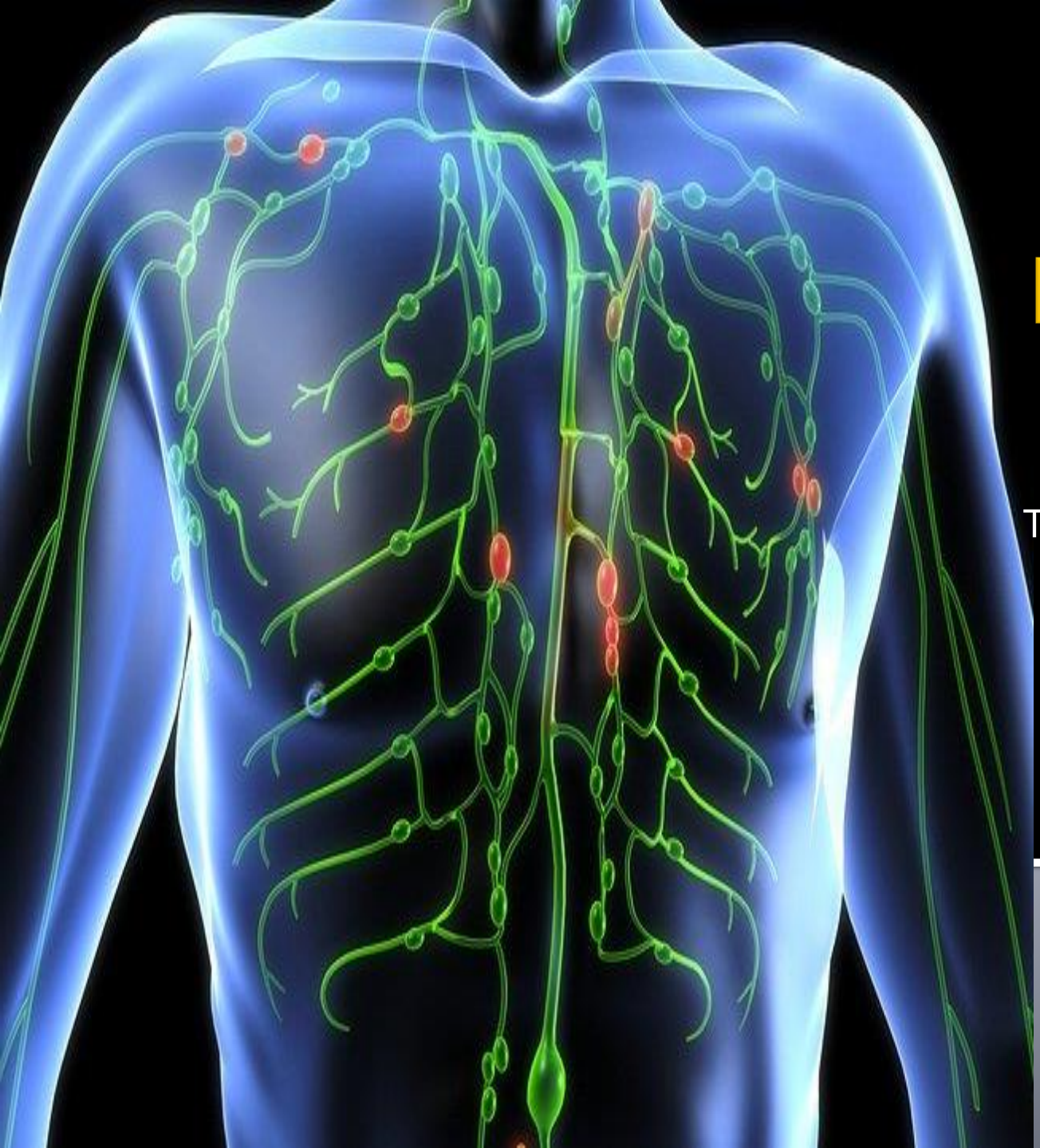

Physiology

Topic : Functions of Lymph and Lymphatic system

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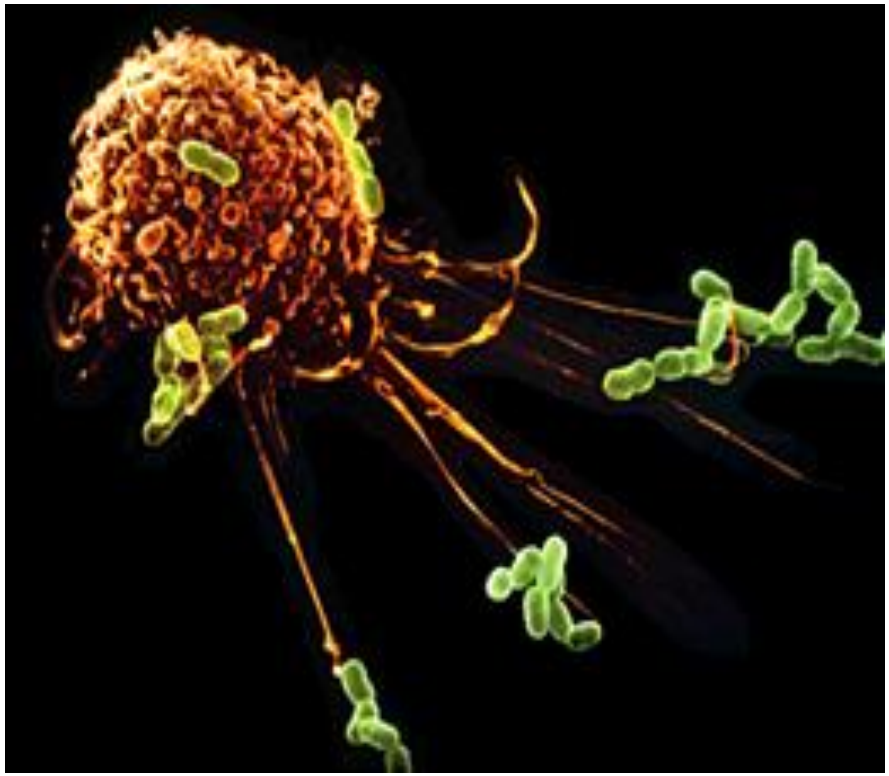
Functions of lymphatic system

1. The lymph transports antigen-presenting cells, such as dendritic cells, to the lymph nodes where an immune response is stimulated.
2. It absorbs and transports fatty acids and fats as chyle from the digestive system
3. It is responsible for the removal of interstitial fluid from tissues

1. Transport of antigen presenting cells

- When micro-organisms invade the body, or the body encounters antigens (such as pollen), antigens are transported to the lymph.
- Lymph is carried through the lymph vessels to regional lymph nodes.

