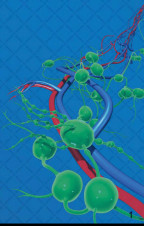


# STRENGTH

*After Breast Cancer*

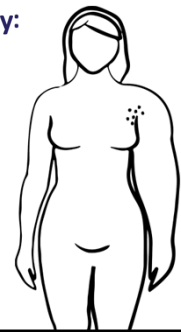
Part 2  
Lymphedema  
Education  
Session



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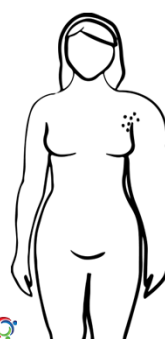
### Questions we will answer today:

- What is lymphedema?
- Who is at risk?
- When is it likely to occur?
- Why does it happen?
- How do I reduce my risk?
- How is it treated?
- What are the exercise guidelines?



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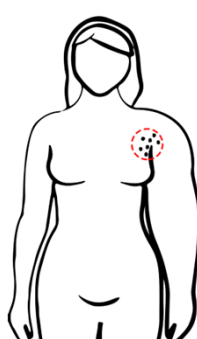
### What is lymphedema?



- Lymphedema is an abnormal accumulation of protein-rich fluid in the tissue which can result in swelling of a body part and fibrosis.
- It only impacts region of body affected by lymph node removal/damage
  - Upper body for breast cancer survivors
  - Lower body for endometrial cancer survivors

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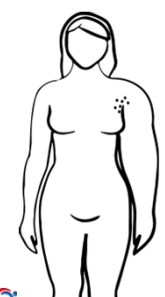
### Who is at risk?



- Removal of lymph nodes
- Damage to the lymph system
- Other factors
  - Obesity
  - Poor diet

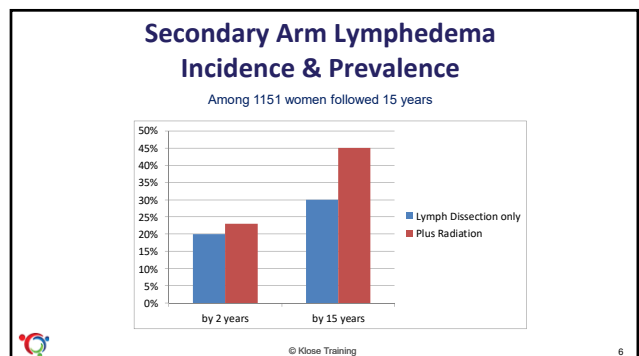
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### How is lymphedema acquired and how rapidly?



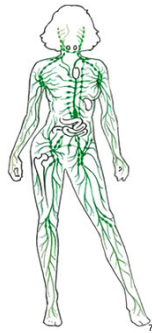
- Once lymphatics are removed or damaged, lymphedema may occur at any time.
- Occurs most often within 3 years of breast cancer treatment.
- Lymphedema usually occurs slowly and steadily.

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## What does the lymphatic system do?

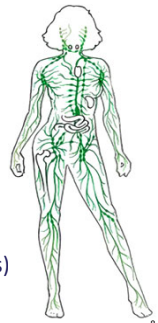
- Surveillance against cancer/infection
- Balances fluid and proteins in the circulatory system by transporting approximately 6 liters of lymph fluid per day
- Assists fat digestion



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## Functions of the Lymphatic System (continued)

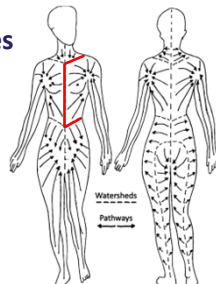
- Transports proteins
- Removes excess water
- Absorbs fat molecules from the gut
- Removes cellular debris and foreign material (e.g. bacteria, viruses, cancer cells)



© Klose Training

## Lymphatic Drainage Territories of the Skin

The AT RISK region is the region where nodes were removed and the tissues that were draining lymph fluid toward those nodes.



Superficial Lymphatic Drainage Pathways of the Skin



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## Fluid and Molecular Exchange at the Blood Capillary

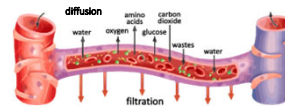


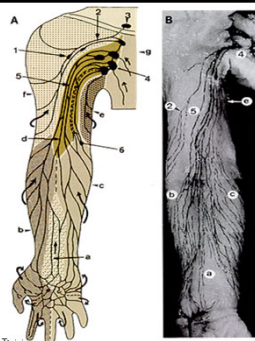
Illustration of diffusion and filtration across the blood capillaries

- Diffusion is the most important process for the nourishment of the tissues.
- Filtration is the movement of fluid from the capillaries to the interstitium (tissues)



