

What normally happens in a normal capillary under normal conditions? Why do some tissues accumulate fluid (inflammation, edema or glomerular filtrate)? How do we promote the reduction of interstitial fluids in a sprained ankle? **Please look at Figure 20.17 and the text that supports this on pages 770 and 771. The section on Lymphatics (pages 808-812) will also help you understand the concepts of capillary filtration and interstitial fluid reabsorption.**

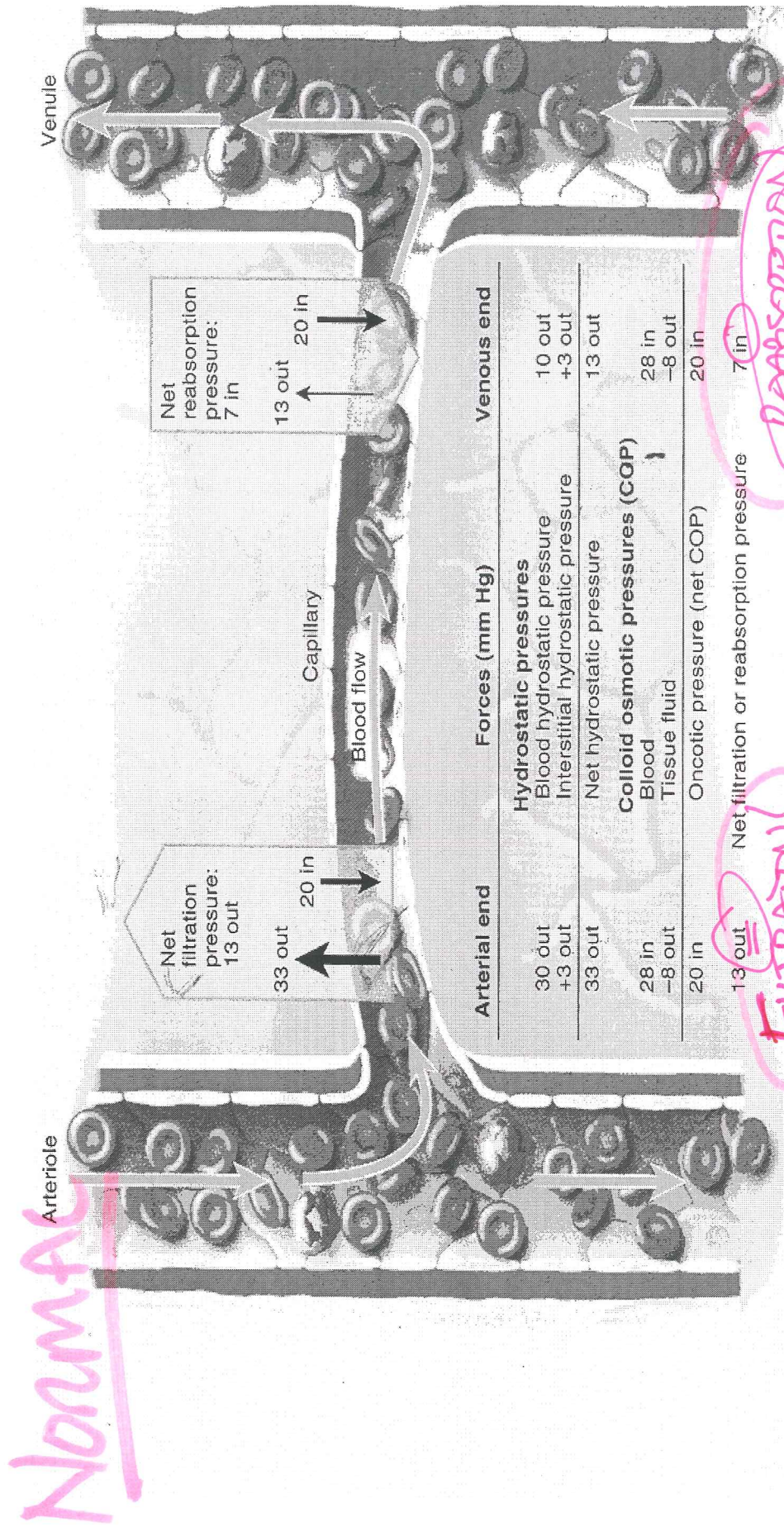


FIGURE 20.17 The Forces of Capillary Filtration and Reabsorption. Note the shift from net filtration at the arterial end to net reabsorption at the venous end (right).