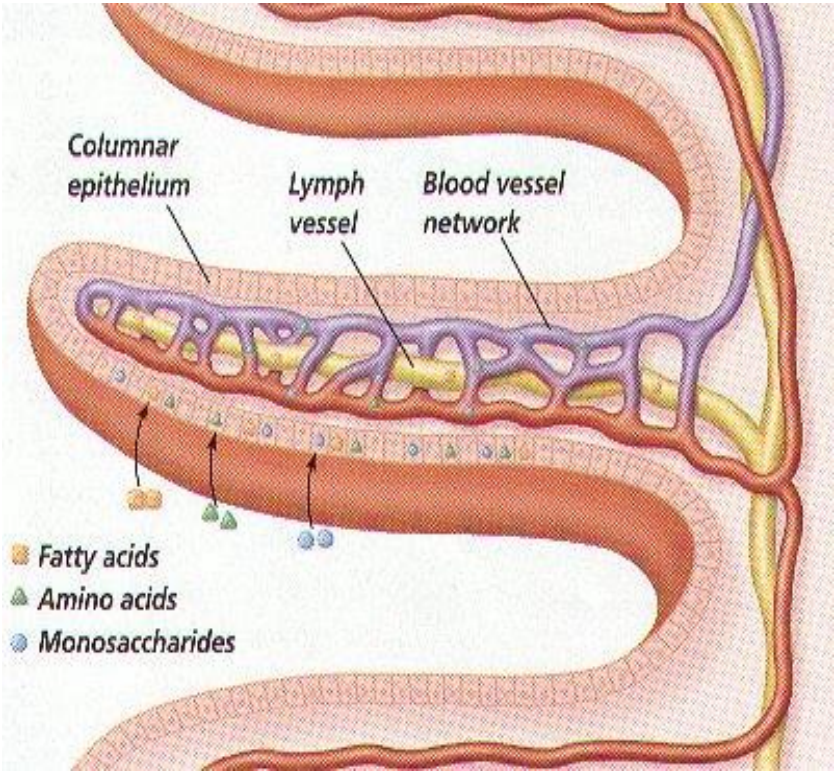


- In the lymph nodes, the macrophages and dendritic cells phagocytose the antigens, process them, and present the antigens to lymphocytes, which can then start producing antibodies or serve as memory cells.
- The function of memory cells is to recognize specific antigens in the future

2.Absorption of fatty acids

- Lymph vessels called lacteals are present in the lining of the gastrointestinal tract, predominantly in the small intestine.
- Fats (lipids) are passed on to the lymphatic system to be transported to the blood circulation via the thoracic duct.

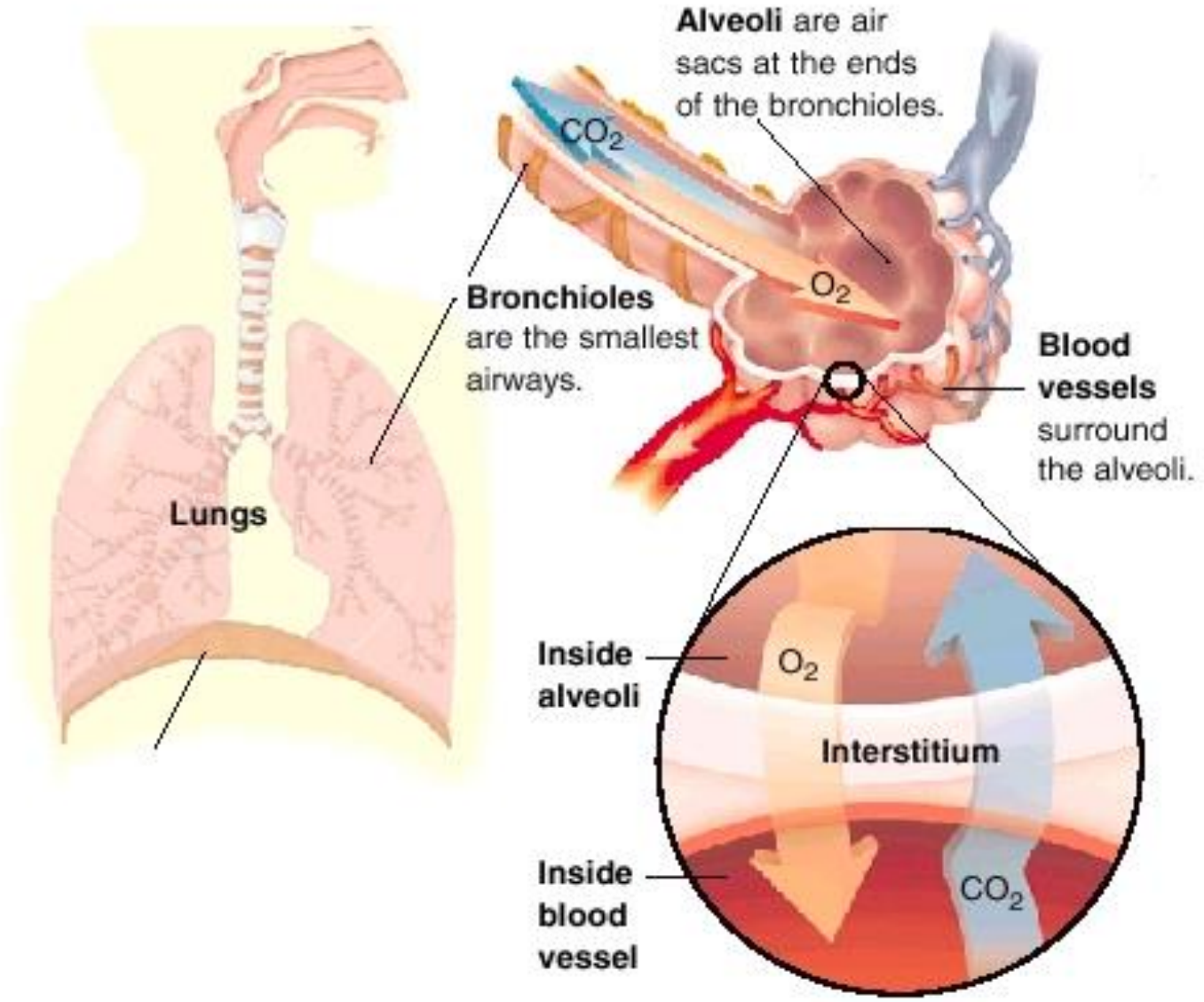
- Lymph mixed with lipids is called **chyle.** The nutrients that are released to the circulatory system are processed by the liver, having passed through the systemic circulation.