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## UE (Arm) Lymph Drainage

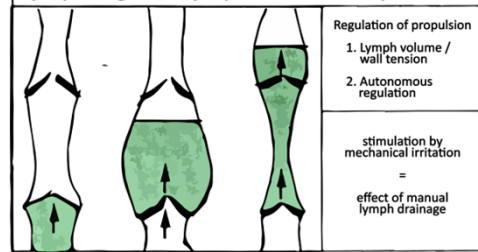


Földi's Textbook of Lymphology 2012



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## Lymphangion - Lymph vessel transport unit

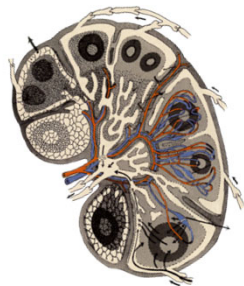


Frequency in resting: 6-10 beats/minute; Increases 10x with exercise



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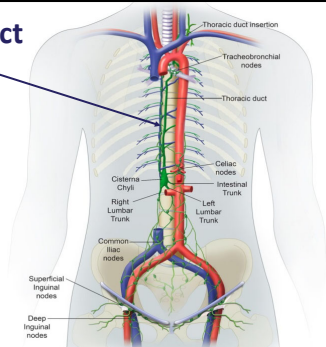
## Lymph Node



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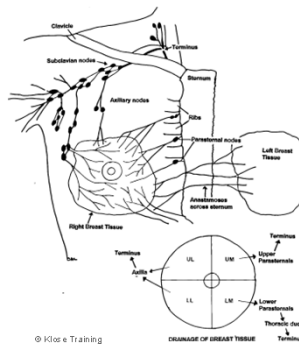
## Thoracic Duct



ScienceDirect.com

14

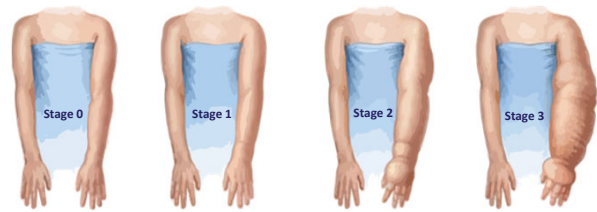
## Breast Lymphatic Drainage



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## Stages of Lymphedema



- Stage 0** - latent, sub-clinical
- Stage 1 (spontaneously Reversible)** - present during the day sometimes goes away overnight - Pitting starts between stage 1 & 2
- Stage 2 (spontaneously irreversible)** - Lymphedema is still present after a night's rest even if improved
- Stage 3 (Lymphostatic Elephantiasis)** - Rarely seen in Breast Cancer

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## Breast Cancer Related Lymphedema (BCRL)

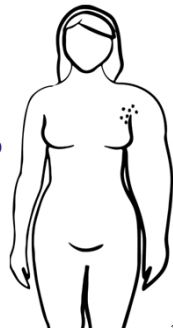


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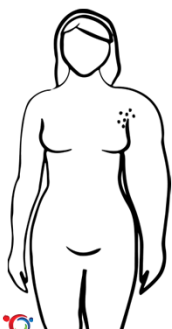
## What changes occur with an altered lymph system?

- Excess protein in the tissues
- Accumulation of excess fluid in the limb
- Decreased oxygenation
- Slow tissue healing time
- Formation of fibrosis



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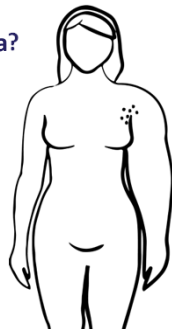
### What does lymphedema feel like?

- Tightness or heaviness in the limb
- Achy
- Pins and needles
- Tenderness in the elbow
- 'Odd' sensations
- "Pain of congestion"
- Discomfort
- NOT "Unbearable pain"  
Unbearable pain may be indicative of:
  - malignant lymphedema
  - radiogenic plexopathy
- NOT muscle soreness  
Let's discuss the difference...


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### How can you reduce your risk of developing/worsening lymphedema?

