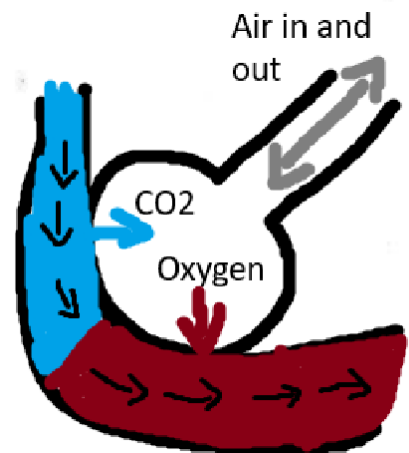
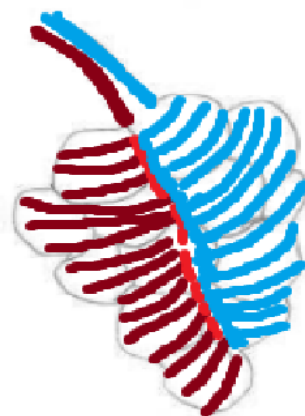
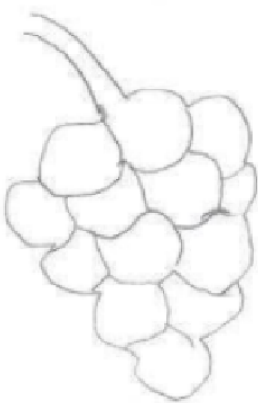
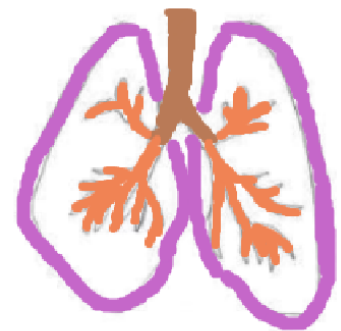
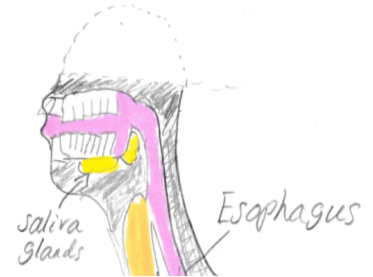


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## System comparison

The respiratory system is responsible for taking the oxygen we breathe and absorbing it for use in the body, and in the process removing the unwanted carbon dioxide. Basically filtering air so that it can be of use to the body and that which is not of use to exit the body. In a similar fashion the urinary system is responsible for filtering blood, removing the waste present and then having a pathway out of the body. These two processes work for the benefit of body homeostasis. In other words the self regulation of internal workings and components so that bodily function can be maintained. The body does not want carbon dioxide in it, nor does it want waste or toxins in the blood, so removing them is the ideal scenario.

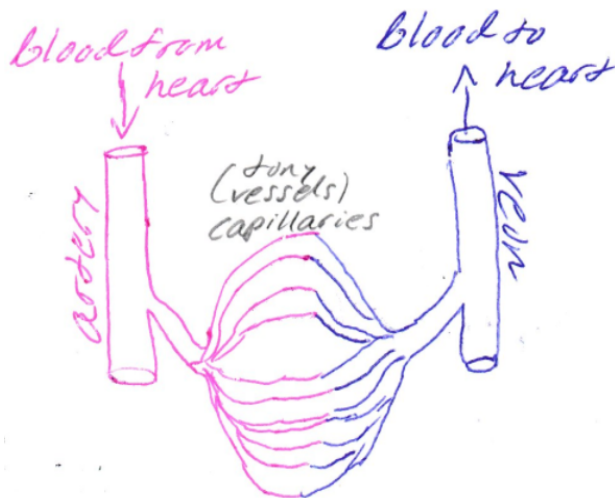
The lungs are the main organ in the respiratory system. Air comes in through the nose (nasal cavity) and goes through the trachea. As it goes down it then goes into the bronchi, bronchus and bronchioles, these being the tree-like stem pathways leading into the lungs. There the air enters into one of the many many alveoli, these grape like sacs where the exchange of gasses will occur. Pulmonary veins and arteries converge on the surface of the alveoli, oxygen diffuses into the bloodstream and is taken back to the heart to continue the cardiovascular cycle while CO<sub>2</sub> is allowed to exit.