❖Role of Lymphatic Systems in

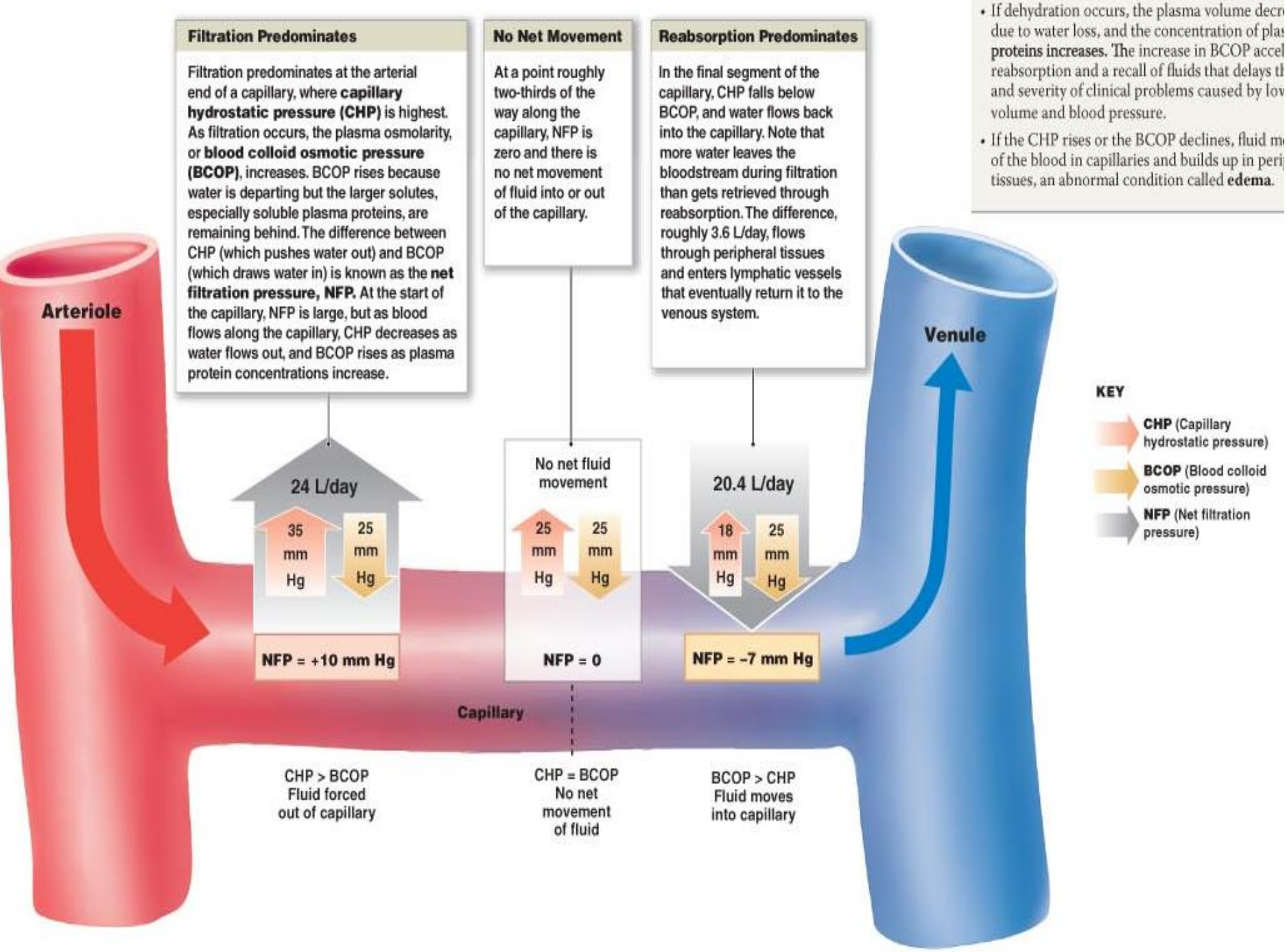
- Controlling interstitial Fluid Protein Concentration
- Interstitial fluid volume and
- Interstitial fluid pressure

