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## lymphedema and exercise

BY BONNIE B. LANSINKI, MA, PT, CLT-LANA

# Target: Lymphedema

*It was April 1996 when I underwent my first mastectomy and TRAM flap reconstruction. Despite my background in sports medicine fitness, I was in absolute denial about the risk of developing frozen shoulder, lymphedema and spontaneous, randomly traveling scar tissue.*

*My physicians had forewarned me and had advised me to move my arm, to stretch mildly, and to lightly massage the surgical areas. Nevertheless, like many other breast-cancer-patients-in-stock, I "pampered" myself by neglecting to move my arm and by allowing my tired and tattered body to go into hibernation.*

*That was, of course, until I could no longer move my arm, at which point my surgeon had to literally break the rope-like, burning scar bands with his hands twice a week for two months. Fortunately, with help from my proactive physicians and nurses, I began seeing a physical therapist within two weeks of my surgery and continued to do so intermittently for seven years.*

*The journey with my PTs and my lymphedema therapists (beginning in 2001) has become my permanent way of life—my means of survival on the long, ever-constant road to recovery.*

*In April 1997, after completing my stem cell transplant treatments, I became certified as a medical exercise specialist to replace my former career as a strength and conditioning specialist for athletes and to become more adept at post-rehab conditioning.*

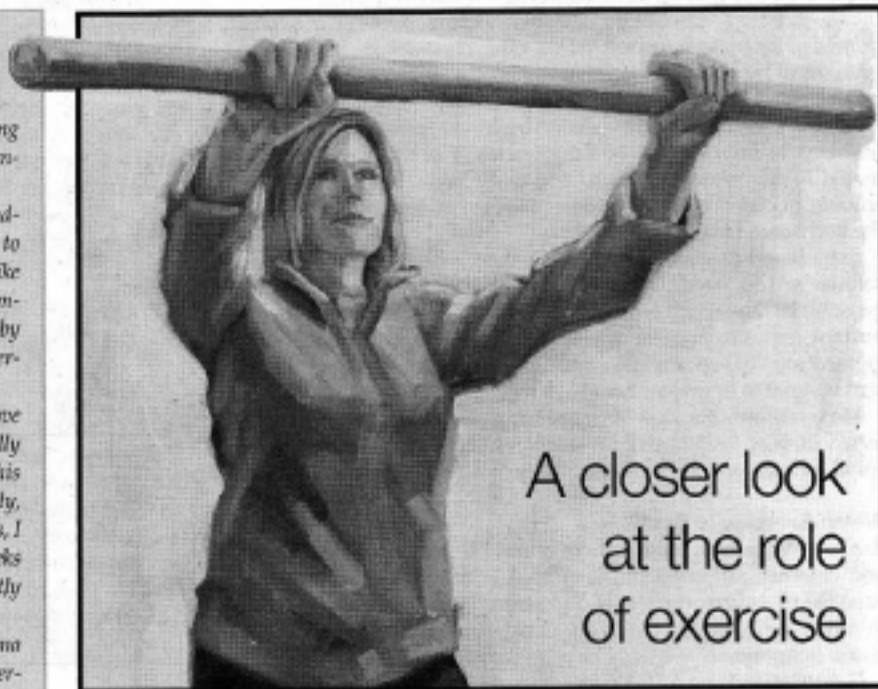
*At the suggestion of Dr. Michael Jones (my PT/MES mentor) and with encouragement from my physicians, who were referring patients to me for rehabilitation, I embarked on yet another journey, the development of my Website and my book.*

*My practitioners not only inspired me to fight for my life, but they also helped me to improve the quality of my life. Moreover, they instilled in me the profound feeling that I had a responsibility to share my information with others fighting breast cancer.*

*Another of my missions is to raise awareness of lymphedema prevention and quality of care, and to work toward improved legislation and insurance coverage for lymphedema therapy, garments and supplies.*

*My search last year for an activist who shared my passion led me to Bonnie Lansinski, a dedicated proponent of exercise for lymphedema and breast cancer.*

—By Annie Togia, MES, CSCS



A closer look  
at the role  
of exercise

**H**ow many clinicians are at a loss for words when they are asked about safe or beneficial exercises for recovery from breast cancer or lymphedema? How many individuals living with breast cancer, lymphedema or an arm at risk have asked their health care professionals for advice concerning exercise, only to receive conflicting information? Exercise after breast cancer and lymphedema is a controversial subject.

Basic and advanced research on the effects of exercise as a lymphedema risk reduction modality must be explored. The basic criticism of the precautions for exercise in current safety guidelines is that they are presently "anecdotal" due to the lack of controlled double-blind studies to prove their efficacy.

Some medical professionals have taken the position that individuals with lymphedema or a limb at risk should pursue whatever activity they wish and "see what happens." Unfortunately, lymphedema is a chronic condition that presently has no cure. While it is true that not all individuals who have had lymph node disruption (surgical or radiological) will develop lymphedema, a prudent approach to exercise is still advisable until physicians can better predict who is at greater risk.

In the case of individuals with established secondary lymphedema, working up to an exercise level that promotes fitness while avoiding exacerbation of lymphedema is a good goal.

### Exercise: Helpful or Harmful?

Lymphedema occurs when there is an imbalance between lymph transport capacity and lymph load.

Following surgical disruption or radiation treatment to a lymph node region, a state of latent lymphedema occurs. The lymph transport capacity is reduced, but is still greater than or equal to the lymph load. Acute or chronic lymphedema can develop when that balance is shifted, and lymph load exceeds the impaired lymph transport capacity. ▶

## Lymphedema and exercise

What does all this have to do with exercise? A review of the acute and chronic effects of exercise is helpful to understand how the limb at risk or a lymphedematous limb might respond to various types of exercise.