The primary organ of the urinary system is the kidney. As mentioned the urinary system is responsible for filtering blood and removing the waste present in it. As such there is a merge between arteries and veins, or capillaries, where blood drops off oxygen and then heads back to the heart. This was explored in the cardiovascular system, however in the kidneys since urine has to go somewhere, the structure is a little

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different. As shown below on the left, is the basic structure of arteries -> capillaries -> veins. However for the kidneys, blood from the artery has to go through a quick checkpoint before it can continue its normal cycle. This checkpoint in the glomerulus, shown in clear white on the bottom right. This is where waste is filtered out of the blood, and taken down the 3rd channel so it can eventually leave the body.



In order to determine the status of the respiratory and urinary system, a spirometry or urine test are necessary respectively. A spirometer is simply a tool used to measure the volume of air capable of being ventilated from the lungs. Data collected is useful to professionals to observe any oddities and address any potential issues with the lungs. Urine test is well, just urinate into a container and it gets examined. Professionals can check the contents of urine to make sure things that should be in urine are there, or that things that shouldn't be in urine aren't.



Many things can go wrong with both the respiratory and urinary systems. Starting off with the respiratory system, the main concern about this system is air pathways and restriction. A common reason pathways are restricted is due to inflammation, and depending which branch is restricted it can lead to different disorders. Bronchitis is the inflammation of the bronchi, the large tube from the trachea down. It is as a result of some infection.

Normal



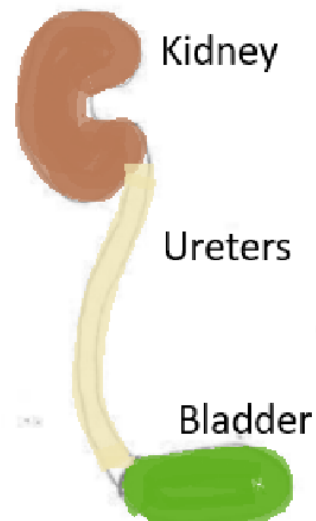
Inflammation



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Infections however are not the sole reason airways can be blocked, but family history and environment can also be a factor. This is the case with asthma, where the smaller bronchioles become restricted in some form. Exercise can help the respiratory system by making muscles stronger, in doing so the amount of oxygen and carbon dioxide exchanged can increase for the same amount of workload. Since the respiratory system is heavily connected to the cardiovascular system, more oxygen available makes it so the heart is more efficient, resulting in an overall more efficient cardiovascular and respiratory group duo.

The urinary system can be compromised in a couple of different ways. Urinary tract infections are a common worry, when bacteria manages to find its way inside. Depending on where the infection is, the difficulties can vary. Infection might incur bleeding which could make its mark on urine color, or might make urination painful. Another issue is kidney failure. Since the kidney is the main driving force in the urinary system, losing the ability for blood filtration means losing the ability to dispose of waste, and ends up having a trickle down effect. Kidney failure can result from diabetes or prolonged alcohol consumption. A good diet might be able to lessen the effort by the kidneys to filter out excess waste or harmful components, such as salts or sugars. Limiting alcohol consumption can also be helpful because of the toll alcohol has on the body.



Speaking of alcohol consumption, excess immediate alcohol consumption can have a major impact not just on the kidneys but also the body as a whole. The liver is the organ primarily responsible for breaking down toxins and preparing them for disposal, and alcohol puts a major burden on it. One drink might not do much, but excess drinking in a short span can knock out the liver and result in lots of alcohol in the bloodstream. When this is the case, blood flowing throughout the body throws every other system and organ into a loop, causing mass turbulence in bodily and cognitive function.