

# Sports & Physical Education



# Lymphatic System

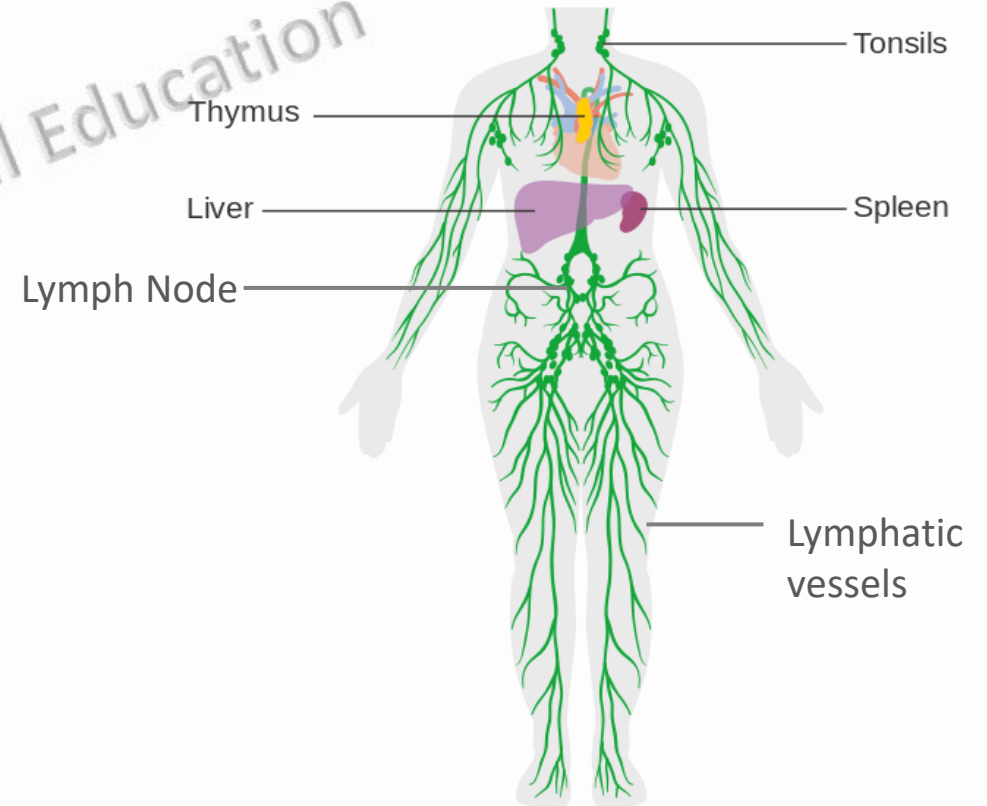
# Lymphatic System



- ❑ Circulatory system
- ❑ Immune System

Lymphatic vessels, tissues, organs, and glands work together to drain a watery fluid called lymph from throughout the body.

- The lymphatic system is a network of vessels, nodes, and ducts that pass through almost all bodily tissues. It drains fluid (called lymph) that has leaked from the blood vessels into the tissues and empties it back into the bloodstream via the lymph nodes. It keeps body fluid levels in balance and defends the body against infections.

