Renal Physiology.

**Activity 1. ¿How is the structure of the filter system in the kidneys?**

Describe -step by step- the journey of the blood from the aorta towards the renal arteries to return from the kidneys to the vena cava, including each segment of the renal structure.

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**Activity 2. What things are filtered and what are not? What things should we reabsorb?**

1. Explain what is the function of negatively charged proteoglycans in those that are part of podocytes?

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1. How can you relate molecule size versus filtration capacity? Could you ensure that a molecule like glucose is filtered? Can you confirm that a protein-like hemoglobin can be filtered? Try to compare their sizes.

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1. In pathological conditions the glomerulus can suddenly become inflamed, allowing large molecules to pass through to cells, for example, in a condition of bacterial infection in the blood, which could affect the capillaries, causing them to become inflamed. What substances or molecules would you expect to detect or see in the urine of a patient with severe inflammation of their glomeruli? Explain what you think would happen.

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1. What substances are essential for our body and therefore are continually reabsorbed throughout the renal tubule?

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1. In which area is the most water and sodium reabsorbed?

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1. What happens if you don't drink water for a whole day, what will your urine be like at the end of the day? Concentrated or diluted? In which area of the nephron do you think the greatest water absorption occurred while you were without drinking water?

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# Activity 3. The Kidney is also responsible for the maintenance of arterial blood pressure.

**Based on the structure and the previous video, hypothesize in each case what would happen.**

What happens with glomerular filtration if you have a hemorrhage causing that blood pressure decreases? What Happens with the amount of sodium that is filtered and passes through the macula densa?

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# Activity 4. Final Conclusions

# How that you know the functions of the kidney, could you draw a final diagram that integrates the mechanisms that you have already learned in this learning sequence?

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