

The background features a dark blue gradient with a subtle pattern of white dots. Overlaid on this are several circular and semi-circular graphic elements in a lighter blue color. These include concentric circles, dashed lines, and a large circular scale on the left side with numerical markings from 140 to 260. Some of the circles contain curved arrows, suggesting a sense of motion or rotation.

LYMPHEDEMA & LIPEDEMA

INDICATIONS, CONTRAINDICATIONS & RISK FACTORS

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UPHS – Bell Hospital - A Lifepoint Hospital

Michigan Occupational Therapy Association Annual Conference

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OBJECTIVES

1. Understand and Recognize Lymphedema and Lipedema in populations we treat
2. Better understand when patient's may benefit from a referral to lymphedema therapy
3. Understand rationale for therapy, including contraindications/risk factors, and objectives for therapy
4. Discuss considerations you may want to give when treating individuals who are at risk for, have active or have undiagnosed lymphedema and/or lipedema



THE LYMPHATIC SYSTEM, LYMPHEDEMA & LIPEDEMA

AN OVERVIEW

RESPONSIBILITIES OF THE LYMPHATIC SYSTEM¹

- Maintains an optimal functioning of and integrity of the connective tissue within the body by absorption of excess fluid, macromolecules (proteins), electrolytes, toxins and foreign substances (debris) from the interstitial compartments.
- Recovers and returns substances that have escaped from the blood compartment into the tissues back to the blood circulation
- Helps to regulate the fluid volume and pressure in a tissue
- Helps with transportation of lymphocytes and other substances throughout the body
- May play an important role in preventing infection from spreading from a localized area to throughout the body
- Helps to generate immunocompetent cells in the lymph nodes
- Carries food components (fatty acids) absorbed from the small intestines to the blood stream

EDEMA¹

- Edema itself is a symptom, not a disease
- Can be a general body or isolated local body site issue
- Revised Starling Principal –
 - In 2004, Adamson and colleagues revealed that the effect of capillary oncotic pressure on transvascular fluid exchange is substantially less than predicted from the original Starling model. This discovery prompted a 2010 revision of the Starling principle by Levick and Michel.

(picture and caption from: <https://www.tactilemedical.com/revision-starling-principle/>)

THE REVISED STARLING PRINCIPLE

accumulation of interstitial capillary filtrate is avoided through lymph drainage not venous reabsorption

Pressure (mmHg)

P_0 at heart level

Net force opposing P_0 in glycolyx model
 $P_{\omega} = (\sigma\pi_p - \sigma\pi_g + P)$

Net force classically opposing P_0
 $P_{\omega} = (\sigma\pi_p - \sigma\pi_g + P)$

Net fluid movement

EVIDENCE SHOWS INTERSTITIAL FORCES ARE NOT NEGLIGIBLE AND ONCOTIC PRESSURES ARE DISRUPTED BY THE GLYCOLYX

IDEAL MEDICAL INTERVENTION FOR CVI MUST...

DECREASE Capillary Filtration

IMPROVE Lymphatic Function

Levick JR, Michel CC. Microvascular fluid exchange and the revised Starling principle. *Cardiovasc Res.* 2010;87(2):198-210.

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LYMPHEDEMA - DEFINITIONS

- ...an accumulation of fluid and fibroadipose tissues due to a disruption of lymphatic flow²
- ...a permanent obstruction of lymphatic system which decreases lymphatic flow causing chronic swelling of the extremities, trunk and face. Causes of obstruction can be congenital or from trauma and/or injury to the lymphatic system.⁴

2016 INTERNATIONAL SOCIETY OF LYMPHOLOGY DEFINITION OF LYMPHEDEMA³

- “lymphedema is an external (and/or internal) manifestation of lymphatic system insufficiency and deranged lymph transport. Some members prefer to define peripheral lymphedema as a symptom or sign resulting from underlying lymphatic disease. It is defined as an illness by the International Classification of Diseases from the World Health Organization. Lymphedema may be an isolated phenomenon or associated with a multitude of other disabling local sequelae or even life-threatening systemic syndromes. Its nature may be acute, transitory or chronic. In purest form, the central disturbance is a low output failure (mechanical insufficiency) of the lymphvascular system; that is overall lymphatic transport is reduced.”