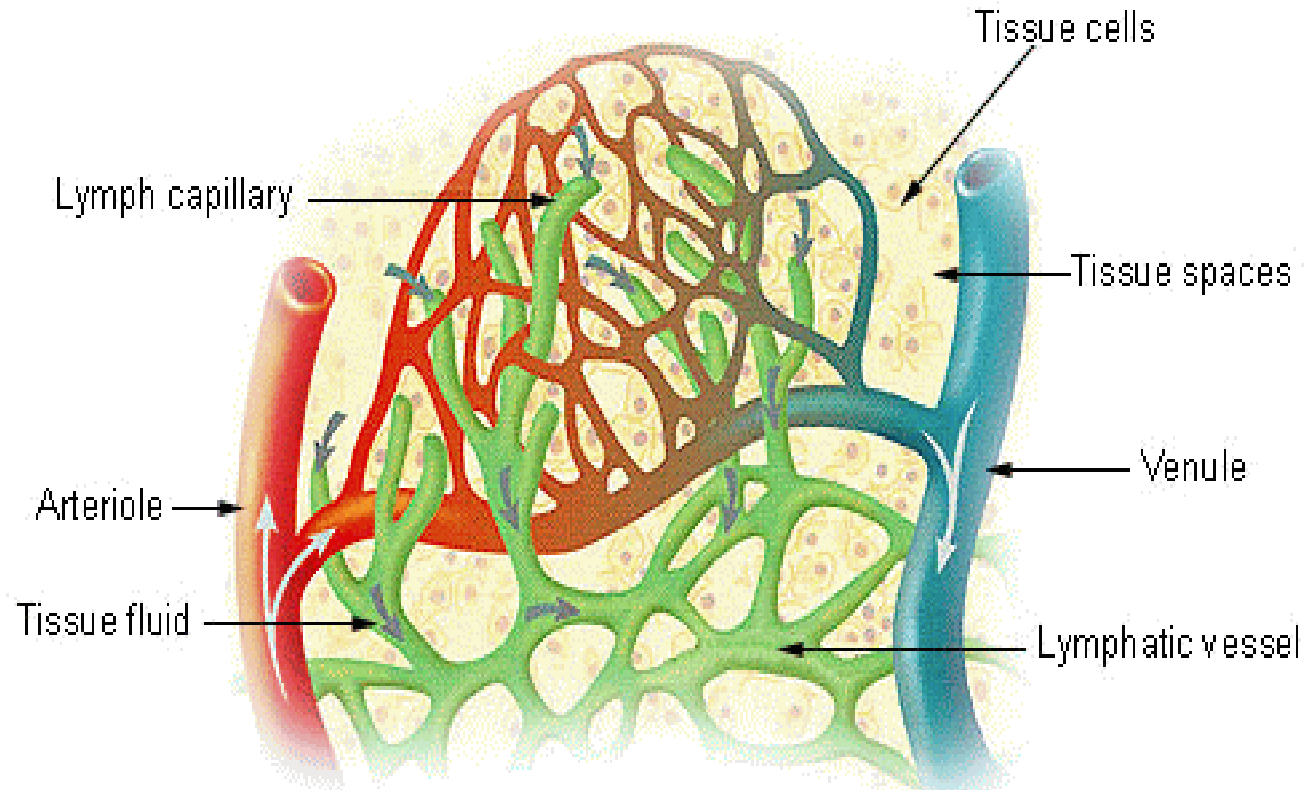




# Lymphatic System

## Lymph Capillaries in the Tissue Spaces

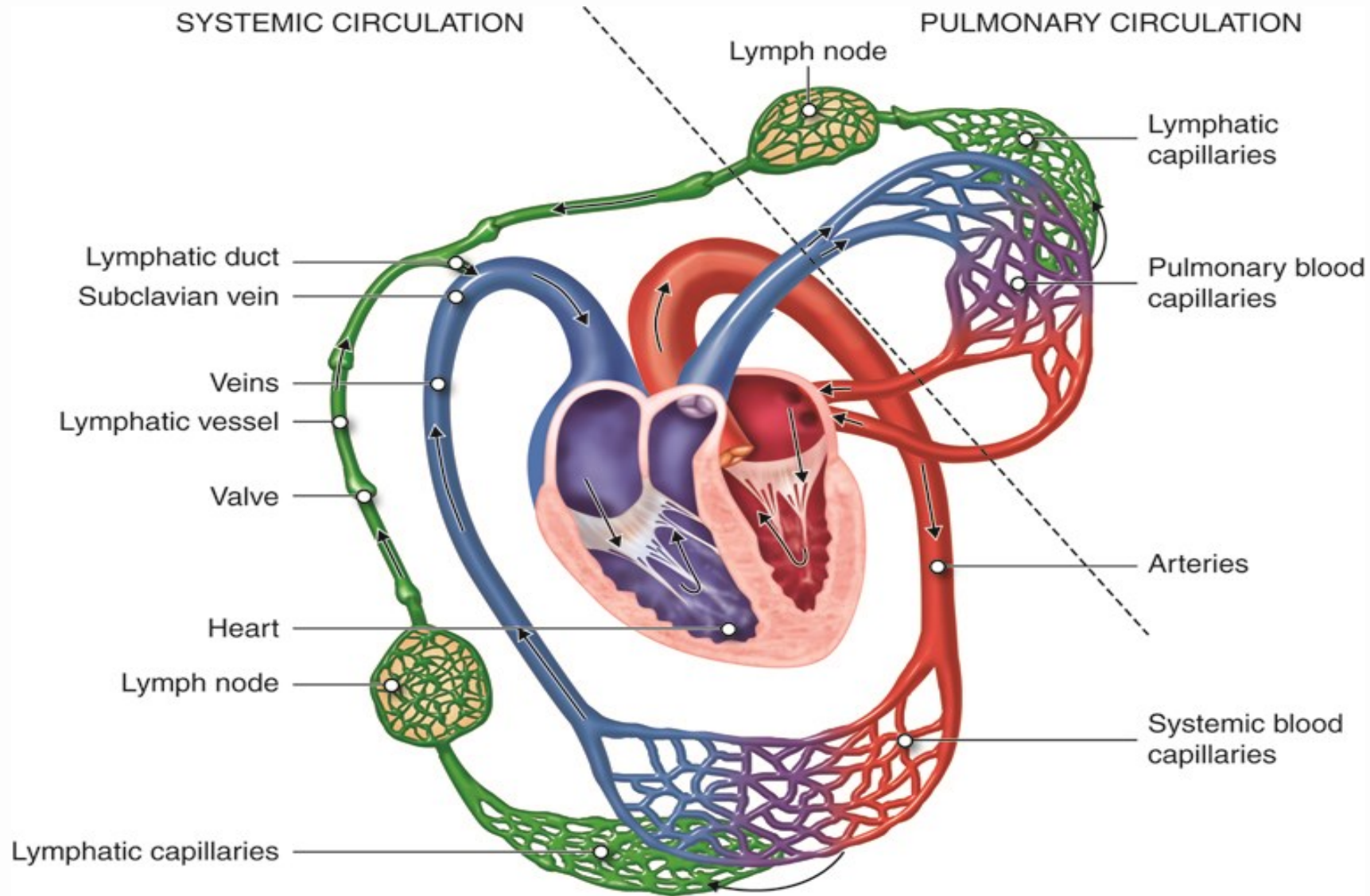
Oxygen & Nutrients



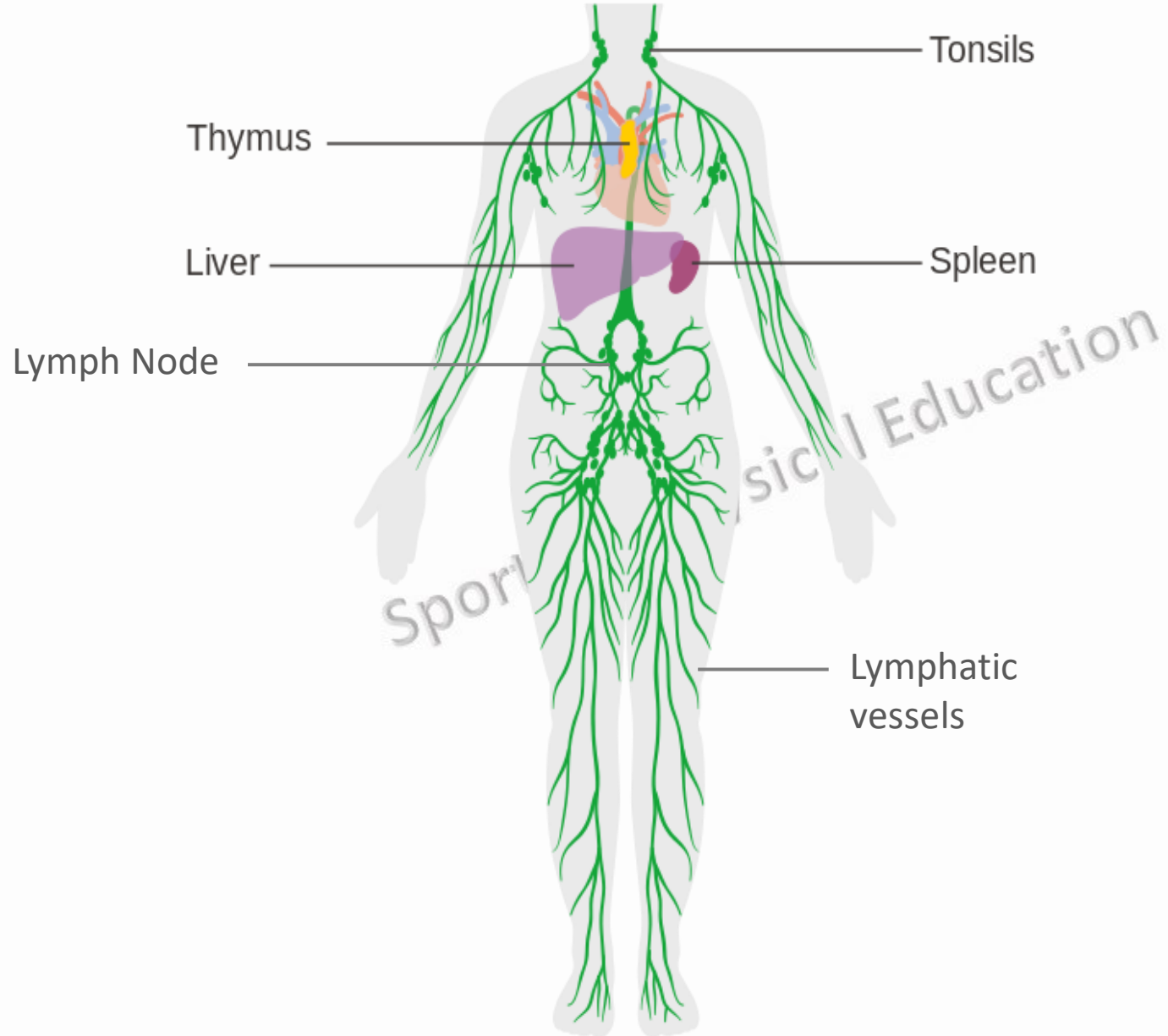
CO<sub>2</sub> & Waste

The human circulatory system processes an average of **20 liters of blood per day** through capillary filtration, which removes plasma from the blood. Roughly **17 liters of the filtered blood is reabsorbed** directly into the veins, while the remaining **3 liters are left in the interstitial fluid**. One of the main functions of the lymphatic system is to provide an accessory return route to the blood for the surplus three liters.

