THE ENIGMA OF EXERCISE: Participation in an Exercise Program after Breast Cancer Surgery
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When can I begin to exercise after breast cancer surgery? How much can I do? Will exercising after surgery help to prevent lymphedema? If I have arm lymphedema, is there a limit to how much I can do? How will I know which activities I can participate in?

These questions are frequently asked by those who have undergone breast cancer surgery with axillary dissection who either fear developing arm lymphedema or have already developed it. Unfortunately, there are no hard and fast rules about exercising after breast cancer surgery because there has been little done in the way of research in this area. However, understanding the physiology of the lymphatic system and the pathophysiology of breast cancer lymphedema, in conjunction with what current research is available, allows for the development of a safe, effective exercise program.

One of the ways in which lymphatic fluid moves is through muscular movement. Muscle contraction and pulsating arteries help to change the tissue pressures in your body. This change in tissue pressure, in turn, causes the lymphatic vessels in your tissues to contract and propel lymphatic fluid (1,2). Therefore, to assist in lymphatic flow it is best to get your limb moving as soon as possible after surgery (3). Shoulder flexibility exercises should be initiated to ensure return of functional use of the arm; contraction of muscles in the forearm and hand will also help facilitate the muscle pump action that directly impacts the lymphatic system. Forearm and hand exercises can be performed when shoulder motion is limited, even when the drains remain in, post-operatively.

The return to any activity and progression through an exercise program after surgery should be gradual. Following the surgical removal of axillary lymph nodes and, in some cases, radiation therapy, the arm may have compromised lymph flow. Normally, with activity there is an increase in lymphatic flow. This can be beneficial in terms of enhancing lymphatic flow but it can also be detrimental if it occurs too rapidly in a limb which cannot handle that sudden increase.

Re-conditioning the arm through a controlled and gradual exercise program may help train the lymphatics to handle the increase in lymph fluid which occur with activity. This may help to control the episodes of sudden onsets of swelling which can occur with seemingly harmless, routine activity.

Of course, true lymphedema prevention, once lymph nodes have been removed, may be impossible. The question of who develops lymphedema after breast cancer surgery may come down to the makeup of each individual’s unique lymphatic anatomy. Evidence shows that several alternative lymphatic pathways exist which drain the arm (4). Perhaps the existence (or non-existence) of these pathways may determine the overall lymphatic function of the limb post-operatively.

To date, very little research has been done on the intensity of exercise that can be safely performed by patients who have had axillary dissection (5). A recent study demonstrated no significant difference between women with axillary dissection who returned to full activity, including sports, and those who chose not to. These authors conclude that perhaps the medical community needs to re-examine the guidelines given to axillary dissection patients regarding return to activity and lymphedema prevention (6).

The amount and intensity of the activity which can be performed post-axillary dissection varies with each individual, and guidelines should be developed with that concept in mind. This principle remains true for those who have developed lymphedema and those who have not. The response of the arm to exercise (i.e. changes in size or tissue texture) is an excellent way to determine the arm’s tolerance for a certain activity. If, after an activity, the limb size remains relatively unchanged and tissue texture remains unchanged, the activity has been well tolerated.

Once lymphedema has developed, there is no research which indicates that the same principles of exercise do not apply. If the limb is used as a barometer of response to exercise and if proper steps are taken while the exercise or activity is performed, there seems to be no reason why a return to a full, active lifestyle cannot be expected after the onset of lymphedema.

At the Breast Cancer Physical Therapy Center (BCPTC) in Philadelphia, we advocate a comprehensive exercise program for breast cancer lymphedema which contains three carefully monitored components: flexibility exercises for the shoulder, progressive weight training, and aerobic activities. Preliminary data on patients who have added a comprehensive exercise regimen to their lymphedema management program has been promising.

Flexibility exercises for the shoulder can assist in decreasing axillary tightness, help restore range of motion and increase functional use of the arm. Decreasing pectoral (chest wall) tightness can also help alleviate compression of the thoracic outlet. If left unaddressed, this compression of the vessels that help with venous return can lead to further impaired drainage of the limb. It has already been shown that a large percentage of women with arm lymphedema present not only with impaired lymph drainage, but with impaired venous return, as well (7). Further muscle tightness may possibly complicate the edema problem.

A progressive weight training program is also beneficial in not only preparing the woman for more functional activities,
Enigma of Exercise... Cont.

but it also positively impacts the lymphatic system. Prior research has shown that muscle concretion performed
while the limb is bandaged increases protein reabsorption
and enhances lymphatic flow (8). Therefore, at BCPTC, the
women wear their compression bandages during exercise to
to help enhance the muscle pump force on the lymphatic system
and help prevent excess filtration into the tissues of the arm
during activity. Bandages are also worn during their home
exercise program.

The weight training component progresses gradually, lift-
ing very light weights (1-2 lbs.) at the onset and carefully mon-
toring the limb’s response. All muscle groups of the arm are
used with emphasis on the muscles of the shoulder and elbow.

The number of repetitions for each exercise is also a factor
for careful consideration — lymphedema can be worsened
by too much weight or too many repetitions. Most women
progress themselves to three sets of ten repetitions with each
activity. Again, the limb must be used as a barometer of
response to treatment. Some individuals may be able to do
more, some less. Regardless, each individual lymphedema
patient must be aware of what level of weight and repetitions is
appropriate for her/his arm (yes, there are men who have de-
veloped breast cancer and lymphedema in the upper limb).

Aerobic activities can also be used to enhance lymphatic
flow in the breast cancer lymphedema patient. Physiologi-
cally, with each breath we take there is a suction force on our
lymphatic system which increases lymphatic uptake (1,2).
Aerobic cross-training, performed with the limb bandaged,
may be a way to vicariously strengthen the lymphatic sys-
tem while strengthening the cardio-respiratory system.

Many women who have undergone treatment for breast cancer
complain of fatigue which lasts long after treatment for cancer
has ended. It has been shown that the cardio-respiratory capa-
city of the cancer patient is greatly diminished after treatment
(9). Furthermore, it has been demonstrated that women with
breast cancer who perform cardio-respiratory exercise during
treatment are able to combat some of the deleterious effects
cancer treatment on their cardio-respiratory system (10).

The development of an effective and safe exercise program
for the individual who has had an axillary dissection requires a
basic understanding of the physiology of normal lymphatics as
well as the pathophysiology of breast cancer lymphedema.
Post-operative flexibility exercises, weight training, and aero-
bic activities can be undertaken to help enhance lymphatic
flow.

Regardless of whether or not lymphedema is present, fol-
lowing the guidelines as outlined previously allows the indi-
cidual who has had an axillary dissection to return to normal
activity gradually without an over-riding fear of precipitating
or exacerbating the edema.

For information about Linda T. Miller’s Exercise Booklet,
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