PRIMARY AND SECONDARY LYMPHEDEMA

- Primary Lymphedema – predisposition to lymphedema due to congenital issue with lymphatic system
 - 3 types distinguished by onset of symptoms
 - Congenital Lymphedema
 - Lymphedema Praecox
 - Lymphedema Tarda
- Secondary Lymphedema – aka “Acquired” lymphedema
 - occurs due to an interruption in the lymphatic system
 - Often due to surgery, radiation therapy, malignancy, infection, filariasis

STAGES OF LYMPHEDEMA

[HTTPS://WWW.TACTILEMEDICAL.COM/ABOUT-LYMPHEDEMA/SIGNS-SYMPTOMS/](https://www.tactilemedical.com/about-lymphedema/signs-symptoms/)

- **STAGE 1 (MILD)**

- With rest and/or elevation, the swollen limb, returns to normal size. Pitting (when pressure is applied to the skin of the swollen area and released an indentation remains) may be present.

- **STAGE 2**

- The tissue can present with pitting, but often in this stage more significant skin changes are present with development of fibrosis tissue and the tissue may have a spongy feel.

- **STAGE 3**

- The tissue at this stage can be hard (fibrotic). The swelling may be largely irreversible and the limb can be very large and swollen. Infections are possible at any stage of lymphedema, however, the risk increases as the stages progress

- It is important to note that while the above is generally true, there may be differing levels of severity within each stage.

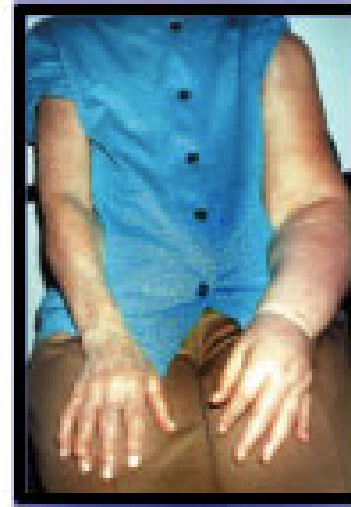
STAGES OF LYMPHEDEMA – UPPER EXTREMITY



Stage 0:
Left Unilateral Arm



Stage 1:
Left Unilateral Arm



Stage 2:
Left Unilateral Arm



Stage 3:
Left Unilateral Arm

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STAGES OF LYMPHEDEMA – LOWER EXTREMITY

Stage 1

Stage 2

Stage 3

Stage 4



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LIPEDEMA^{5,1}

- Defined as a chronic disease of lipid metabolism that results in symmetrical impairment of fatty tissue distribution and storage combined with the hyperplasia of individual fat cells.
- Accumulation of fatty tissue generally from waist to ankles with dorsum of foot always spared
- Occasionally referred to as a Rare disease
- Occurs almost exclusively in women, may affect up to 11% of woman
- Origin is unknown, but it is usually associated with a family history
- Those affected often complain of heavy legs which are painful to palpation, bruise easily because of fragility of vascular walls
- Often overlooked, misdiagnosed and poorly understood

LIPPEDEMA – CONTINUED ^{5, 1}

- Skin Evaluation:
 - Edema associated with lipedema:
 - No pitting
 - Negative Stemmer's sign
 - Pain noted on palpation
 - No rise in skin temperature
 - No thickening or induration of tissues

3 STAGES OF LIPEDEMA (1- CHIKLEY PG. 233)

- Stage 1:
 - Visual inspection is normal. The surface of the skin is soft and smooth, with small fatty lobules
- Stage 2:
 - Inspection can reveal small skin deformities and uneven skin surface. “Peau d’orange” phenomenon (appearance of little depressions similar to those in an orange peel) when the skin is squeezed between two fingers. This phenomenon allows visualization of the different fat lobules of an area including large fatty lobules.
- State 3:
 - Inspection reveals significant deformation of the profile. Very large, excessive fatty lobules are present that interfere with a normal gait pattern.

