Homeostasis & Exercise — Student Worksheet

Name: _____
Date: _____
Group Members: _____

Safety Considerations
Please read and follow all safety guidelines before participating.

- This activity involves light-to-moderate physical exercise.
- Do not engage in any activity that causes pain, dizziness, chest discomfort, extreme shortness of breath, or nausea.
- Students with injuries, medical conditions, or accessibility needs may choose **alternative roles** (observer, timekeeper, data recorder) or **alternative physical activities** (e.g., seated marching, arm motions).
- Notify the instructor immediately if you feel unwell.
- Only participate if you are wearing **appropriate footwear** and ensure the exercise area is **clear of obstacles and hazards**.
- **Hydration and rest breaks** are encouraged as needed.

Experimental Question
What kinds of changes occur in the human body during exercise, and how can we observe or measure them to understand how the body maintains functionality?

Pre-Lab Questions (Individual)
Answer in full sentences in your binder or in the space provided below.

1. **Define homeostasis** in your own words and explain why it is especially important during physical activity.

Brainstorm at least three internal variables you think the body must regulate during exercise. Briefly explain why each one matters.

a. _____
b. _____
c. _____

2. **Define a feedback system** in your own words. Provide an example of a **non-physiological feedback system**. Describe how feedback helps the body respond to changes.

3. **Explain the difference between positive feedback and negative feedback** in your own words, and predict which type you expect to observe most during physical activity. Why?

Procedure (Group)

1. Working in groups of **3–4**, select one or more student(s) to perform an exercise such as **jumping jacks, running in place, box sets, or another instructor-approved activity** for approximately **16 minutes**, with brief pauses for observations and measurements.
2. As a group, **brainstorm and choose at least three variables** related to homeostasis that you will observe or measure. Record them in your data table.
3. As a group, write a **hypothesis for each variable**, predicting how it will change during exercise and recovery. Be specific about the **direction of change** (increase/decrease) and your **proposed explanation**.
4. Before the exercise begins, record **resting values or observations** for each selected variable.
5. The exercising student(s) begin when the **timekeeper signals the start**.
6. At **2–5 minute intervals** (as appropriate for your variable type), quickly pause to collect and record data for each selected variable.
7. Continue until the **~16-minute exercise interval** is complete.
8. After exercise, allow the student(s) to **rest**, then collect and record **recovery data every 5 minutes** (as appropriate for your variable type) for approximately **8 minutes**.
9. Create **at least two graphs** showing how one or more of your measured variables changed over time.
10. As a group, create a poster explaining your experiment. Make sure to discuss variables you thought would change (introduction), why you chose the variables you studied (methods), your graphs (results), what do you think your experiment means in the greater context of physiology class (conclusions).

Selected Variables & Group Hypotheses

Variable	Predicted Change (↑ / ↓ / –)	Explanation
1.		
2.		
3.		
4.		

Conclusion Questions

1. Describe overall trends in your variables. Were they consistent with your hypotheses?

2. Compare recovery vs. resting values. What does this indicate about homeostasis?

3. Explain how at least two body systems worked together.

4. Provide evidence of negative feedback mechanisms from your experiment

5. How might fitness level, exercise duration, or intensity affect responses?

6. How might changes to your experiment affect homeostatic responses?

7. Draw and label a **negative feedback loop** for one of your studied variables (controlled condition, control center, sensor/receptor, effector, and stimulus). If needed, use your resources to identify each element of the feedback loop.

Poster Instructions
Create a group poster summarizing your experiment:

- **Introduction:** State your experimental question and predicted variables.
- **Methods:** Explain why you chose your variables and how you measured them.
- **Results:** Include graphs and highlight trends.
- **Conclusions:** Discuss what your experiment shows about homeostasis, feedback, and body system coordination. Relate findings to physiology concepts.
- **Optional Visuals:** Diagrams, illustrations, or models to help explain variables or feedback loops.

Submit Documentation
Create a single pdf file that includes images of your completed worksheet, data files, graphs, and poster. Submit within this assignment to receive credit.

Creation and Copyright Information
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Last updated by: Heather Talbott

- Breton, Ashley (2026). Homeostasis Exercise Lab
- Grammarly. (2026). Grammarly (Version 14.1268.0) [Software]. *https://www.grammarly.com/*
- OpenAI. (2026). ChatGPT (GPT-5) [Large language model]. *https://chat.openai.com/*