English Reading Practice: All About Collagen

Part 1: Reading Material

What is collagen?

Collagen is the most abundant protein in mammals, making up 30 percent of the proteins in our bodies. It is a key structural element of skin, ligaments, muscles, tendons, bones, blood vessels, the intestinal lining, and other connective tissues, says Julia Zumpano, a registered dietitian at Cleveland Clinic's Center for Human Nutrition.

Shaped like a triple helix with three chains of amino acids twisted together tightly enough to make the protein strong and rigid, collagen has been categorized into 28 types, based on molecular structure and where it is found in the body. Ninety percent of the body's collagen is Type I, which is found in skin, bones, tendons, and ligaments, according to the Cleveland Clinic. Types I through V are more common than the rest.

What happens to collagen as you age?

After age 40, we lose about 1 percent of the collagen in our bodies each year. By age 80, collagen loss can reach 75 percent. With less collagen to support tendons and ligaments, many people develop chronic pain that prevents them from staying active.

Meanwhile, as collagen levels decline in the dermis, an inner skin layer, skin sags and becomes wrinkled. A variety of factors can accelerate that process. Studies show that over time, smoking, alcohol, UV light, and high sugar consumption all lower collagen production and make the protein weaker, leading to more wrinkled skin.

Part 2: Exercises

A. Short-answer comprehension questions

1. What is the specific shape of the collagen protein?
2. According to Julia Zumpano, what is the role of collagen in the body's structure?
3. How many different types of collagen have been identified by scientists?
4. What is the estimated percentage of collagen loss by the time a person reaches 80?
5. Aside from sagging skin, what is a physical consequence of losing collagen in tendons and ligaments?

B. Multiple-choice questions

1. Which of the following makes up 90% of the collagen in the human body?
   A. Type V B. Type III C. Type I D. Triple Helix

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2. After the age of 40, how much collagen do we typically lose every year?

A. 10% B. 75% C. 30% D. 1%

3. According to the text, collagen is categorized into types based on:

A. Diet B. Structure/Location C. Sugar D. Strength

4. Which factor is NOT mentioned as a reason for accelerated collagen loss?

A. Lack of sleep B. Sugar consumption C. UV light D. Smoking

5. Where is the 'dermis' located?

A. Bones B. Inner skin layer C. Intestines D. Blood vessels

C. True/False statements

1. [T / F] Collagen is the most common protein found in mammals.
2. [T / F] Types I through V are the least common types of collagen.
3. [T / F] Collagen is composed of four chains of amino acids.
4. [T / F] Smoking and alcohol can make collagen proteins weaker.
5. [T / F] Collagen loss only affects appearance, not physical movement.

D. Gap-filling summary

Collagen is a vital protein that serves as a key structural (1) _____ for various tissues in mammals. It is unique for its 'triple helix' shape made of twisted amino acid (2) _____. While it is found throughout the body, the majority of it is classified as (3) _____. As humans age, especially after 40, collagen levels begin to (4) _____. This process can be made worse by external factors like UV light or a high-(5) _____ diet, eventually leading to wrinkles and joint pain.

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Part 3: Answer Key

A. Short Answer:

1. Triple helix
2. Key structural element of skin, ligaments, muscles, tendons, etc.
3. 28 types
4. 75 percent
5. Chronic pain

B. Multiple Choice:

1. C | 2. D | 3. B | 4. A | 5. B

C. True/False:

1. T | 2. F | 3. F (3 chains) | 4. T | 5. F

D. Gap-filling:

(1) element | (2) chains | (3) Type I | (4) decline/decrease | (5) sugar

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