STAGES OF LIPEDEMA



Stage 1 Lipedema



Stage 2 Lipedema



Stage 3 Lipedema

<https://www.bing.com/images/search?view=detailV2&ccid=LNoWhejH&id=700FA491B399D783D4C43301964CB72E973E363E&thid=OIP.LNoWhejHiKjpfVFyWtpbOQHaDe&mediaurl=http%3a%2f%2fwww.stlouislipo.com%2fwp-content%2fuploads%2f2016%2f03%2fstages-of-lipedema-st-louis-lipo.png&expw=648&expw=648&q=stages+of+lymphedema+photos&simid=608007852353586749&selectedIndex=22&ajaxhist=0>

LYMPHEDEMA



LIPPEDEMA



LYMPPEDEMA VS. LIPPEDEMA

- <https://www.bing.com/images/search?view=detailV2&ccid=oS93foXU&id=F05F9C6BCCB30D3836CCD0A5648D929BA49DC3CC&thid=OIP.oS93foXUNu4gBKQphKOo6gHaFK&mediaurl=http%3a%2f%2flipedemaliposuctioncenter.com%2fwp-content%2fuploads%2f2017%2f08%2flymphedema-vs-lipedema.jpg&exph=446&expw=640&q=stages+of+lymphedema+photos&simid=608006104294886559&selectedIndex=30&ajaxhist=0>

The background is a dark blue gradient with a subtle pattern of white stars and technical diagrams. On the right side, there are several circular diagrams resembling gauges or dials with numerical scales (e.g., 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 210) and arrows. There are also dashed lines and other geometric shapes scattered across the background.

TREATMENT OF LYMPHEDEMA & LIPEDEMA

RATIONALE, OBJECTIVES, PRECAUTIONS, AND LONG-TERM MANAGEMENT

MANUAL LYMPHATIC THERAPY

- Manual lymphatic Drainage (MLD) is the generic term for lymphatic drainage massage. In process of MLD, the therapist moves the congested lymph fluid to an area of healthy lymphatic functioning. The therapist must start in a healthy proximal area and move towards the congested area following with our understanding of the lymphatic pathways of the body
- Visualize: You have a farmer who needs to drain a pond from his field to a nearby creek.....

EVALUATION

- History of symptoms, any precipitating factors/causes, impacts on daily activities, functional scores (G-Codes)
- Other medical history
- History of surgeries, burns and/or scars, history of radiation therapy or node removal and their locations on lymphatic pathways
- Any contraindications or circumstances requiring additional consideration for therapy?
- Measurement of the affected and non-affected area to obtain a baseline and comparison
- Skin Observations –
 - Stemmer sign, a thickened skin fold when pinched at the base of the second toe or finger, is a clinical indicator of lymphedema.
 - Changes in skin color, temperature, physical appearance of skin, hair growth
 - Pitting edema
 - Fibrosis
 - Skin integrity (papillomas, weeping, wounds, lobules)

CONSIDERATIONS & POSSIBLE CONTRAINDICATIONS

- If infection is present
- Over areas of inflammation
- If there is a blood clot or hematoma in the area
- Debate on if can be completed when active cancer is present
- In inflammation state of acute wound healing*
- Renal Failure or severe kidney disease problems exist
- Pulmonary issues
- Sudden unknown swelling occurs but has not been evaluated and cleared by a physician first
- Eczema or Foot Fungus
- Cellulitis
- Pregnancy
- Patient has current Congestive Heart Failure or Severe Cardiac Problems

A NOTE ABOUT CONGESTIVE HEART FAILURE

- Because MLD is moving extra fluid out of congested areas, the fluid must then move out of the body eventually through the circulatory system.
- Therapy that is too quick, too intense or done with someone with an already compromised system may put individuals at risk for CHF. Patients and caregivers should know the signs/symptoms of CHF and seek medical care should symptoms present.
- Signs and symptoms of CHF may include:
 - Change in blood pressure
 - Fatigue
 - Dyspnea
 - Orthopnea
 - Tachycardia
 - Edema of liver, abdominal cavity (ascites) or pulmonary system (patient have sudden weight gain?)
 - Skin changes
 - Behavioral or cognitive changes
 - Chest pain
 - Rales
 - Oxygen level and pulse