FILTRATION!
REABSORPTION!
Balance = Ankk Stays same size!
Excess → Lymphatics OR Accumulation (swells)

What happens in the glomerulus? What is the "net" at the start and end of a glomerular capillary if blood hydrostatic is 70 mmHg at arteriolar end, 50 mmHg at the distal end, and blood colloid osmotic pressure is 28 mmHg and colloid osmotic pressure in the glomerular capsule is 0 mmHg (filtrate)? What process predominates: Filtration or Reabsorption? (Do Math)

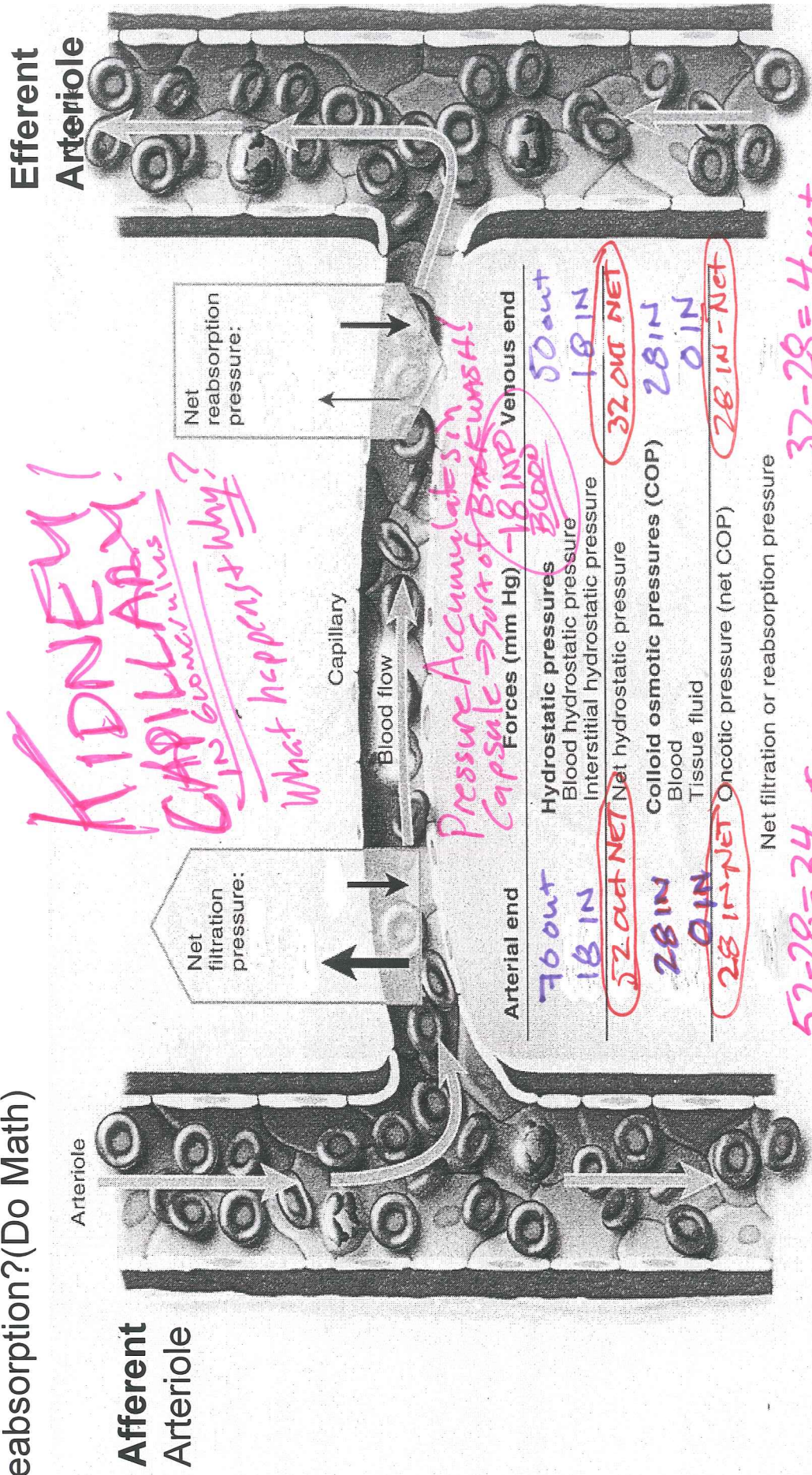


FIGURE 20.17 The Forces of Capillary Filtration and Reabsorption. Note the shift from net filtration at the arterial end to net reabsorption at the venous end (right).
 Filtration!! YAY!
 Filtration!! YAY!
 Capillary in glomerulus filters STAY to FLOW!