- Lymphedema risk reduction practices
  - Screening
  - Reporting changes/infections
  - Body weight
  - Skin care
  - Exercise
  - Avoiding Trauma/Constriction
  - Compression garments (if appropriate)
  - Avoiding Extremes of Temperature
  - Care with surgeries on affected side



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### Screening


- Get regular check ups with a professional with lymphedema training
  - Timing determined by your risk level
  - Higher risk, more frequent

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### Reporting changes/infections

- Notice whether the affected side:
  - Increases in size
    - Report an increase in size to your CLT
  - Changes in sensation, color, temperature, or skin condition
  - Gets infected (red, warm, elevated body temperature)

**REPORT CHANGES THAT MAY INDICATE INFECTION TO A PHYSICIAN OR EMERGENCY ROOM!**



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### Body Weight

- Excess body weight is a risk factor for lymphedema.
  - If you do not have lymphedema, maintaining a healthy body weight will reduce your risk of onset
- **HOWEVER**, research shows that 8% weight loss does not result in reduced arm swelling in those already diagnosed with lymphedema
  - If you are already diagnosed, be aware that weight loss may not improve arm swelling

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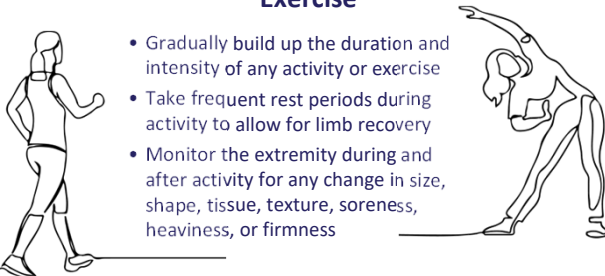
### Skin Care



- Avoid trauma/injury and reduce infection risk
- Keep arm clean and dry
- Apply moisturizer daily to prevent chapping/chafing
- Attention to nail care; Do NOT cut cuticles
- Protect exposed skin with sunscreen and insect repellent
- Use care with razors to avoid nicks and skin irritation (shave axilla with electric razor)
- If possible, avoid punctures such as injections and blood draws
- Wear gloves while doing activities that may cause skin injury
- If scratches/punctures to skin occur, wash with soap and water, apply antibiotics, and observe for signs of infection
- If a rash, itching, redness, pain, increased skin temperature and swelling, fever, or flu-like symptoms occur, contact your physician immediately

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### Exercise




- Gradually build up the duration and intensity of any activity or exercise
- Take frequent rest periods during activity to allow for limb recovery
- Monitor the extremity during and after activity for any change in size, shape, tissue, texture, soreness, heaviness, or firmness

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### Avoid Trauma/Limb Constriction

- If possible, never have blood pressure taken on the arm at risk
- Wear loose fitting clothing and jewelry
- Trauma can include:
  - Cuts
  - Cut cuticles
  - Falls and fractures



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### Compression Garments

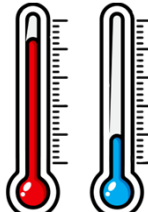


- IF NEEDED
- Should be well fitting
- Support the limb with lymphedema for strenuous activity (e.g. weight lifting!)
- If you have lymphedema, wear a well fitting compression garment for air travel

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### Extremes of Temperature

- Avoid exposure to extreme cold, which can be associated with rebound swelling, or chapping of skin.
- Avoid prolonged (> 15 minutes) exposure to heat, particularly hot tubs and saunas
- Avoid immersing limb in water temperatures above 102 degrees



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### Care with Surgery

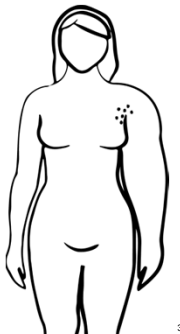


- Evaluate the affected limb prior to surgery
- Ask how long swelling should last after surgery
- Work with your lymphedema therapist to revise your care if needed, post surgery

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### What can you do if you develop lymphedema?

- Get evaluated by your doctor or certified lymphedema therapist (CLT).
- Earlier treatment results in faster response to treatment thereby decreasing the length of therapy.



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## Training of Lymphedema Therapists

**Handout from NLN**

- Be sure your therapist meets these minimum requirements

**nlm**  
National Lymphedema Network

**Position Statement of the National Lymphedema Network**

**Training of Lymphedema Therapists**  
As per NLN Medical Advisory Committee, Modified

The purpose of this statement is to provide a minimum standard for the training of lymphedema therapists. This standard is based on the current state of the profession and is intended to be a minimum standard. It is not intended to be a maximum standard. The NLN Medical Advisory Committee reserves the right to update this statement as needed.

**Education:** A minimum of a Bachelor's degree in a health-related field is required. A minimum of a Master's degree is preferred. The degree should include coursework in anatomy, physiology, pathology, and lymphology. A minimum of 30 credit hours of lymphology coursework is required. The NLN Medical Advisory Committee reserves the right to update this requirement as needed.

**Experience:** A minimum of 1 year of supervised clinical experience in lymphedema therapy is required. The experience should include a minimum of 1000 hours of direct patient care. The NLN Medical Advisory Committee reserves the right to update this requirement as needed.