COMPONENTS OF INDIVIDUAL THERAPY

- Understanding potential complications and precautions
- Understanding basic principals of lymphedema therapy (the what, why, where and how to's)
- Diaphragmatic breathing
- Manual therapy techniques for drainage including “clearing” and “flowing,” aka “sweeping”
- Exercise
- Considerations towards diet, skin and nail care, and activities of daily living
- Precautions and general activities to either do or avoid to prevent exacerbations
- Compression wraps with short stretch bandages and compression garments (Ted hose and ace bandages are not compression therapy)
- How to don compression wraps and garments
- ***Lymphedema is a LIFELONG condition – there is no cure – but it CAN BE prevented, reduced, and managed successfully! EMPOWERING & giving individuals the resources to take control of their own care is VERY important!***

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CONSIDERATIONS FOR GENERAL PRACTICE

TREATING THOSE AT RISK FOR LYMPHEDEMA OR WHO ARE LIVING WITH LYMPHEDEMA

IDENTIFICATION

- Prevention is often key for both Lymphedema and Lipedema
- Early intervention is more than removing fluid or decreasing limb size
- Patient's who have struggled with weight loss and fit characteristics of lipedema – are we identifying them and getting them the treatment and support they need soon enough?
- Individuals with a history of DVT's can be at increased risk
- Untreated lymphedema can lead to secondary complications that are hard to treat and can turn life threatening

PREVENTION – CONSIDERATIONS FOR CANCER SURVIVORS

- Breast Cancer Survivors ¹⁶
 - Previously believed that treatment for lymphedema can wait until patients reported symptoms or swelling became visible
 - Now believed treatment should not wait until person is symptomatic or lymphedema is visible
 - Early detection and treatment may reverse the progression of lymphedema to a chronic, irreversible lymphedema ⁸
- Cervical Cancer ¹⁵
 - Cervical cancer is 4th most common cancer of women in the world
 - Mean age of those diagnosed is 49 years
 - One study noted lymphedema to be the most disabling complication of treatment among cervical cancer survivors
 - Multiple studies
- Oral/Facial Cancers
 - Swelling may not be as visible, but still can lead to increased impairment and discomfort

LIVING WITH LYMPHEDEMA – BADL'S

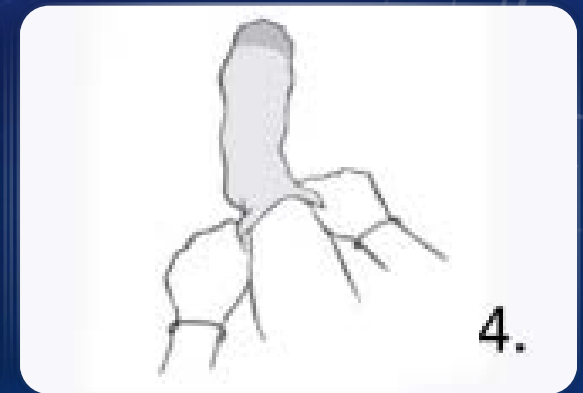
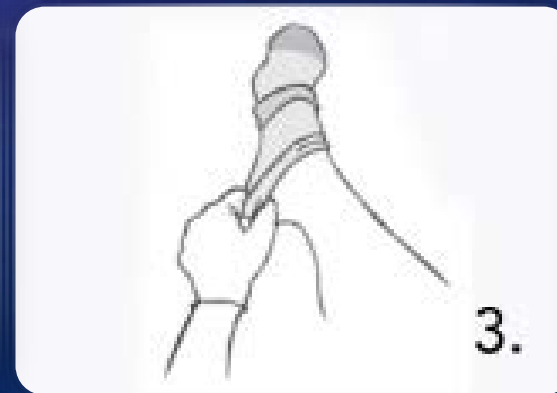
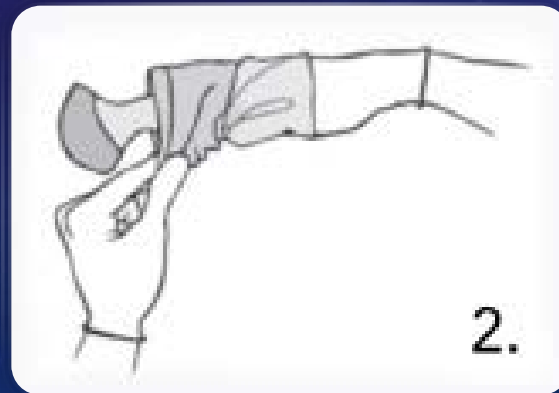
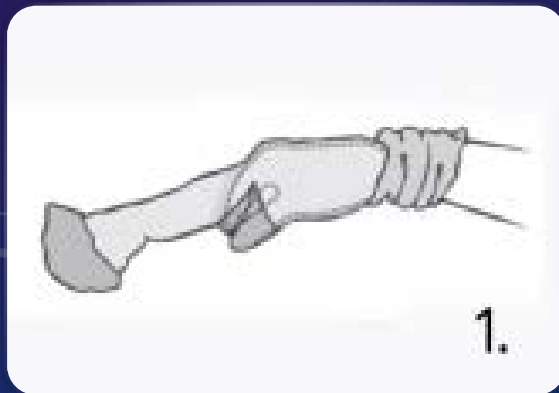
- Nail Care
- Skin Care & Hygiene
- Dressing
- Jewelry
- Donning Compression Stockings –
 - Alps Silicone Gel
 - Jobst “It Stays”
 - Therafirm has a great tutorial and you tube video