ANOTHER NORMAL

NORMAL CONDITIONS--What is net at the **start and end** of a normal capillary if blood hydrostatic is 35 mmHg at arteriolar end, 15 mmHg at distal end, and blood colloid osmotic pressure is 25 mmHg and colloid osmotic pressure in the interstitium is 1 mmHg? (Do The Math)

What process predominates: Arteriolar End of Capillary: Filtration or reabsorption?

What process predominates: Venous End of Capillary: Filtration or reabsorption?

*ANOTHER NORMAL CAPILLARY!
BEFORE YOU SPEAK ANK!
ouch.*

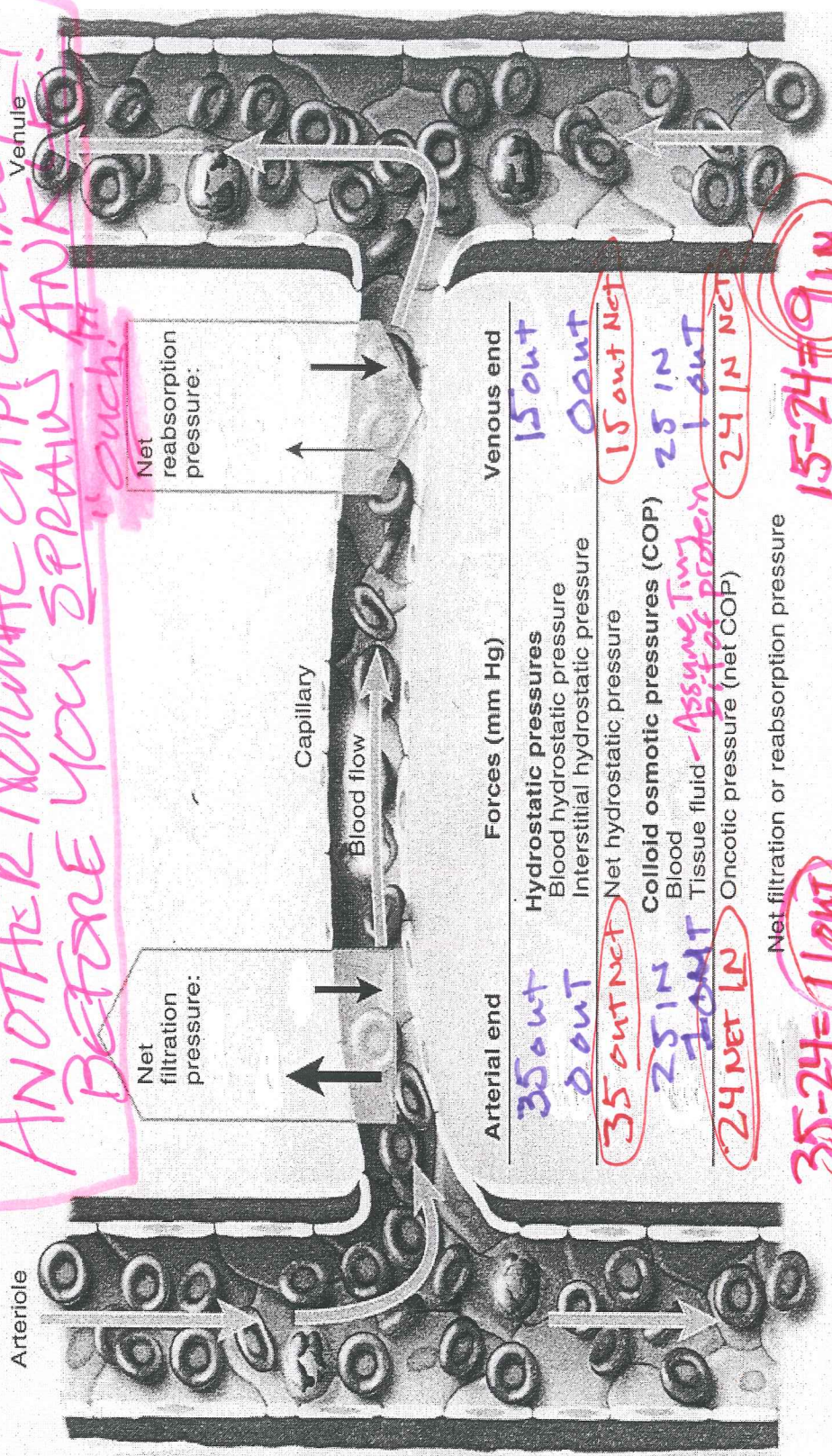


FIGURE 20.17 The Forces of Capillary Filtration and Reabsorption. Note the shift from net filtration at the arterial end to net reabsorption at the venous end (right).