❑These three factors interact each other n function out


Alveoli are air sacs at the ends of the bronchioles.
CO_2
O_2
Bronchioles are the smallest airways.
Blood vessels surround the alveoli.
Lungs
Inside alveoli
O_2
Interstitium
Inside blood vessel
CO_2

process is known as a **recall of fluids**.

- If dehydration occurs, the plasma volume decr due to water loss, and the concentration of plas **proteins increases.** The increase in BCOP accel reabsorption and a recall of fluids that delays th and severity of clinical problems caused by lov volume and blood pressure.
- If the CHP rises or the BCOP declines, fluid m of the blood in capillaries and builds up in peri tissues, an abnormal condition called **edema**.



Things to note

- As Hydrostatic pressure increases –fluid moves out – filtration takes place – slowly concentration of ions increases
- As ion concentration increases – colloid osmotic potential increases
- Thus at a point both HP and COP become equal
- But as COP increases – fluid move in – reabsorption take place

Process 1

- Small amounts of proteins leak continuously out of the blood capillaries into interstitium.
- Only minute amounts, if any, of the leaked proteins return to the circulation by way of the venous ends of the blood capillaries.
- Therefore, these proteins tend to accumulate in the interstitial fluid, and this in turn **increases the colloid osmotic pressure of the interstitial fluids.**

Process 2

- **the increasing colloid osmotic pressure** in the interstitial fluid shifts the balance of forces at the blood capillary membranes in favor of **fluid filtration into the interstitium**.
- Therefore, in effect, **fluid is translocated osmotically outward through the capillary wall** by the proteins and into the interstitium, thus increasing both interstitial fluid volume and interstitial fluid pressure.

Process 3

- the increasing interstitial fluid pressure greatly increases the rate of lymph flow.
- This in turn carries away the excess interstitial fluid volume and excess protein that has accumulated in the spaces.

Other complementing functions

- The lymph nodes swell in response to infection - so-called swollen glands - due to a build-up of lymph fluid, bacteria or other organisms and immune system cells.
- Lymph nodes may also become swollen due to direct infection and, rarely, cancer or other diseases or conditions.
- Lymph nodes are responsible for filtering lymph and providing part of the adaptive immune response to new pathogens - the part of our immunity that has a long "memory."

WHEN LYMPHATIC SYSTEM FAIL TO FUNCTION

- Disorders of the lymphatics include lymphedema, a form of swelling occurring when lymph has failed to drain through the lymph vessels.
- Swollen lymph nodes can indicate a response to foreign material such as from a nearby infection - this process is known as reactive lymphadenopathy.

- Lymph nodes can also become infected themselves, a condition known as lymphadenitis.
- If swollen lymph nodes do not return to their normal size, are hard or rubbery and difficult to move, are accompanied by fever, unexplained weight-loss, or difficulty breathing or swallowing, a check-up from a doctor is needed.

SUMMARY

The lymphatic system has three main roles:

- It is part of our immune system.
- maintains fluid balance and is essential for the absorption of fats and fat-soluble nutrients.
- Lymph vessels drain fluid from virtually all our tissues to control fluid balance and to deliver foreign material to the lymph nodes for assessment by immune system cells.

Thank
You