

Physiology data table: verify and summarize

Your goal: Paper documentation only. No new human measurement, device operation or intervention is authorized. Actual collection requires the responsible teacher's approved protocol and authorization. Today's objective: Submit a complete, organized physiology data table ready for analysis.

One product: Complete physiology data table: all trials labeled with conditions and units, summary statistics (mean and SD) per condition, and a one-line reliability assessment.

Question: Which changes and summaries can a reader trace to the source?

Start the work

Describe the values first. Choose a test from the design and its assumptions, not from the mean gap alone.

1. Paper documentation only. No new human measurement, device operation or intervention is authorized. Actual collection requires the responsible teacher's approved protocol and authorization. Verify every trial and condition is recorded with units.
2. Paper documentation only. No new human measurement, device operation or intervention is authorized. Actual collection requires the responsible teacher's approved protocol and authorization. Add summary statistics: mean and standard deviation per condition.
3. Paper documentation only. No new human measurement, device operation or intervention is authorized. Actual collection requires the responsible teacher's approved protocol and authorization. Check for obvious data-entry errors or outliers.
4. Paper documentation only. No new human measurement, device operation or intervention is authorized. Actual collection requires the responsible teacher's approved protocol and authorization. Write a one-line note on data reliability.
5. Paper documentation only. No new human measurement, device operation or intervention is authorized. Actual collection requires the responsible teacher's approved protocol and authorization. Submit the physiology data table.

If blocked, save locally and ask for help with the missing input or assignment access.

Words you will use

condition

A label grouping observations; A and B prescribe no activity.

trial

One supplied observation for a specified code and condition here.

pair

Two linked observations with the same fictional code, one per condition.

bpm

Beats per minute, the unit for D1 values.

raw value

An individual source entry preserved before summaries.

source record

The record against which a draft is checked.

draft

A working copy that may differ from its source.

provenance

Where an entry came from and how changes can be traced.

change log

Before/after entries with a source-backed reason.

missing value

An absent entry, never automatically zero.

NA

No numeric entry supplied in that location.

included n

Number of numeric observations used in a particular summary.

exclusion

An observation omitted from analysis for a documented justified reason, not erased from raw records.

mean

Sum of included numeric values divided by their count.

deviation

One value minus its mean.

square

Multiply a number by itself.

squared-deviation sum

Sum of all squared differences from the mean.

sample variance

Squared-deviation sum divided by n minus 1.

sample SD

Square root of sample variance; a measure of spread in original units.

square root

The nonnegative number whose square equals a given nonnegative value.

rounding

Reporting a value to a stated number of decimal places.

outlier

A value that appears far from other observations; appearance alone does not prove error.

reliability assessment

An evidence-based statement about consistency/quality and what the available evidence cannot establish.

calibration

A defined comparison with a reference, not established by SD.

replication

Repeating a study using enough genuine method information; a table may be insufficient.

simulated

Invented for practice, not actually measured.

Schoology submission check

After uploading, look for Submitted in the linked assignment.

H1: Check a record before changing it

Paper documentation only. No new human measurement, device operation or intervention is authorized. Actual collection requires the responsible teacher's approved protocol and authorization.

Opening source H-S: invented record Z has value 12 units. Opening draft H-D: the same record Z has value 120 units. Original route: identify the evidence supporting a correction and say why size alone would not prove an error. Actual route: use your genuine source/draft instead, or mark the source unavailable. Answer once using H1 only.

Today is Monday March 8. Friday March 5 used five fictional paired records. No previous student work or actual physiology collection is assumed complete.

D1: Original fictional source, preserved from March 5

These author-invented values repeat the March 5 D1. P1–P5 are five fictional participant codes, with one observation in A and one in B for each code. Trial 1 denotes that one supplied observation per condition for each code, not a time point or an extra measurement. Ten values represent five pairs, not ten independent people.

A and B are condition labels only. No activity, onset, duration, sensor, actual participant or protocol is specified. Values represent pulse rate in bpm, beats per minute, solely for paper practice. SUPPLIED means included in the fictional source, not physically validated.

Columns: fictional pair ID | trial within each condition for that ID | A value | B value | unit for both values | A status/B status.