TIPS FOR PUTTING ON GRADIENT COMPRESSION

(FROM [HTTPS://WWW.THERAFIRM.COM/DONNING-TIPS](https://www.therafirm.com/donning-tips))

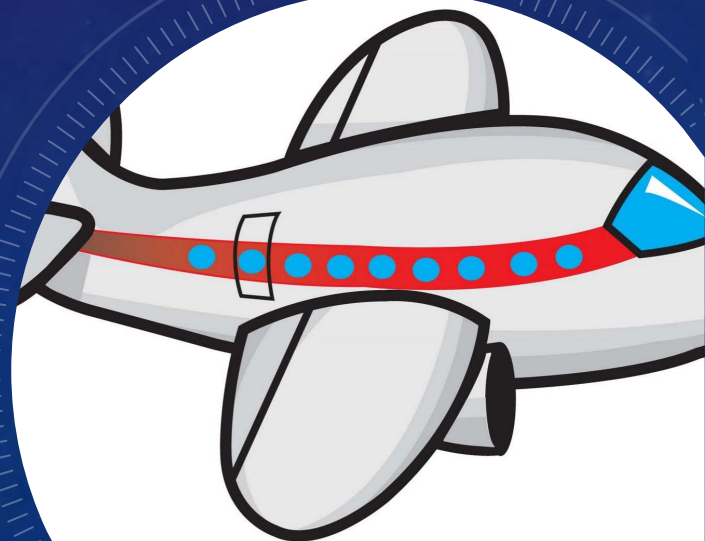
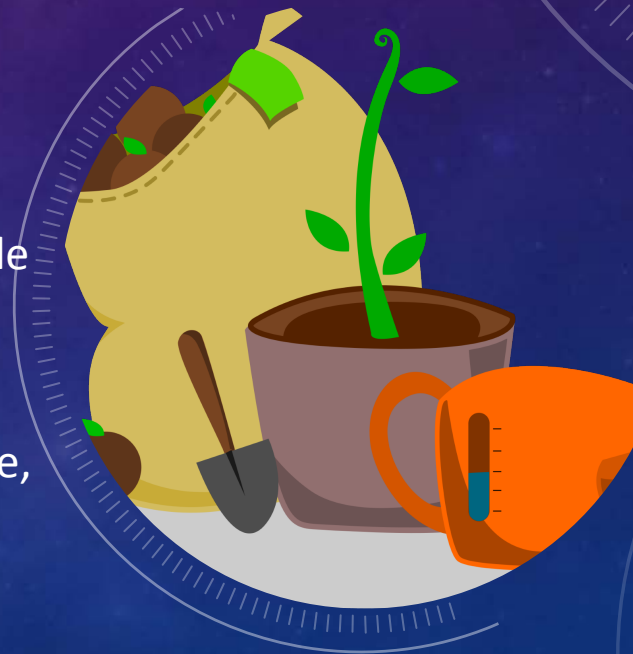
For many men and women that have never worn compression hosiery, putting on your new stockings can be difficult. Compression hosiery has more resistance or compression than traditional pantyhose hose or stockings. Because they fit more snug, they are a little more difficult to put on. Below are a few tips to help you don, or put on, compression stockings.