**Certification:** A minimum of a certification in lymphedema therapy is required. The certification should be issued by a recognized professional organization. The NLN Medical Advisory Committee reserves the right to update this requirement as needed.

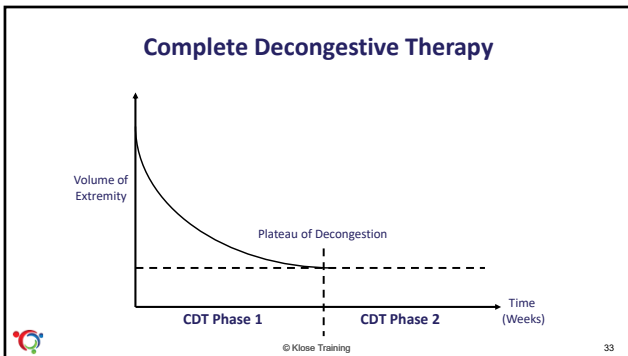
**Continuing Education:** A minimum of 10 hours of continuing education in lymphedema therapy is required annually. The NLN Medical Advisory Committee reserves the right to update this requirement as needed.

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## How is lymphedema treated?

**Complete Decongestive Therapy (CDT) is an effective therapy for lymphedema and other swelling disorders.**

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## Complete Decongestive Therapy

<p><b>Phase 1: Decongestion</b></p> <ul style="list-style-type: none"> <li>Meticulous Skin Care</li> <li>Manual Lymph Drainage (MLD)</li> <li>Gradient Compression Bandaging</li> <li>Remedial Exercises</li> <li>Compression Garments</li> </ul>	<p><b>Phase 2: Self-Care (Maintenance)</b></p> <ul style="list-style-type: none"> <li>Meticulous skin Care</li> <li>Compression Garment (daytime)</li> <li>Gradient Compression Application (nighttime)</li> <li>Self-MLD</li> <li>Remedial Exercises</li> <li><b>Follow-up Assessment</b></li> </ul>
---	---

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## Meticulous Skin & Nail Care

- Low pH, gentle soaps
- Moisturizer (low pH also recommended)
- Do not cut cuticles in manicures
- Prevents infection
- Keeps skin working optimally

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## Manual Lymph Drainage

Expert Stretching of the Skin

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### Manual Lymph Drainage

- Drains the congested areas
- Reduces the risk of infection
- Normalizes the size and pressure in the limb
- Reduces pain/discomfort



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### Compression Therapy



Gradient, short-stretch bandaging



Medical Compression Garment



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### Gradient Compression Bandaging

- Decreases the filtration rate
- Prevents re-accumulation of fluid
- Softens fibrosis
- Provides external counter pressure during exercise

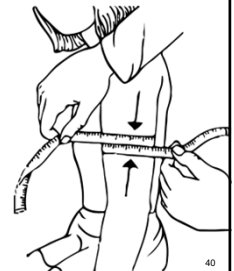


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### Garment Measurement

- Should be custom fitted
- Take serial measurements over time (every 6 months) to ensure the garment still fits



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### Patient with BCRL Before and After CDT



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### Custom Compression Garment



Eslihy-Jobst Confidence Custom Compression Garment



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## Summary of Guidelines

	During Treatment		Post Treatment	
	Aerobic	Resistance	Aerobic	Resistance
ACSM	30 min 3x weekly	2x weekly	150-300 min/weekly	2x weekly
ACS	Recommended but not specific		150-300 min/weekly	No comment
ASCO	Recommended	Recommended	Not the focus of the guideline	



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## What does exercise help?

STRONG Evidence	MODERATE Evidence
Anxiety	Bone Health
Depressive Sx	Sleep
Fatigue	
HR-QOL	
Lymphedema	
Physical Function	



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## Strength After Breast Cancer

- Based on a large clinical trial conducted at Penn
  - 154 survivors WITHOUT lymphedema
  - 141 survivors WITH lymphedema
- Women who participated had these benefits:
  - 50% reduced likelihood of lymphedema worsening
  - 70% reduced likelihood of lymphedema onset among women with 5 or more nodes removed
  - Improved strength and energy
  - Improved body image
  - Reduced body fat
  - Prevented decline in physical function



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## For more information about lymphedema, visit:

- National Lymphedema Network (NLN) – [lymphnet.org](http://lymphnet.org)
- Lymphatic Education & Research Network (LE&RN) – [lymphaticnetwork.org](http://lymphaticnetwork.org)
- American Cancer Society (ACS) – [cancer.org](http://cancer.org)
- Moving Through Cancer Initiative of the American College of Sports Medicine – [exerciseismedicine.org/eim-in-action/moving-through-cancer](http://exerciseismedicine.org/eim-in-action/moving-through-cancer)



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