

# Chapter 14

## Research–Based Applied Psychophysiology: Yoga as a Therapy for Lymphedema

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### ABSTRACT

*The lymphedema is a disfiguring and disabling disease caused by dysfunction of lymphatic system due to damage/block or by lymph overload. Breast Cancer Related Lmyphedema and elephantiasis due to Lymphatic Filariasis are most prevalent world over. This chapter describes the yoga protocols used as a part of integrative medicine treatment, to treat lymphedema. Patients perform yoga in two sessions. It includes warm up, breathing, prolonged exercise with appropriate rests and relaxation. Yoga helps to drain lymph though various mechanisms. Asanas focus on dermal stretch, joint movement, muscle pumps and muscle stretch and pranayamas on lung expansion. Yoga also provides knee strengthening, gait correction and improves shoulder movement. Joint movements and muscle contractions are designed to mimic nodal drainage. Yoga sequence is arranged to achieve a similar role of manual lymph drainage as that of Foldi's Complex Decongestive Therapy. Yoga as a self-care in lymphedema is an effective treatment in endemic communities albeit not supported by randomized controlled trials.*

### INTRODUCTION

In recent years there has been a prolongation of life and with the chance of living to what was once thought extreme old-age. Many people are finding that though they live longer they could be frail and less healthy and hence not enjoy a good quality of life. One aspect of this, noted in particular in a London

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study by Moffatt et al. (2003), is swelling of the lower legs, which is in part due to reduced mobility. Although commonly a mild oedema, which pits when compressed with a relatively light touch, due to age related changes in the heart (heart failure), some people develop a persistent oedema which becomes organised, brawny and non-pitting oedema termed lymphedema. Commonly known as elephantiasis, lymphedema is a disfiguring, disabling disease, usually in the tropics acquired following mosquito bites in childhood, transmitting a parasite termed filaria in childhood or, worldwide. It also appears some years after therapies for cancer such as surgical removal of lymphnodes with supporting fat pads in adults or following radiotherapy. There are several genetic disorders accounting for rarer presentations especially but not inevitably, in childhood.

Lymphedema occurs when lymph vessel function is greatly impaired due to blockade, gross dilatation or loss. Accumulation of protein-rich interstitial fluid (lymph) stimulating tissue overgrowth and swollen limbs is the hallmark of failure of lymph drainage.

The story is in fact more complicated than that because there is also the phenomenon of overload. This can be due to an excess of fluid flow from the capillary bed of the upper dermis as result of inflammation by cytokines and other inflammatory mediators from the epidermis and dermal mast cells and macrophages. A major underlying mechanism is failure of the barrier function of the epidermis which also loads the dermis with inflammatory mediators such as cytokines and growth factors (Ryan, 2004) in an attempt to repair itself. It responds to care of the epidermis by washing and emollients (Ryan, 2016). The long term physical consequences are swollen limbs often complicated by entry points for bacteria or environmental irritants and allergens. These irritants penetrating deep into the dermis through the failed barrier, reaching the capillary bed of the upper dermis resulting in local inflammation, cellulitis and systemic illness such that affected persons have frequently to take to their bed with fever. Cellulitis is deep tissue inflammation when the lymphatics fail to take such inflammatory material to the lymph nodes for their destruction. There is also a failure of dermal immuno-surveillance (Ruocco, Schwartz, & Ruocco, 2002; Ryan, 2009). Impaired lymphatic flow and the effects of dermal inflammation is made much worse if there is also venous overload due to gravitational effects of an immobile and dependent limb. The role of an overloaded venous system in aggravating lymphatic overload is alleviated by anti-gravitational interventions such as elevation, and ankle movements activating the calf muscle contractions and compressing the calf veins. Attention to a failing venous system is often neglected by lymphologists, in spite of emphasis by early investigators of its significance (Ryan, & Mallon, 1995).

This brief introduction to management by yoga must emphasise that any discussion of this intervention will be based on years of experience in India. Furthermore, since the major cause of lymphedema in India is filariasis this must be discussed in more detail.

There are many causes for failure of lymph drainage and all lead to lymphedema. But in India the major cause of lymphedema, and indeed throughout the tropics is Lymphatic Filariasis (LF). LF is a neglected disease of the poor, prevalent in 78 countries. In India, there are at least 20 million people with signs and symptoms of LF. The parasite causing LF is *Wucheraria Bancrofti*, *Brugia malayi* or *B. timori*. The parasite is inoculated by the mosquito as a microscopic parasite. After a prolonged circulation in the blood stream the parasite resides as a much larger 'worm' in the lymphatic collecting ducts near their lymph node termination causing dilatation of the vessel (Young, 1976) and failure of flow (Witte et al., 1993). Removal of the cause such as the microfilaria circulating in the blood and consequent transmission by the mosquito is achieved by two of three drugs given once yearly over a period of five years, namely, albendazole, ivermectin and diethyl carbamizine. Once the elephantiasis has developed there is little to no reduction in lymphedema in response to these drugs alone.

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