Life Without Gravity:

Weightlessness in Space

"Life Without Gravity" Vocabulary

1) **Blander (adj.) :** Having little or no distinctive flavor

2) **Feeble (adj.):** Lacking strength; weak.

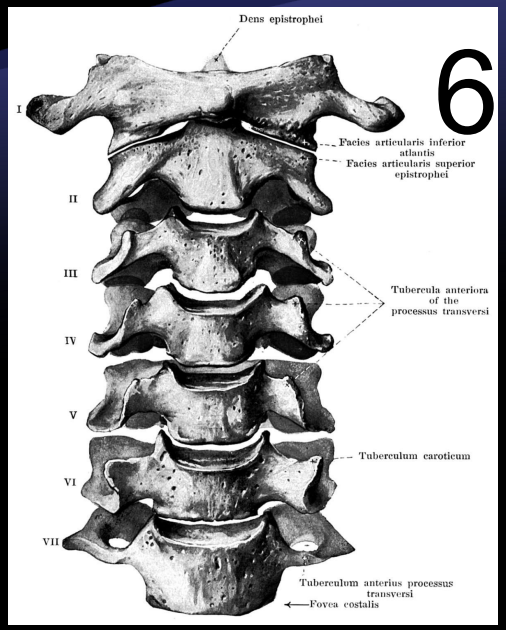
3) **Globules (noun):** A small spherical mass, especially a small drop of liquid.

4) **Manned (adj):** Operated by a human

5) **Readapt (verb):** To adjust oneself to a new situation or condition

6) **Spines (noun):** The backbone of a vertebrate

Match the picture to a vocabulary word.



Complete the vocabulary activities:

1) Name a food that you dislike that you wish tasted bland (no longer had flavor).

2) Complete this sentence: I would feel feeble after

_____

(For example, I would feel feeble after climbing Mt. Everest while carrying Mrs. Sansbury on my back.)

3) Write a sentence using the word globule.

(Suggestion: globules of sweat, rain droplets, or pearls…)

4) Name a vehicles or machine you would like to man.

5) Name something you would love to see a “micro-” version of…

6) How have you adapted for colder weather?

7) Name a creature that does not have a spine.

Being weightless in space seems so exciting. Astronauts bounce about from wall to wall, flying They float, they weave, they do somersaults and acrobatics without effort. Heavy objects can be lifted like feathers, and no one ever gets tired because nothing weighs anything. In fact, everything is fun, nothing is hard.

NOT! Since the first manned space missions in the 1960s, scientists have discovered that being weightless in space isn't just flying around like Superman. Zero gravity is alien stuff. As space tourist Dennis Tito said when he visited the natio space station, "Living in space is like having a different life, living in a different world."

The author introduces the essay by trying to grab the reader's attention with a _____.

What is the author's main point?

What is the tone of the author? Formal or Informal? Serious or _____?

Worse, weightlessness can sometimes be downright unpleasant. Your body gets upset and confused. Your face puffs up, your nose gets stuffy, your back hurts, your stomach gets upset, and you throw up. If astronauts are to survive a one-year journey on Mars—the shortest possible trip to the Red Planet—they will have to learn how to deal with this weird environment.

Underline the topic sentence:

Worse, weightlessness can sometimes be downright unpleasant.

Our bodies are adapted to earth's gravity. Our muscles are strong in order to overcome gravity as we walk and run. Our inner ears use gravity to keep us upright. Because gravity wants to pull all our blood down into our legs, our hearts are designed to pump hard to get blood up to our brains.

In space, the much weaker gravity makes the human body change in many unexpected ways. In microgravity, your blood is rerouted, flowing from the legs, which become thin and sticklike, to the head, which swells up. The extra liquid in your head also makes you feel like you're hanging upside down or have a stuffed-up nose.

Underline the topic sentence:

Our bodies are adapted to earth's gravity.

