



# 11

## The Lymphatic System

# The Lymphatic System

- Learning Objectives
- Key Terms
- Lymph
- Lymph Vessel Network
- Lymph Nodes
- Lymph Formation and Movement
- Types of Edema

## Before we get started ...

- Why do you think physical movement can help keep your fluids flowing?
- If your ankles are swollen from standing all day, how could walking home help reduce that swelling rather than make it worse?

## Learning Objectives

Upon completion of this chapter, you will be able to:

- Discuss the importance of understanding fluid return and immune response as separate roles of the lymphatic system and how this relates to manual therapy practice. (Slides 7, 14, 23, 27, 29, 31, 35, 37, and 39)
- Name the primary components of lymph. (Slide 8)
- Identify the three categories of lymph vessels and describe their key structural features. (Slides 10 – 18)
- Explain the general structure and functions of a lymph node. (Slide 21)

## Learning Objectives (cont'd.)

- Explain the process of interstitial fluid uptake and distinguish this process from lymph flow. (Slides 25 – 28)
- Describe the key internal and external mechanisms that create and influence lymph flow. (Slides 28 – 31)
- Name and locate the primary lymphatic catchments and watersheds of the body. (Slides 30 and 31)
- Explain the different routes for lymph flow back into cardiovascular circulation for the torso and upper and lower extremities. (Slides 30 and 31)
- Compare and contrast three major categories of edema. (Slides 33 –40)



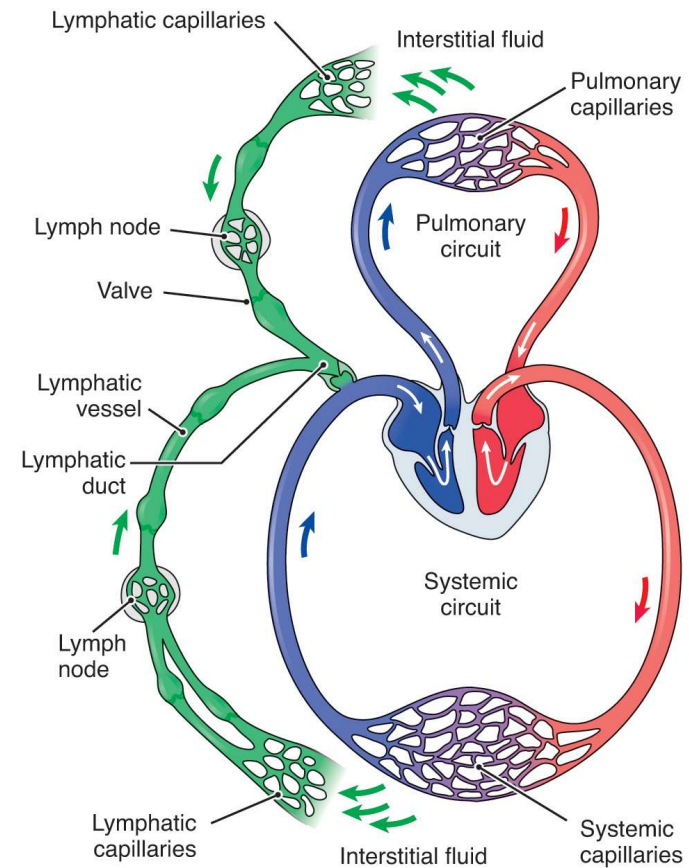
## Key Terms

- Anastomosis
- Anchor filaments
- Angion
- Angulus venosus
- Catchment
- Dynamic edema
- Edema uptake
- Lymphatic terminus
- Lymphedema
- Lymphotome
- Obligatory load
- Pre-lymphatic channel
- Traumatic edema
- Watershed



## Introduction

- Vascular network that returns interstitial fluids, large protein molecules, and cellular debris back to cardiovascular circulation
- Manual therapy may impact fluid flow and edema