- Insert hand and grab stocking at top of heel pocket.
- While still holding heel pocket, turn top of stocking down towards toe.
- Open stocking and slide foot in until toe and heel are positioned in place.
- **For Knee-highs:** Grasp top of stocking and pull up over ankle and calf. Position tops approximately 1" below bend of knee. **For Pantyhose and Tights:** With crotch in a snug, comfortable position, stretch panty hose with both hands. Adjust waist band to preferred position either folded under the belly or pulled up and over the belly
- Video tutorial: <https://www.youtube.com/watch?v=nNbmNuzlO98&feature=youtu.be>



LIVING WITH LYMPHEDEMA – IADL'S

- Work – Do they engage in strenuous activities, repetitive motion, sedentary tasks?
- Home Life – What type of responsibilities at home? Meal prep? Laundry? Yard work? Child care?
- Gardening – Do they deal with thorny bushes? Is skin protected? Ergonomics?
- Traveling – Travel by air? Car?
 - The NLN has a position paper on Air Travel⁷ – Compression should be worn in confirmed lymphedema cases and may be beneficial in people at risk
- Pet care – Do they have animals that scratch or bite?
- Sewing & Crafts – Do they use tools that could puncture, burn or crush skin such as needles, hot glue guns, hammers, etc?
- Recreation & Leisure – scuba diving, hot tubs, saunas, sunbathing, the great outdoors – and bugs....
- Exercise & Sports



EXERCISE & LYMPHEDEMA

- Certain types of exercise are an important component part of Lymphedema Therapy (remedial exercise, flexibility and stretching)
- Physical fitness and healthy weight maintenance are important
- Lifelong exercise is important to long-term maintenance and health



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NLN POSITION PAPER ON EXERCISE⁶

- Resistance or Weight Lifting Exercise –
 - Isometric or isotonic
 - Can be done with individuals with lymphedema, but rules apply
 - “Resistance exercise should be done cautiously, starting with low weights, low repetitions, and gradual progression”
 - Compression garments should be worn during resistance exercise
 - Studies with breast cancer-related edema and exercise overall support benefits to overall health without harmful effects on lymphedema
- Aerobic Conditioning or Cardiopulmonary Exercise –
 - Includes walking, jogging, cycling and swimming
 - Has not been studied formally as a treatment for lymphedema, but one study showed no adverse effect on lymphedema
 - Aerobic conditioning is considered beneficial to individuals with lymphedema due to benefits it has on cardiovascular fitness, effective weight management and overall health and well being

NLN POSITION PAPER ON EXERCISE - SUMMARY⁶

- Exercise is a part of a healthy lifestyle and is essential for effective lymphedema management
- Before starting any exercise program, individuals should be cleared for the program of activity by their physician
- Lymphedema Exercises (aka Remedial exercises) are specific rhythmic muscle and breathing exercise in Phase 1 and Phase 2 CLT; in phase 2, these can be combined with or integrated into a regular exercise program
- After intensive treatment with CDT, the person with lymphedema should work with the CLT or qualified provider to adapt their remedial exercises into fitness and weight management
- Individuals with or at risk for lymphedema should perform aerobic and resistance exercises in a safe manner
- Individuals with or at risk for lymphedema may benefit from working with an OT practitioners or PT practitioner to design a safe exercise program. If individual chooses to work with an Exercise Physiologist or Personal Trainer, they should inquire on if they have experience in working with lymphedema and other medical conditions as certifications and trainings vary.

