

The kidneys are the filtering devices of blood. They remove the nutrients for the cells to use and to remove wastes. The kidneys remove waste products from metabolism such as urea, uric acid, and creatinine by producing and secreting urine. Urine may also contain sulfate and phenol waste and excess sodium, potassium, and chloride ions. The kidneys help maintain homeostasis by regulating the concentration and volume of body fluids. For example, the amount of H^+ and HCO_3^- secreted by the kidneys controls the body's pH.

The kidney primarily accomplishes these tasks by filtering impurities, metabolic wastes and salt from the blood

Although the kidneys use a number of hormones to regulate homeostasis, the two major ways they maintain balance is through releasing hormones to regulate blood pressure and through altering sodium and electrolyte balances to maintain proper fluid amounts in the body.

The urinary or renal system includes the kidneys, ureter, urinary bladder and urethra. This organ system filters excess fluid out of blood as well as other substances, such as excess ions and metabolic wastes, which mainly consist of urea and uric acid. These products are filtered out of the blood and combined with water before exiting the body in the form of urine.

Blood pressure- the measure of how hard your heart is working to pump blood

High blood pressure- your heart is working too hard

Low blood pressure- your heart isn't working hard enough

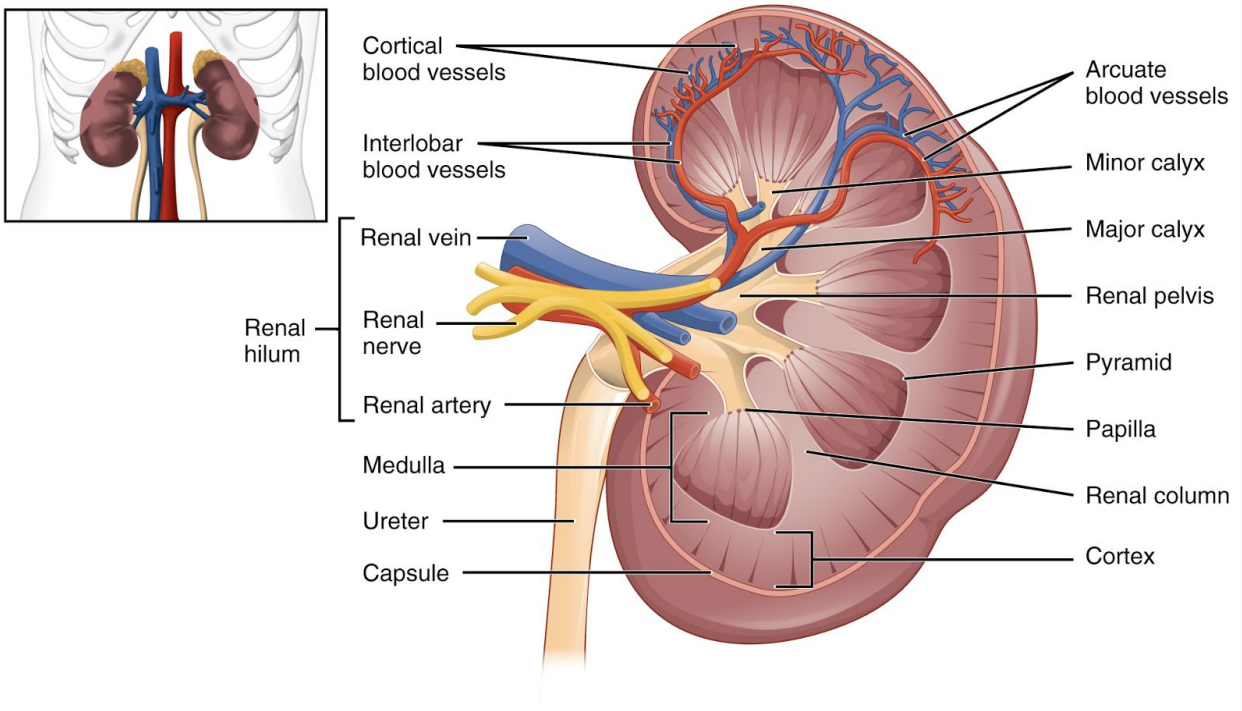
The two kidneys are located to the rear of the abdominal cavity on either side of the spine. They normally weigh about 5 ounces each, but receive about 20% of the blood flow coming from the heart. The urine produced by each kidney drains through a separate ureter into the urinary bladder, located in the pelvic region. The bladder is emptied in turn by a single urethra, which exits the body.

Exercise forces all blood flow to the muscles, meaning that only 5% of the blood flow is going to the kidneys, resulting in a lower rate of urinary production

You lose a lot of fluid and sodium through sweating and evaporation, which means that the kidneys conserve sodium and reabsorb water for a long time after.

A major hormone involved in maintaining fluid balance during exercise is antidiuretic hormone, or ADH, which causes the kidneys to conserve sodium.

<http://philschatz.com/anatomy-book/contents/m46432.html>



Nephrons are the “functional units” of the kidney; they cleanse the blood and balance the constituents of the circulation

PROCEDURE

Scientific question:

How does water affect your urine?

Hypothesis:

The more water you drink, the more frequent you will pee. Also, the lighter color it is means the more water you drink.

Purpose: to find out how water changes the frequency of your urination, and color

Experiment: red- first test blue- second test

Person 1- no water from 8pm -12 pm (emma)(hannah)

Person 2- 1 water bottle from 8pm-12pm (becca)(casey)

Person 3- 2 water bottles from 8pm-12pm (casey)(becca)

Person 4- 3 water bottles from 8pm-12pm (hannah)(emma)

1. Continue life as normal and each test subject can only drink the certain amount of water for the time period (8pm to 12pm)
2. Mark each time you pee and the color
3. Continue throughout the day and report time and color as usual until 4:00pm
4. When completed record all the data from the other test subjects and mark as a graph
5. Compare each amount of water drunk to the amount and color of pee
6. Analyse data and share
7. Day 2: each subject switches places with another and records the data for their different amount of water intake
8. Complete the same procedure as day 1 for day 2 just with different amounts of water intake

<https://docs.google.com/spreadsheets/d/1uIMtL-z2aotXsFsDS-VbqRygLGCCwOfsNCbgspeOAyo/edit#gid=0>

Abstract:

Urination can represent health and what is happening in our bodies. We wanted to test how water affected our bodies in result of urination. Our experiment was conducted between 4 people, each had to drink a specific amount of water. Over the time period, we recorded the frequency and time of urination. The results are over the course of two 16 hour session.

Intro: The kidneys help maintain homeostasis by regulating the concentration and volume of body fluids. They also excrete waste that would otherwise be toxic to the body. The kidneys filter excess fluid out of blood as well as other substances, such as excess ions and metabolic wastes, which mainly consist of urea and uric acid. These products are filtered out of the blood and combined with water before exiting the body in the form of urine.

We chose the test we did because we can see how much drinking water affects the body and the kidneys and how the body will have to adjust to continue homeostasis. We hope to find out what the symptoms of this are.

Discussion: Our data felt more inconclusive than informational. People were very good at recording when they peed and what color it was. The data didn't really help inform us about how the body maintains homeostasis through the kidneys in the way we wanted it to, but it did tell us that, in general, the more water you drink, the more peed because your body was trying to get rid of the extra waste in your body. We should only have focused on number of times we peed rather than when and what color it was. Our group felt that color reflected what you ate rather than how much water you drank. We also didn't have anything to compare the color to. These were our only errors. Other tests we could do would be to extend the time, increase the amount of water we drink, and have a more controlled environment.

Works Cited

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