# Lymphatic System



# Lymphatic Organs



# Lymphatic Organs

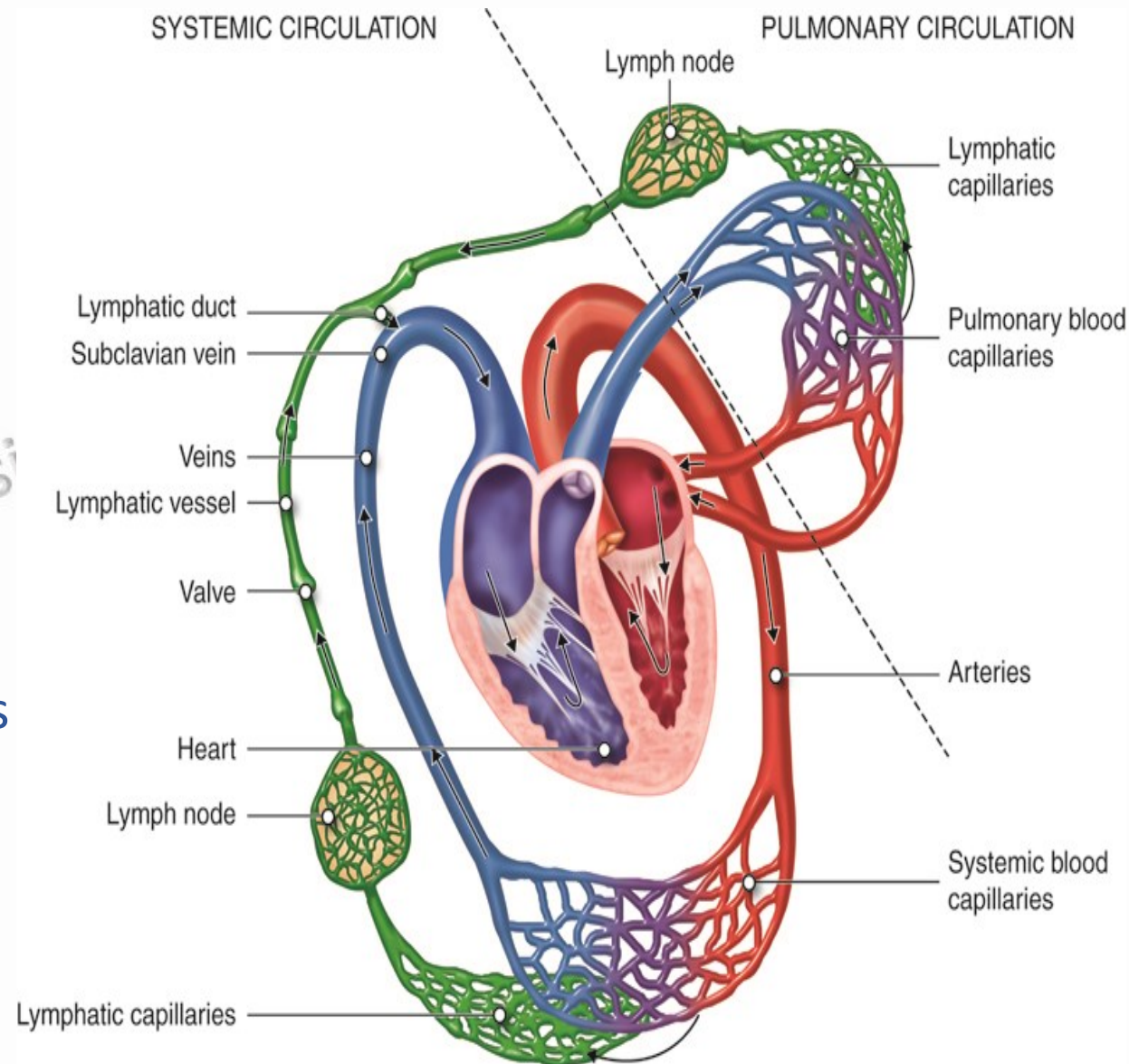


## Lymph-

Lymph is a colourless fluid that circulates throughout the lymphatic system. It carries lymphocytes throughout the body that fight against infections.

## Lymph Vessels-

Lymph or lymphatic vessels are the fine tubes carrying the lymphatic fluid and white blood cells all through the lymphatic system.