The acute responses to exercise include increased heart rate, stroke volume, cardiac output, blood flow to active muscles, systolic blood pressure, arteriovenous oxygen difference, ventilation, oxygen uptake and decreased blood pH and plasma volume.

The chronic responses include biochemical changes in skeletal muscles, decreased resting heart rate, changes in density and strength of bone and connective tissue, and decrease in total body fat and blood lipids.

During exercise, muscles need extra blood to supply the oxygen required to do the work of the exercise. The blood is then redirected to the muscles and, as the body heats up, an increasing amount of blood is directed to the skin to conduct heat away from the body core.<sup>1</sup>

Extra blood flow means that extra fluid will remain in the extracellular spaces needing transport via the lymphatic system. The question is, how much is too much? That is very individual. It is important that any exercise workout or program be gradually progressed to avoid sprain and strain, and to ensure that lymph transport is equal to or greater than lymph load.

More importantly, slow progression allows for monitoring the affected limb or limb at risk for sensations of aching or fullness that could indicate an overwhelming of the lymphatic system.

### Which Exercise is Best?

Exercise can increase the uptake of fluid by the initial lymphatics, and enhance pumping of the collecting lymphatics. In addition, exercise mobilizes the joints and strengthens the muscles of the involved limb/limbs/trunk quadrant, thus decreasing the risk of strain or sprain.<sup>2</sup>

Gentle stretching and flexibility exercises are critical for individuals who are recovering from surgical procedures, but particularly for those recovering from TRAM or Free Flap breast reconstruction following mastectomy. Individuals with restricted mobility from scar tissue are at higher risk to strain or sprain the affected limb, which can trigger lymphedema.

Exercise is best done with either compression bandages or garments on the affected limb. The bandages provide a new "tight" skin for the muscles to contract against, assisting in pumping the lymph out of the extremity into the central circulation.

Wearing compression garments provides support to the skin and to the lymphatic vessels directly under the skin, called the superficial lymphatic network. It is these vessels that help to carry the load when the larger vessels have been cut away from the lymph nodes or have been damaged due to trauma.

Of course, high-risk, high-speed activities such as tennis and bowling place stress on the upper limb. That is not to say, however, that patients with arm/hand lymphedema should not play tennis or golf, particularly if they were skilled at the activity prior to developing lymphedema. A sport-specific exercise program should be developed for them, and ultimately, a decision to play should be an individual, informed one.

Many individuals with lymphedema or a limb at risk wish to work out with weights. A slow progression of light weights can be performed safely to increase strength and power.

Deep breathing should be incorporated to enhance the pumping in the thoracic duct (the major lymphatic vessel draining the lower body and the left upper trunk, arm and hand). Most importantly, patients must consider their level of daily activity and the affected limb's reaction to exercise, and then modify activity accordingly.

## Learning More

**F**inding appropriate books and videos on postop exercises is often challenging. One helpful resource is *Staying Abreast: Rehabilitation Exercises for Breast Cancer Surgery* by Annie Toglia, a survivor of aggressive medical treatments and multiple surgeries for Stage 4 breast cancer.

*Staying Abreast* guidelines are repeated in all sections of the book, reinforcing the importance of injury prevention and risk reduction of lymphedema. Prominent are the concepts of periodization (designing programs for athletes), returning to Phase One exercises after every new surgery, and detailed "do's and don'ts" that clearly explain how modifying activities and positions can reduce the risk of injury.

Lymphedema is first mentioned on page 5, where the reader is referred to Exercise Tips, a later section that includes a summary of risk reduction techniques and recommendations to seek assessment at the first sign of symptoms.



Toglia highlights proper breathing, posture, form and technique as the foundations of any safe and successful exercise program. This is a therapist's dream come true. Rehab specialists understand the importance of core strength and stability, but convincing clients of their importance is frequently difficult.

Each exercise is clearly illustrated and positioning and breathing are coordinated with each movement. Starting and ending positions are distinctly indicated in different colors.

Toglia has created a valuable resource for therapists and for individuals recovering from breast cancer surgery and treatments. It is a book that was begging to be written.

Visit [www.stayingabreast.com](http://www.stayingabreast.com) for more information. ■

—Bonnie Lasinski

### Everyday Athletes

Certain studies have been conducted involving the effects of strenuous or repetitive upper body exercise rowing on individuals who have had axillary dissection during breast cancer surgery. It is important to note that they had completed lengthy, progressive training programs of stretching, strengthening and aerobic exercises prior to engaging in the actual strenuous activity.

However, most individuals who undergo breast surgery/axillary dissection and radiation are not enrolled in supervised exercise programs. It is time that every individual who undergoes surgical treatment for breast cancer is given this opportunity for musculoskeletal rehabilitation.

How many champion athletes sustain trauma or undergo surgery and don't have extensive aggressive rehabilitation to get them "back into their game in top form?" Shouldn't everyday "athletes" in the game of life be offered the same treatment?

Providing structured, individualized exercise programs should be a goal of all centers that perform cancer surgeries. ■

### References

1. Nieman, D.C. (1999). *Exercise testing and prescription: A health related approach*, 4th ed. Mountain View, CA: Mayfield Publishing Co.
2. Casley-Smith, J.R. (1997). *Modern treatment for lymphoedema*, 5th ed. Adelaide, Australia: The Lymphology Association of Australia.

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