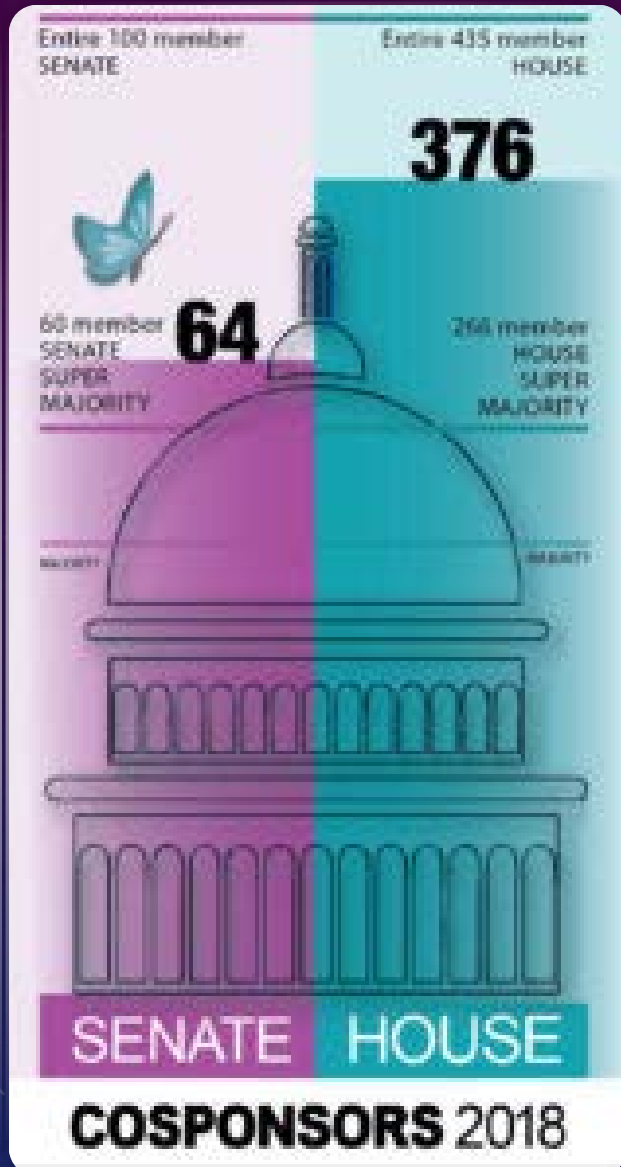
NLN POSITION PAPER ON EXERCISE - SUMMARY⁶ (CONTINUED)

- Individuals with confirmed diagnosis of lymphedema should utilize compression garments or bandages during exercise
- Individuals at risk for lymphedema may or may not use compression garments during exercise; use clinical judgement and individual's personal factors to determine
- Individuals at risk for lymphedema will benefit from most forms of exercise tailored to their individual needs
- Individuals at risk for or with confirmed lymphedema should avoid repetitive overuse of the affected part. Sudden increase in exercise duration or intensity may trigger or worsen lymphedema symptoms
- Exercise should be started gradually, increased cautiously, and stopped for pain, increased swelling or discomfort
- The risks of exercise must be balanced against the risks of deconditioning
- The NLN cannot specifically determine the safety of exercise for any individual. The guidelines provide general principles, but do not substitute for medical evaluation and recommendations from a qualified health care professional.



ADVOCACY & OTHER HELPFUL LINKS

THE LYMPHEDEMA TREATMENT ACT, USEFUL WEBSITES & PRODUCT VENDORS



LYMPHEDEMA TREATMENT ACT

- The Lymphedema Treatment Act (LTA) is a federal bill that aims to improve insurance coverage for the medically necessary, doctor-prescribed compression supplies that are the cornerstone of lymphedema treatment. <https://lymphedematreatmentact.org/>
- House Status: <https://www.congress.gov/bill/115th-congress/house-bill/930/cosponsors>
- Senate Status: <https://www.congress.gov/bill/115th-congress/senate-bill/497/cosponsors>

HELPFUL LINKS

- <https://lymphedematreatmentact.org/>
- www.lymphedivas.com
- www.Vim&Vigr.com
- www.Brightlightdirect.com
- www.omnimedical.com
- www.juzo.com
- www.jobst.com
- www.tactilemedical.com
- www.phlebology.org
- www.nih.gov
- www.lymphnet.org
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