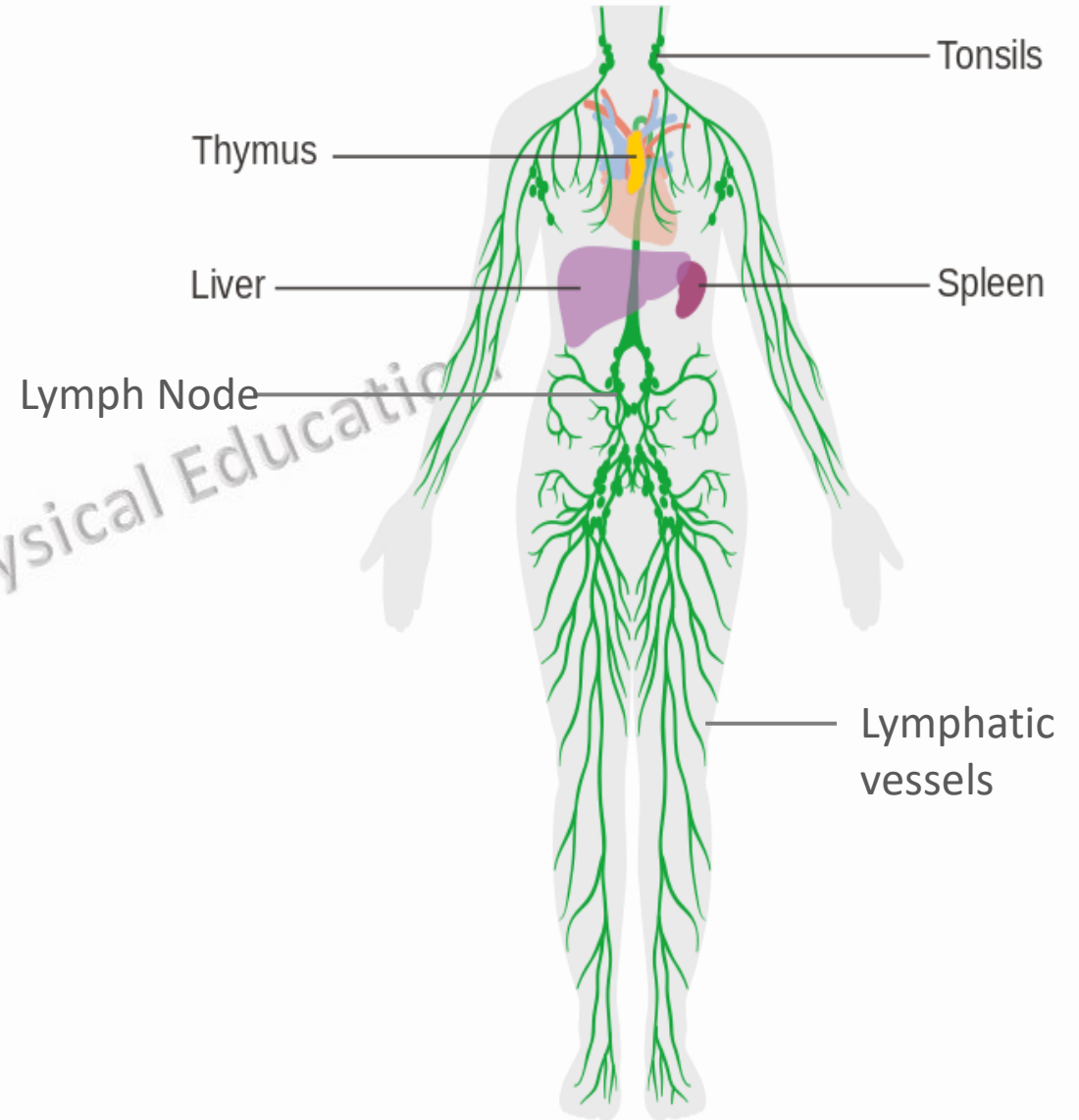


# Lymphatic Organs



## Bone Marrow-

Red bone marrow produces all red blood cells and platelets and around 60–70% of lymphocytes in human adults. Other lymphocytes begin life in red bone marrow and become fully formed in the lymphatic tissues, including the thymus, spleen, and lymph nodes.





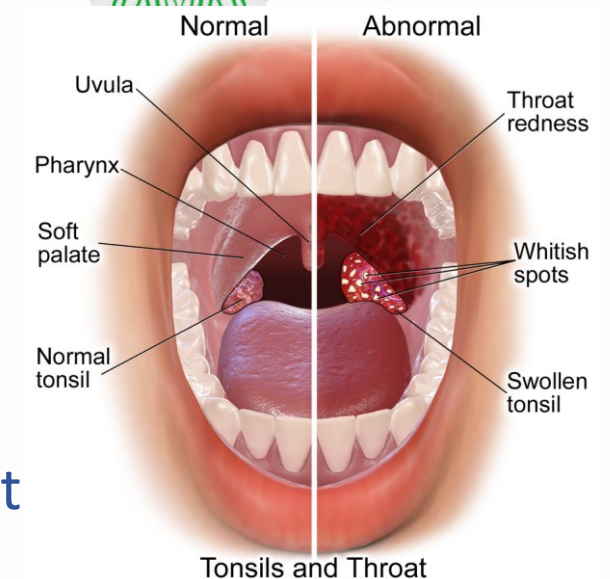
# Lymphatic Organs

## Thymus-

The primary function of the thymus gland is to train special white blood cells called T-lymphocytes or T-cells. White blood cells (lymphocytes) travel from your bone marrow to your thymus. The lymphocytes mature and become specialized T-cells in your thymus.

