

Aquatic Exercise after Breast Cancer

Prescribing exercise throughout cancer recovery is an important role for physiotherapists working in oncology. Community-based exercise programs and current research have demonstrated positive outcomes attributable to land-based exercise interventions for people with cancer (1). For those individuals diagnosed with, and treated for, breast cancer, 30% to 82% will experience upper limb dysfunction (2). After sentinel node lymph biopsy or axillary node lymph surgery, 26% experience lymphedema after the surgery (3). Lymphedema severity can be affected by infection, obesity and excessive arm use (3). Recent evidence has helped to clarify the interpretation of 'excessive arm use'. Authors of a 2010 Cochrane systematic review concluded that upper-limb exercise does not increase the risk of lymphedema for breast cancer patients (4).

Management of lymphedema includes skin care, compression bandaging, lymphatic drainage massage and remedial exercise (5). Another management 'tool' is water immersion owing to the hydrostatic pressure which provides graduated compression. For example, hydrostatic pressure on an arm (60 cm in length) positioned vertically in the water would be approximately 40 mm Hg at the finger tips – greater than many bandaging products. While pressure at the ankle immersed at a depth of 1 metre would be approximately 70 mm Hg, a significant external pressure, with gradual reduction proximally. Another advantage is the viscosity and turbulence of the water which provides altered pressures on the skin and may improve pumping of the lymphatic vessels. A clinical trial by Tidhar et al in 2010, demonstrated significant immediate reduction in limb volume after one hour of a specialized aquatic exercise class for 48 women who were in the maintenance phase of lymphedema (average 12.8% relative volume) and of an average age of 56 years (6). The adherence to the aquatic therapy was significantly higher than in the group instructed to perform self-management measures. Aquatic lymphatic therapy follows the basic principles of central lymphatic decongestion, followed by peripheral lymphatic compression and can be incorporated into the design of an aquatic exercise program. Precautions would include radiation fibrosis

syndrome which can put the skin at risk for infection in the chlorinated water (barrier creams are available). Contraindications would include open wounds and chlorine allergy.

There are advantages to aquatic exercise executed in a vertical position. Hydrostatic pressure positionally addresses upper and lower limb lymphedema and provides respiratory muscle strengthening with gentle pressure on the chest wall. Buoyancy assists shoulder ROM with less strain on the neck and shoulder muscles while helping to maintain an upright posture. The reduced weight-bearing provides joint decompression and the water viscosity challenges core stabilizers and slows the fall mechanism. These water properties are used to optimize the client's exercise capacity. There are increasingly more specialized aquatic programs being offered in rehabilitation pools, community pools and warm water therapeutic pools as well as increasing access to condominium pools. Bridging to any community programming is essential in the ongoing rehabilitation of our clients and the pool can provide social support as well as positive physiological outcomes.

Aquatic therapy is another 'tool' in our pocket and aquatic exercise is an alternate way to reap the positive outcomes of exercise with the potential to be effective in the management of lymphedema. As exercise prescribers and educators enthusiastic about optimizing long term health, it is important to offer our clients a wide variety of exercising options and the evidence to support those options.

1. Barbaric M, Brooks E, Moore L, Cheifetz O. Effects of physical activity on cancer survival: a systematic review. *Physiother Can.* 2010;62:25-34.
2. McLaughlin SA, Wright MJ, Morris KT et al. 2008 Prevalence of lymphedema in women with breast cancer 5 years after sentinel lymph node biopsy or axillary dissection: Objective measurements. *J Clin Oncol.* 2008, 26(32):5220-6.
3. Kwan ML; Cohn JC; Armer JM. 2011 Exercise in patients with lymphedema: a systematic review of the contemporary literature. *Journal of Cancer Survivorship* 5:320-336.
4. McNeely, ML, Campbell K, Ospina M et al. 2010. Exercise interventions for upper-limb dysfunction due to breast cancer treatment (Review) *The Cochrane Collaboration. Issue 6.*
5. www.cmaj.ca/cgi/content/full/158/3/DC1
6. Tidhar D, Katz-Leurer M. 2010 Aqua lymphatic therapy in women who suffer from breast cancer treatment-related lymphedema: a randomized controlled study. *Support Care Cancer* 18:383-392.