Write down key words:

Muscles, inner ears, blood, hearts

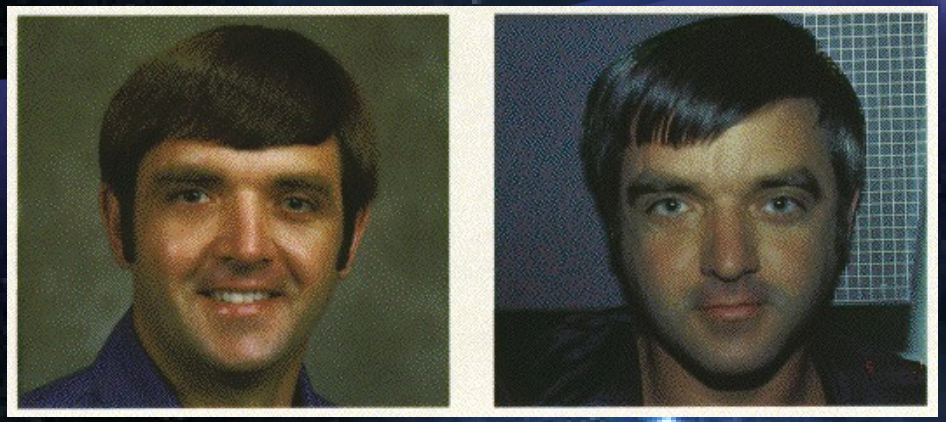
Underline the topic sentence:

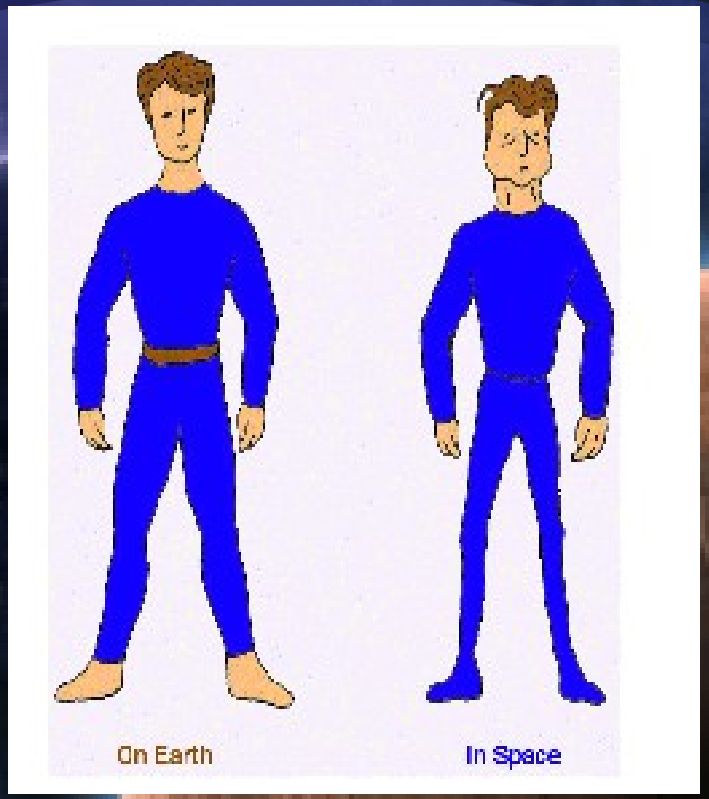
In space, the much weaker gravity makes the human body change in many unexpected ways.

Write down key words:

blood, legs, head

PUFFY FACE





BIRD LEGS

The lack of gravity causes astronauts to routinely “grow” between one and three inches taller. Their spines straighten out. The bones in the spine and the disks between them spread apart and relax.

However, their bones also get thin and spongy. The body decides that if the muscles aren’t going to push and pull on the bones, it doesn’t need to lay down as much bone as it normally does.

Astronauts who have been in space for several months can lose 10 percent or more of their bone tissue. If their bones got much weaker, they would snap once the astronauts returned to Earth.

