

Physiology Class 3:

Digestive and Excretory Physiology

Activities

These activities are designed to be done at home. There is no grade given for these and they do not have to be turned in. The answer key has been emailed to your grown up.

Super Athlete!

Pretend you are a super athlete and you forgot to drink enough water before a big event. Describe the things that you might experience and what is happening in your body.

Answer: A strong response should include the following ideas:

1. Physical Experiences of Dehydration

Students might describe:

- Feeling tired or weak
- Muscle cramps
- Dry mouth or extreme thirst
- Headache or dizziness
- Faster heart rate
- Reduced ability to perform at their best
- Feeling overheated or unable to cool down

2. What Is Happening Inside the Body

Students should show an understanding of these key points:

A. Low Water Levels

- Blood becomes more concentrated (higher osmolarity).
- There is less fluid available for sweat, making it harder to cool down.

B. Kidney Response

- Kidneys **reabsorb more water**.
- Urine becomes **dark and concentrated**.

C. Circulatory Effects

- Lower fluid levels mean **less blood volume**, which makes the heart work harder.

- Muscles may not get oxygen and nutrients as efficiently.

D. Muscle Effects

- Electrolyte imbalance can lead to **muscle cramps** or weakness.

E. Performance Impact

- Dehydration reduces endurance, speed, strength, and coordination.
- The athlete may overheat more easily since sweating decreases.

3. Summary Statement

Students should clearly connect dehydration to reduced performance and physical discomfort because the body cannot cool itself, maintain blood pressure, or deliver nutrients effectively when water levels are low.

Pre-Assessment Quiz: Digestive and Excretory Physiology

1. What is the main job of the digestive system?

- A. To pump blood
- B. To remove waste
- C. To break food into nutrients**
- D. To control breathing

2. What is ATP?

- A. The energy of a cell**
- B. Special rocket fuel
- C. An enzyme
- D. Part of the integumentary system

3. Which enzyme starts breaking down carbohydrates in the mouth?

- A. Protease
- B. Lipase
- C. Amylase**
- D. Pepsin

4. Where are MOST nutrients absorbed?

A. Stomach

B. Small intestine

C. Large intestine

D. Rectum

5. Which organ **makes** bile to help digest fats?

A. Pancreas

B. Gallbladder

C. Liver

D. Kidney

6. What do the kidneys produce to remove waste?

A. Sweat

B. Blood

C. Urine

D. Stool

7. When the body is dehydrated, what happens to urine?

A. It becomes pale

B. It becomes darker

C. It stops forming

D. It turns blue

8. The large intestine mainly:

A. Absorbs water and forms stool

B. Digests proteins

C. Makes enzymes

D. Breaks down oxygen

9. Which nutrient gives quick energy?

A. Protein

B. Fat

C. Vitamins

D. Carbohydrates

10. What do enzymes do?

A. Slow down digestion

B. Speed up chemical reactions

C. Carry oxygen in the blood

D. Make urine