*Net Filtration
Normal Size Ankles!
YAY!
Net Reabsorption
YAY!*

WHAT HAPPENS WHEN YOU FILTER AT BOTH ENDS OF CAPILLARIES?
TRICKY: What if you sprained your ankle? It would swell up, but WHY???

Why: because immune system causes the endothelium to become quite permeable to Plasma Protein (pores enlarge) and water moves from blood into the interstitium! Why is the swelling WORSE if you stand on the ankle and reduced if you ELEVATE the ankle above the level of your heart? What is net at the start and end of your capillaries if: It hurts less! Pressure - remember 2mmHg per Inch of Heart!

Blood hydrostatic is 37 mmHg at arteriolar end, 17 mmHg at distal end, interstitial hydrostatic is 1 mmHg. Blood colloid osmotic pressure is 28 mmHg (at start) and 20 mmHg at the end of the capillary (protein left the blood so number not the same), therefore colloid osmotic pressure is now high (10 mmHg). What process predominates: Filtration or Reabsorption?

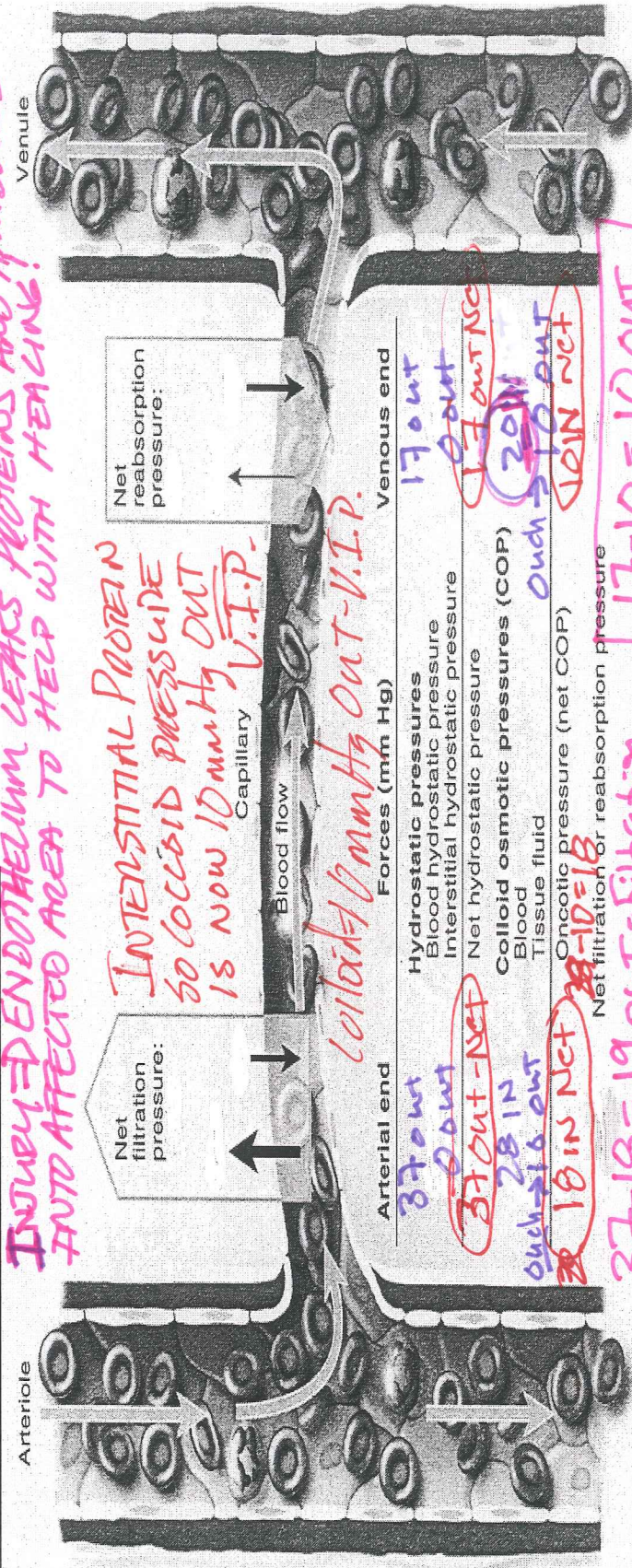


FIGURE 20.17 The Forces of Capillary Filtration and Reabsorption. Note the shift from net filtration at the arterial end to net reabsorption at the venous end (right).
Filtration at Both Ends = Swollen Ankle!
Now you Filterate end of capillary AND at start