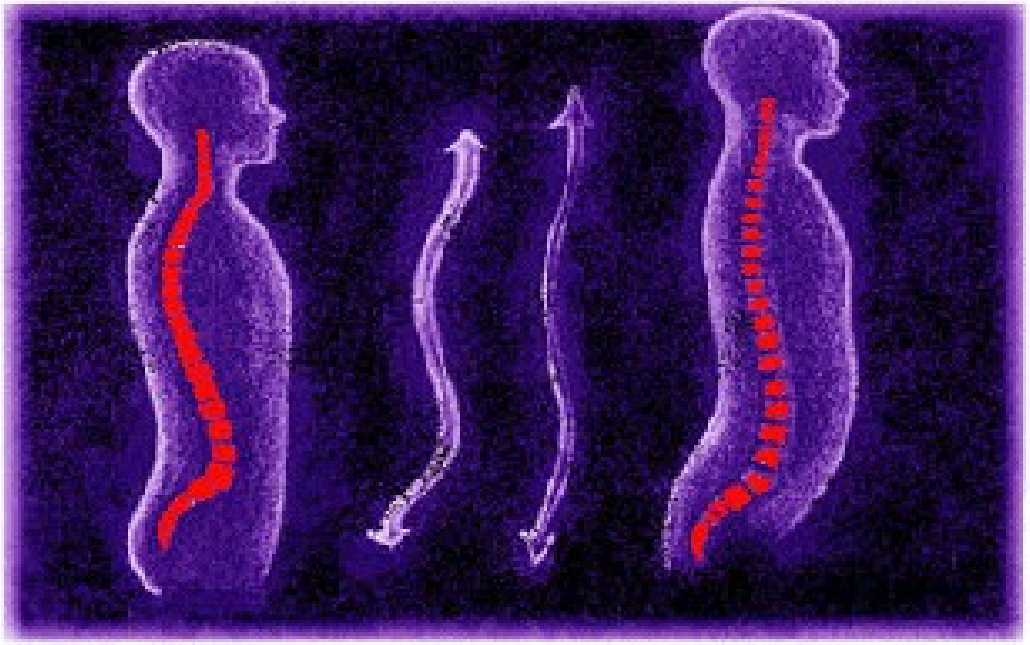
In addition, their muscles get weak and flabby. Floating about in space is too easy. If astronauts don’t force themselves to exercise, their muscles become so feeble that when they return to Earth they can’t even walk.

Where can you find the topic sentences in all four of these paragraphs?

In the beginning—the first sentence

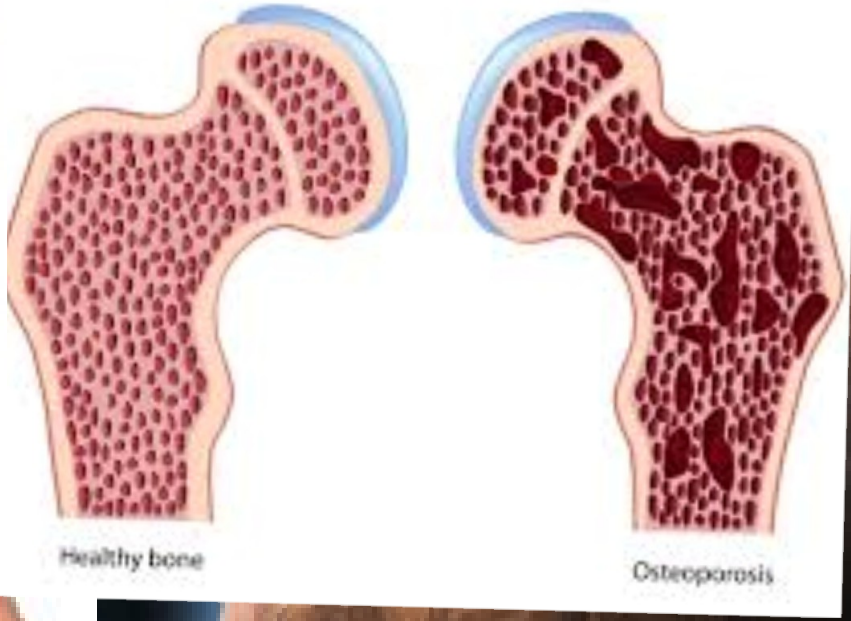
What two major body parts do these paragraphs focus on?