## Tonsils-

Part of your immune system, your tonsils are like lymph nodes. They help filter out germs that enter through your nose or mouth to protect the rest of your body from infection.



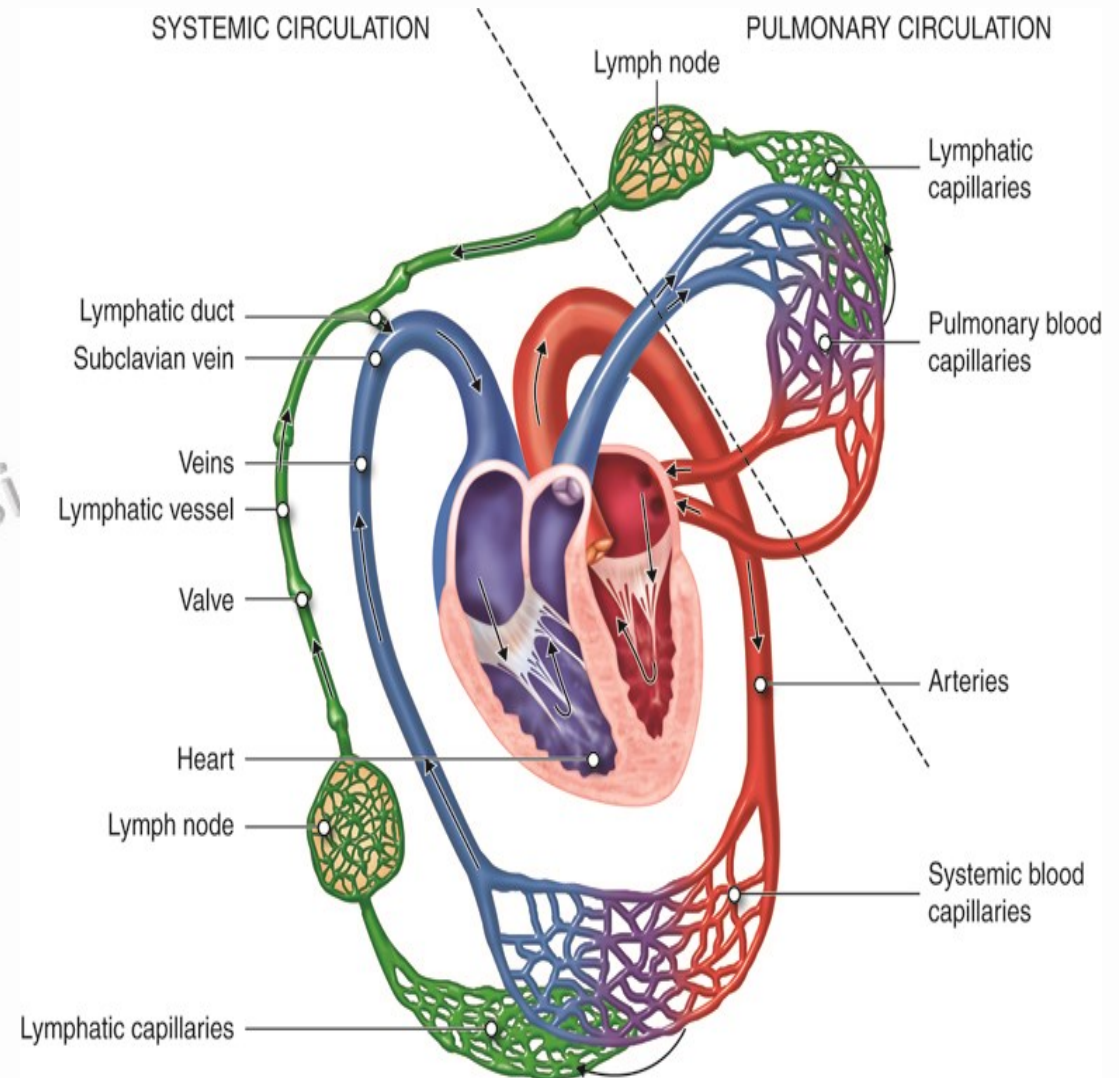


# Lymphatic Organs



## Lymph Node/Gland-

Lymph nodes **filter substances** that travel **through the lymphatic fluid**, and they **contain lymphocytes** (white blood cells) that help the body fight infection and disease. They are major sites of lymphocytes that include B and T cells. Lymph nodes are important for the proper functioning of the immune system, acting as filters for foreign particles including cancer cells.

