranean diets in light of contemporary knowledge. 2. Meat, wine, fats, and oils. *Am J Clin Nutr.*, **61**(Suppl. 6), 1416S–1427S.

Lee, I.M. (2003). Physical activity and cancer prevention—data from epidemiologic studies. *Med Sci sports Exerc*, **35**, 1823–7.

Markes, M., Brockow, T., & Resch, K.L. (2009). Exercise for women receiving adjuvant therapy for breast cancer. *Cochrane Database of Systematic Reviews* 2006, Issue 4. Art. No.: CD005001. DOI: 10.1002/14651858.CD005001.pub2.

McNeely, M.L., Campbell, K.L., Rowe, B.H., Klassen, T.P., Mackey, J.R., & Courneya, K.S. (2006). Effects of exercise on breast cancer patients and survivors: A systematic review and meta-analysis. *CMAJ*, **175**(1), 34–41.

Analysis 1.4. Comparison: 1 Exercise versus control; Outcome 4 Weight change							
Review: Exercise for women receiving adjuvant therapy for breast cancer; Comparison: 1 Exercise versus control; Outcome: 1 Weight change							
Study or subgroup	Exercise (N)	Mean (SD)	Control (N)	Mean (SD)	Std. Mean difference IV, Random, 95% CI	Weight	Std. Mean Difference IV, Random, 95% CI
MacVicar, 1989	12	0.82 (2.1)	12	1.99 (2.1)		63.0%	-1.17 [-2.85, 0.51]
Segal, 2001 SD	40	0.4 (3.71)	20	0.6 (6.21)		20.4%	-0.20 [-3.15, 2.75]
Segal, 2001 SU	42	-1.4 (6.28)	21	0.6 (6.21)		16.7%	-2.00 [-5.27, 1.27]
Total (95% CI)	94		53			100.0%	-1.11 [-2.44, 0.22]
Heterogeneity: Tau ² = 0.0; Chi ² = 0.65, df = 2 (P = 0.72); I ² = 0.0%; Test for overall effect: Z = 1.63 (P = 0.10)							

Generously supported by
an unrestricted educational
grant from Pfizer