Bones
Muscles



During space flight, the vertebrae separate slightly from one another and the spine lengthens for more than seven centimeters due to weightlessness.

Osteoporosis



Worst of all is how their stomachs feel. During the first few days in space, the inner ear—which gives people their sense of balance—gets confused. Many astronauts become nauseous. They lose their appetites. Many throw up. Many throw up a lot!

What is the topic sentence?

Worst of all is how their stomachs feel.

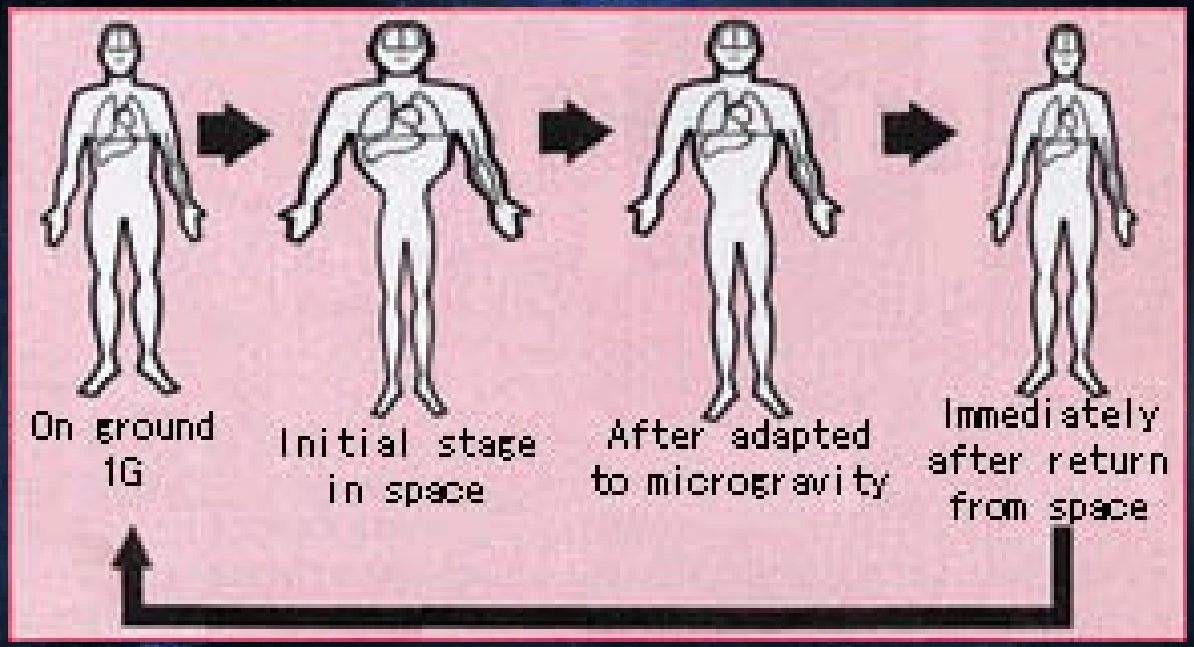
Which body part does microgravity cause to malfunction?

Inner Ear

What are three effects of the inner ear not functioning correctly?

Nausea
Loss of Appetite
Vomiting

Weightlessness isn’t all bad, however. After about a week people usually get used to it. Their stomachs settle down. Appetites return (though astronauts always say that food tastes blander in space). The heart and spine adjust.



What is the topic sentence?

Weightlessness isn't all bad, however.

What are key words—what isn't all that bad after people get used to microgravity?

Stomaches

Appetites

Heart

Spine

Then, flying around like a bird becomes fun! Rooms suddenly seem much bigger. Look around you: The space above your head is pretty useless on Earth. You can’t get up there to work, and anything you attach to the ceiling is simply something you’ll bump your head on.

In space, however, that space is useful. In fact, equipment can be installed on every inch of every wall. In weightlessness you choose to move up or down and left or right simply by pointing your head. If you turn yourself upside down, the ceiling becomes the floor.

What is the change in mood?

Focusing on the positive side of life without gravity

Focusing on how to adapt to microgravity