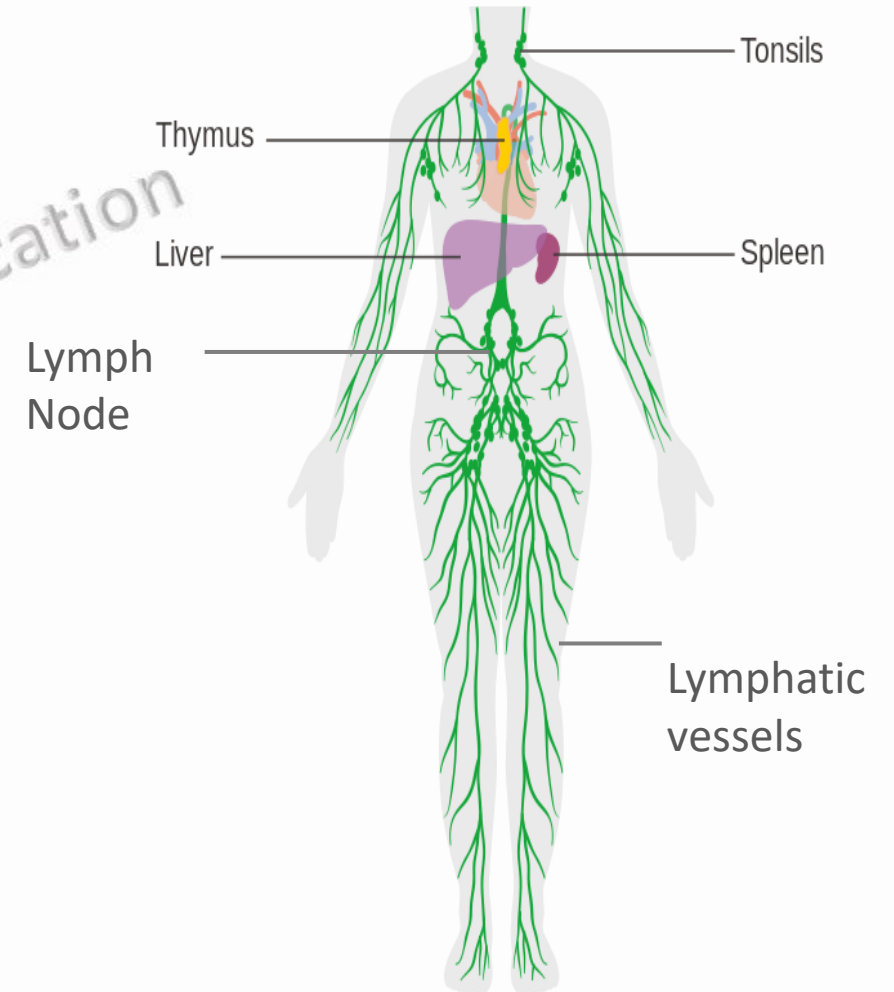




# Lymphatic Organs

## Spleen-

Spleen's main function is to act as a **filter for your blood**. It recognizes and removes old, malformed, or damaged red blood cells. Another useful purpose of your spleen is **storing blood**. spleen also plays an important part in your immune system, which helps your body fight infection. Just as it detects faulty red blood cells, your spleen can pick out any unwelcome micro-organisms (like bacteria or viruses) in your blood. **When one of these invaders is detected** in your bloodstream, your spleen, along with your lymph nodes, jumps to action and **creates an army of defender cells called lymphocytes**. Lymphocytes are a type of white blood cell that produces antibodies, special proteins that weaken or kill bacteria, viruses, and other organisms that cause infection.





# Thank You for Watching



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