Reading Work Sample Practice Assessment

Task S-2: Exercising Options (Informational)

Instructions:

Read the following excerpt carefully and **make notes in the margin** as you read. Your notes should include:

- Comments that show that you **understand** the selection. (A summary or statement of the main idea of important ideas may serve this purpose.)
- Questions you have that show what you are **wondering** about as you read.
- Notes that show what you can tell about **main ideas, details, character interactions and beliefs**
- Observations about the **writer's strategies** (organization, figurative language, dialogue, word choice, point of view) and how the writer's choices affect the meaning.

Your **margin notes** are part of your score for this assessment.

Student _____ **SSID #**_____
Teacher _____ **Class Period** _____
School _____ **School District** _____

The following article, written by Kristen Weir for CURRENT SCIENCE *magazine, talks about some exciting research relating to what happens when we spend some time engaging in exercise.*

Notes on my thoughts, observations, reactions and questions:

The Ex Factors: There are Hundreds of Reasons Why Physical Activity is Important to Good Health

"Get off your rear and get some exercise!" How many times have you heard that from one of your parents? Like it or not, it's excellent advice—even more than your mom or dad probably knows.

Regular exercise helps you stay fit and maintain a healthy weight. That much is certain. Recently, however, scientists have discovered that working muscles seem to "talk" directly to other parts of the body. What the muscles are saying may be very important to your health.

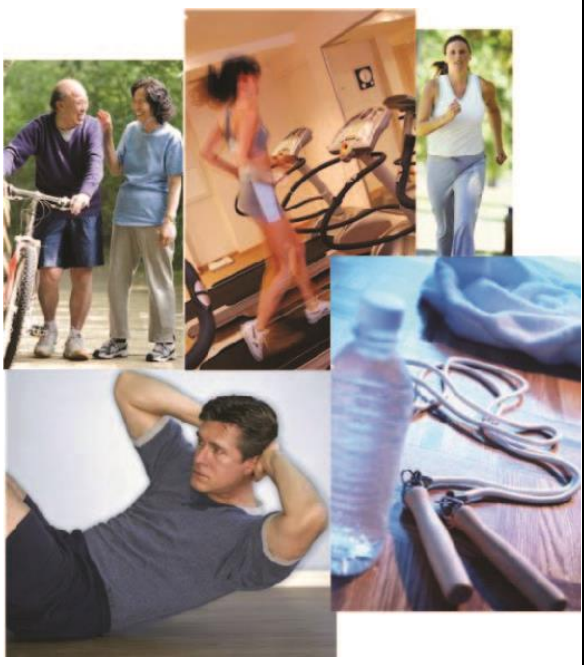
When muscles work, they somehow communicate with the brain, liver, and other organs. Until recently, scientists weren't sure how muscles sent those messages. "Researchers for many decades have been searching for an 'exercise factor,'" says Bente Klarlund Pedersen, a professor of medicine at the University of Copenhagen, Denmark. Now it seems she's found just such an ex factor—and not just one, but hundreds.

Slight Swelling

Lack of exercise is linked to all sorts of health problems. It increases the risk of conditions such as depression, osteoporosis (thinning and weakening of the bones), dementia (loss of mental abilities), heart disease, some cancers, and type 2 diabetes.

All diseases linked to lack of exercise have something in common: chronic inflammation. Inflammation is a swelling and redness in the body's tissues that is usually brought about by an injury or an infection—usually a short-term reaction. Constant, low levels of inflammation that occur throughout the body are tied to more serious problems, including dementia, heart disease, and diabetes—virtually all the diseases that are linked to lack of exercise.

Low-level inflammation is marked by an increase in certain immune cells, called cytokines, in the blood. Pedersen was studying cytokines when she discovered that one of them—interleukin 6 (IL-6) —"was present in the blood during exercise in huge amounts," she says.



When you're at rest, your levels of IL-6 are very low. As you work your skeletal muscles, however, the amount of IL-6 in the blood shoots up dramatically. Skeletal muscles are the muscles that we control voluntarily to move our bodies.

At first, the discovery puzzled Pedersen. When IL-6 is produced by immune cells, it causes inflammation. When the muscles make IL-6, it reduces inflammation. Why might that be? Exercise seems to hold back other chemicals that normally work hand in hand with IL-6 to cause inflammation.

To learn more, Pedersen created a breed of mice whose muscles did not release IL-6 when they exercised. The results were dramatic. "Mice that did not produce IL-6 became obese and developed insulin resistance," she says. Insulin resistance occurs when the body's cells stop reacting to insulin, a hormone that regulates blood sugar. It is an early warning sign of type 2 diabetes. In other words, IL-6 appeared to be the exercise factor that Pedersen was looking for.

