Heart Rate & Exercise Intensity

PSK4U | Student laboratory assignment | 1 of 4

Prepare for your investigation

Name: _____ Date: _____ Class: _____

Research question

How does exercise intensity affect end-of-exercise heart rate and recovery?

Learning goal: use the virtual model to gather evidence, explain heart rate & exercise intensity and communicate a supported conclusion.

Materials: WorksheetGalaxy virtual laboratory, this assignment, calculator or spreadsheet if needed. Virtual observations only; do not recreate hazardous procedures or perform physical fitness tests without teacher approval.

1. Define two relevant scientific terms from the Background Information tab. (K/U)

2. Write a prediction or hypothesis with a scientific reason. (K/U, T/I)

3. Identify the variable or feature compared, the measured outcome and constants or consistent observation criteria. (T/I)

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Perform the virtual laboratory

Open the corresponding virtual lab and read Background Information. Follow the investigation instructions below. Record authentic simulated results; do not invent data.

• Read the background and write a testable hypothesis.

• Keep the same simulated participant and exercise duration. Run low (25%), moderate (55%) and vigorous (85%) intensity trials.

• Record resting HR, exercise HR, and HR at 1 and 2 minutes after exercise.

• Repeat at least one intensity and compare the results.

• Plot end-of-exercise HR against intensity and describe the pattern.

• Calculate the 1-minute recovery drop: exercise HR − HR after 60 seconds.

• Complete the lab report, identify limitations and suggest improvements.

Record each completed observation using the simulator’s record control when available. Use Data & Graphs to review results. Export CSV if available; attach additional rows or screenshots when needed.

Record the exact settings and any changes to the method.

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Observations & results

Enter the actual results. Keep trial IDs consistent between continued tables. Attach the full exported data or extra sheets when the procedure requires more rows. Include units as displayed.

Data table 1

Trial / item	Participant	Intensity	Duration	Rest HR	End HR

Data table 1 — continued (2)

Trial / item	60 s	120 s	1-min drop

Qualitative observations / sample calculation (show units where applicable)

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Analysis, conclusion & assessment

4. Present a labelled graph of a measured relationship, or an annotated diagram / comparison chart for qualitative investigations. Attach it separately. Explain the pattern using recorded evidence. (C, T/I)

5. Analysis: What patterns do the data show? (K/U, A)

6. Explain why HR increases during exercise and decreases during recovery (K/U, A)

Conclusion and evaluation: answer the research question, revisit the prediction using evidence, identify a model limitation and propose an improvement. (T/I, A)

Submit this assignment plus your completed Lab Report (printed or saved as PDF from the lab) and any supporting data/figures.

K/U: accurate concepts /10	T/I: method, data, reasoning /12	C: clear tables, units, report /8	A: explanation, conclusion, transfer /10

Total: /40