P1 | 1 | 66 | 68 | bpm | SUPPLIED/SUPPLIED

P2 | 1 | 68 | 70 | bpm | SUPPLIED/SUPPLIED

P3 | 1 | 70 | 74 | bpm | SUPPLIED/SUPPLIED

P4 | 1 | 72 | 76 | bpm | SUPPLIED/SUPPLIED

P5 | 1 | 74 | 82 | bpm | SUPPLIED/SUPPLIED

D1 is the authoritative source for this original exercise. Every D1 value is supplied. March 4's separate V01 repeated-record example, including R08 missing, is not D1 and must not be merged with it. Actual route: genuine teacher-assigned data and rubric replace the fictional records, draft errors and counts. Complete one table only. Ask for missing actual inputs and authorization; after uploading, check that Schoology shows Submitted.

D2: Complete deliberately flawed draft

The author made this fictional transcription draft from D1. The same six columns apply. NA/MISSING means absent from this draft, not zero and not absent from the original source.

P1 | 1 | 66 | 68 | bpm | SUPPLIED/SUPPLIED

P2 | 1 | 680 | 70 | bpm | SUPPLIED/SUPPLIED

P3 | 1 | 70 | 74 | bpm | SUPPLIED/SUPPLIED

P4 | 1 | 72 | NA | bpm | SUPPLIED/MISSING

P5 | 1 | 74 | 82 | bpm | SUPPLIED/SUPPLIED

Compare every draft cell with D1. Change a draft cell only when D1 supplies a different value for that exact cell, never because a number looks unusual. No actual sensor mistake or lost measurement is inferred.

Keep a short change log on the same table: cell ID/condition, draft entry, verified source entry, action and source pointer. Retain before/after rather than silently overwriting. A large value alone does not justify changing or deleting it; decide each cell from its D1 comparison. Actual route: genuine teacher-assigned data and rubric replace the fictional records, draft errors and counts. Complete one table only. Ask for missing actual inputs and authorization; after uploading, check that Schoology shows Submitted.

R1: Verify and assemble the same table

Original route: use D1 to repair D2 into one final table retaining the six labeled columns, all five pairs and units. Record each change in the change log with its draft entry and its D1 entry, citing D1. This restores source values; it is not guessing missing data.

If an actual source is unavailable, preserve the draft value or missing marker, flag the uncertainty and request the source. Never infer a typo from a physiological range, remove an inconvenient outlier or fill a missing value with zero.

For each condition, count the numeric values in your corrected table as n , then record the missing and excluded counts with a reason for each. Do not count pair IDs or labels as numeric observations.

Actual route: use genuine provenance and missing-data rules. For a descriptive summary, count only available numeric values in each condition, report missing/excluded counts and reasons, and preserve every raw row. If no rule authorizes an exclusion, do not silently discard a reading. This task supplies no new collection or clinical screen.

C1: Complete calculation reference

Original route: calculate summaries separately for A and B after the source check. Use n for the count of included numeric values, x for one value, and $\bar{x}$ for the arithmetic mean. Mean = sum of included values divided by n . A mean requires at least one included numeric value.

Sample variance = sum of $(x - \bar{x})^2$ squared, divided by $(n - 1)$. Sample SD $s = \sqrt{\text{variance}}$ of that variance. Sample SD requires n at least 2. If n is 0, mean and SD are unavailable; if n is 1, sample SD is unavailable. Do not replace unavailable with zero.

Sigma notation means add all the indicated terms; no Greek notation is required in your answer. Keep the unrounded mean and intermediate calculations. Round only final mean and sample SD to two decimal places for this practice. Mean and SD use bpm; squared deviations and variance use bpm squared.

Check each sum and squared-deviation sum against your own March 5 calculation for the same D1 values; if they differ, recompute before changing anything. The divisor for sample variance is $n - 1$ for each condition. A basic calculator with square root is sufficient; a spreadsheet is optional.

NIST defines sample variance with n minus 1 and SD as its square root, restoring original units (NIST-SCALE). No t-test, confidence interval, significance claim, graph or new experiment is assigned. Actual route: use the genuine rubric and included-value rules; report your actual n and limitations instead of forcing these sums or counts.

Q1: Reliability and unusual values

Original route: write one sentence stating what the source comparison establishes and what it cannot establish. Include the traceable draft corrections and one real limitation you can point to in what D1 does or does not supply. Do not claim that a small SD proves accurate or reliable measurement.

NIST distinguishes a possible outlier from a confirmed error and cautions against simply deleting a value when its validity is unknown (NIST-OUTLIER). Apply that to any unusual D2 value by checking it against D1. No formal outlier test or numerical rejection threshold is assigned.