Mysterious Molecules

IL-6 was just the start. Once she started looking more closely, Pedersen realized that working muscles produce many different compounds. She called those compounds myokines, and she's identified a whopping 600 of them so far.

"Most of the 600 myokines are totally unknown, and we have absolutely no clue about their role," Pedersen says. It's clear they exist, she adds, "but we don't know what they're doing."

Slowly, she and her colleagues are learning how myokines work. They're all very different from one another, she says, and seem to play many different roles throughout the body.

- In addition to its connection to preventing obesity and insulin resistance, IL-6 communicates with cells in the liver.
- A myokine called IL-8 helps the body form new capillaries, the body's smallest blood vessels.
- IL-15 encourages muscle growth and helps prevent the buildup of abdominal fat—fat in the belly. Abdominal fat is more harmful to overall health than fat elsewhere in the body.

That's just a handful of myokines that have been studied so far. Hundreds

Notes on my thoughts, observations, reactions and questions:

more are a mystery—for now. Pedersen and her colleagues are eager to understand how each muscle-made molecule affects the body, from head to toe. Some myokines, she suspects, might even have an anticancer effect.

Muscle Medicine

The discovery of myokines is a starting place, Pedersen says, "for understanding how exercise can protect against diseases." It's too soon to know whether myokines might be harnessed to prevent or cure illnesses such as diabetes or cancer. But it's an intriguing idea.

One day, Pedersen says, it might be possible to prescribe a medication that triggers patients' muscles to produce more myokines. Such drugs could benefit people who are unable to exercise on their own—people who are paralyzed or recovering from serious injuries or illnesses, for example.

For now, that's just a dream. Yet even as scientists are working to understand what each myokine does, one thing seems clear: There are at least 600 good reasons to get off the couch and move your muscles!

Notes on my thoughts, observations, reactions and questions:

From "The Ex Factors: There are Hundreds of Reasons Why Physical Activity is Important to Good Health" by Kirsten Weir. Published in CURRENT SCIENCE, *December 10, 2010 by Weekly Reader Corporation. Used by permission of Scholastic Inc.*

Demonstrate Understanding

1. Explain your understanding of the article, *"The Ex Factors: There are Hundreds of Reasons Why Physical Activity is Important to Good Health."* Include main ideas and details that are important.

Read this second article, which also comes from CURRENT SCIENCE *magazine and provides more information on the connection between exercise and good health.*

Notes on my thoughts, observations, reactions and questions:

Exercise Restores Health

DALLAS--Keeping physically fit is one of the best things you can do for your health. Regular exercise improves sleep and concentration. It also shrinks the odds of developing diabetes, heart disease, infections, and dementia. Now a Texas researcher has found what might be a clue to why it has those effects.

That clue is autophagy, a process in which the body breaks down excess, worn-out, or misshapen proteins into parts that can be assembled into fresh structures. Autophagy is like a "cellular garbage disposal," says Beth Levine, a professor at the University of Texas Southwestern Medical School. The term autophagy comes from a Greek word that means "self-eating."

For her most recent study, Levine observed laboratory mice that had been running for 30 minutes. She found that the exercise sparked autophagy in the muscles, liver, and pancreas of each mouse.

Then Levine fed two groups of lab mice a high-fat diet. The mice gained weight and developed a disorder like type 2 diabetes. In type 2 diabetes, the body's cells are increasingly unable to absorb glucose (blood sugar), the body's main source of energy. Glucose collects in the blood, giving rise to symptoms such as frequent urination, constant fatigue, loss of vision, and numbness in the feet and hands.

Levine then put the two groups of mice on an exercise regime involving regular workouts on a tiny treadmill. One group recovered from the disorder; the other didn't. Why? The group that didn't recover had been bred so that their bodies couldn't undergo autophagy. Even though those mice exercised regularly, that effort did not stimulate autophagy, and the mice were still sick. Autophagy, it appears, is what gives exercise the restorative powers that promote good health.