# Lymph

- Extracellular fluid
- Obligatory load absorbed into lymph vessels
- Components
  - Water
  - Proteins
  - Cells including lymphocytes
  - Foreign substances
  - Long-chain fatty acids



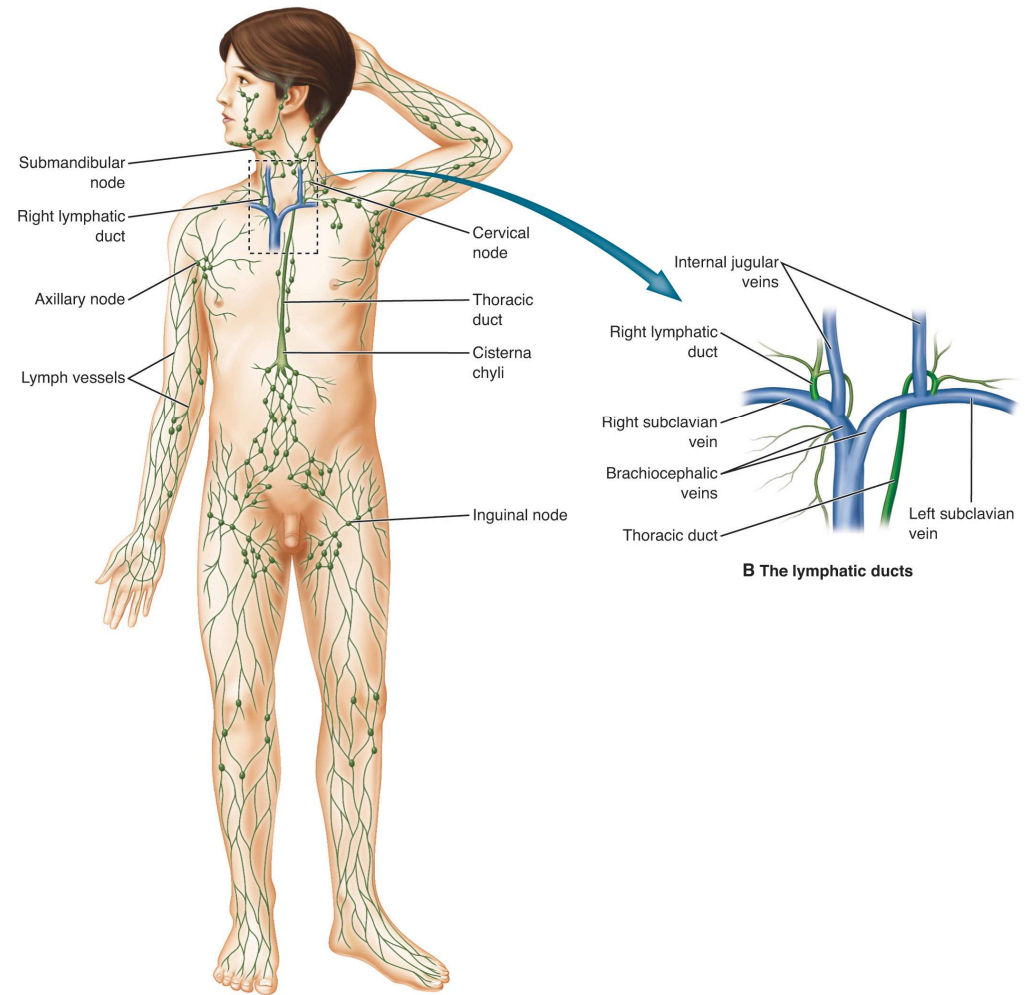
# What Do You Think?

Learning Objectives #1 and #2

- How would you summarize the cardiovascular and lymphatic systems' interdependent roles in circulating fluids throughout the body?
- Why do you think it is important to know that the lymph obligatory load is more than just water?

# Lymph Vessel Network

- Lymph Capillaries and pre-collectors
- Collector vessels
- Lymphatic trunks and ducts



A The lymphatic network

B The lymphatic ducts