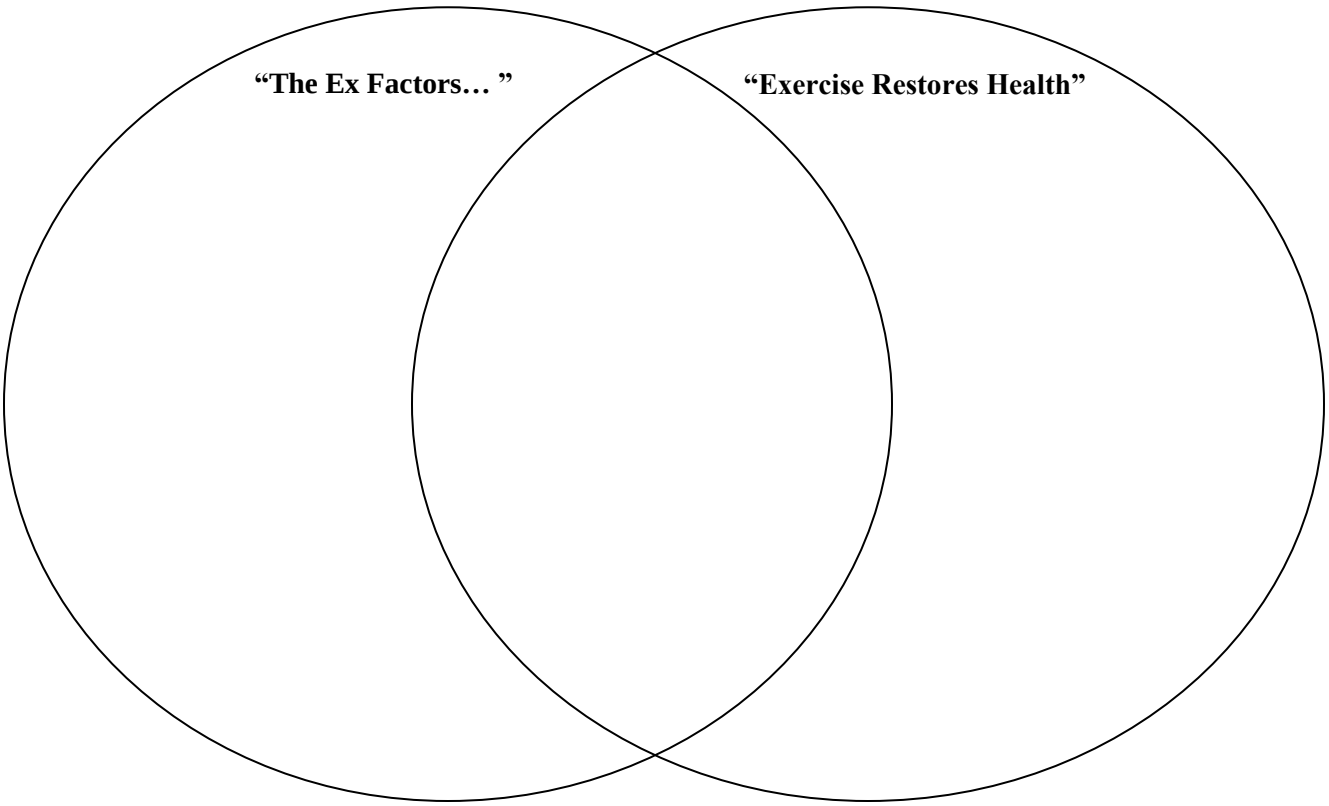
Levine now plans to investigate whether autophagy is why physical activity seems to protect people against cancer and diseases of the nervous system. She has also bought a treadmill for herself in hopes of getting more exercise. "If it's good enough for my mice," she says, "it's good enough for me."

Demonstrate Understanding

2. Explain your understanding of the article, "*Exercise Restores Health."* Include main ideas and details that are important.

Develop an Interpretation

3. Compare and contrast the content of the two articles. What are their similarities and what are their differences?



Develop an Interpretation

4. Based on the information in these two articles, what do you think is most likely to be a focus for both research and the emphasis on exercise in the future? Cite textual evidence to support your answer.

Analyze Text

5. What is each author's purpose in writing these articles? Support your answer with specific examples from the articles that reveal their purpose.

Article	Purpose	Textual Support
"The Ex Factors…"		
"Exercise Supports Health"		

Analyze Text

6. Use this chart to identify three writing **devices or strategies** that the authors use in these articles to establish for the reader that the information is **accurate** and **important** to share.

Author choices	Article (circle one)	Example from Article	Effect on accuracy and impact of the information
	1st article 2nd article both articles		
	1st article 2nd article both articles		
	1st article 2nd article both articles		

Analyze Text

7. Both of these articles appeared in CURRENT SCIENCE magazine and they both deal with similar topics. How similar are they in terms of tone and style? Is one article more easily understood than the other? Describe any differences you see in the way these articles are written that makes one more effective or informative than the other.