A suitable reliability note distinguishes documentation accuracy from measurement quality. You can check faithful copying, arithmetic and labels here; you cannot verify actual instrument performance or conditions. Possible sources of real error stay possibilities unless documented, not invented events. Actual route: genuine teacher-assigned data and rubric replace the fictional records, draft errors and counts. Complete one table only. Ask for missing actual inputs and authorization; after uploading, check that Schoology shows Submitted.

S1: Submission and reproducibility

Keep ten work checks separate. 1: authentic data/provenance. 2: approved collection protocol/authorization. 3: actual calibration and condition records. 4: actual missing/exclusion rules. 5: genuine table/statistics. 6: actual rubric. 7: enrolled official task/completion. 8: confirmed destination/deadline. 9: saved chosen-route document. 10: whether Schoology shows Submitted. Give a non-private pointer for what you actually did or name the missing input and next action. Update an existing record if available.

Open the linked BI assignment and follow its posted instructions. Use the linked March 8 assignment and check its required format; ask the teacher if it is unclear. If blocked, save the labeled preparation locally and ask for help with the missing input or assignment access. A saved file or upload is not automatically official completion.

Your teacher may also assign Activity 2.1.2 Science and the Media. Confirm the enrolled task and stopping point. Do not assume Friday statistics or official work is done.

Exit, both routes: can the table alone support replication of the study? Give one reason based on supplied or missing protocol information. Original route: list the method details a classmate would need and check whether D1 records each one. Do not invent that protocol. Actual route: refer only to genuine

supplied documentation. March 10 concerns biometric privacy; no permission to share health data is implied.

M1: Distinct complete non-physiology model

Optional invented box-mass example, not another assigned table. Original source M-S gives three fictional boxes in each condition: U values 2,4,6 grams and V values 3,3,6 grams. IDs M1,M2,M3 identify matched boxes across U/V; each has one supplied reading per condition. No actual weighing occurred. Draft M-D changes M2/U from 4 to 40; all other entries match M-S.

Completed table, columns ID | trial per condition | U (grams) | V (grams) | status: M1 | 1 | 2 | 3 | supplied both; M2 | 1 | 4 | 3 | supplied both; M3 | 1 | 6 | 6 | supplied both. Log: M2/U draft 40, source M-S 4, restored 4 because the exact source cell verifies it. No missing or excluded values; n=3 per condition.

U: sum12, mean4, deviations minus2/0/2, squared sum8, sample variance8/(3 minus1)=4, sample SD2.00 grams; mean4.00 grams. V: sum12, mean4, deviations minus1/minus1/2, squared sum6, sample variance6/2=3, sample SD1.73 grams; mean4.00 grams.

Worked note: “The draft correction is traceable to M-S and summaries preserve all records, but no actual scale verification or collection conditions are supplied.” No real reliability or effect is claimed. A table alone cannot supply the missing weighing protocol. Actual route: genuine teacher-assigned data and rubric replace the fictional records, draft errors and counts. Complete one table only. Ask for missing actual inputs and authorization; after uploading, check that Schoology shows Submitted.

Try the decision

Original route: P5/B is 82 in both D1 and D2. Actual route: apply genuine provenance/rubric instead without a duplicate decision.

- Retain 82 and note any concern without calling it a confirmed error.
- Delete the value of 82 because it increases the dataset’s spread.
- Change the recorded value from 82 to 72 to make it look typical.

Explain your choice using the reading. Discuss it or say it to yourself. This practice does not add another submission.

Your 80-minute flow

0–10 minutes	Read H1 and answer the opening; choose one route. Actual route: genuine teacher-assigned data and rubric replace the fictional records, draft errors and counts. Complete one table only. Ask for missing actual inputs and authorization; after uploading, check that Schoology shows Submitted.
10–30 minutes	Read D1/D2/R1 and relevant definitions; verify the same table and log traceable changes. Actual route: genuine teacher-assigned data and rubric replace the fictional records, draft errors and counts. Complete one table only. Ask for missing actual inputs and authorization; after uploading, check that Schoology shows Submitted.
30–50 minutes	Use C1 to compute per-condition mean and sample SD; M1 is optional help. Actual route: genuine teacher-assigned data and rubric replace the fictional records, draft errors and counts. Complete one table only. Ask for missing actual inputs and authorization; after uploading, check that Schoology shows Submitted.
50–65 minutes	Use Q1 to write one reliability sentence on the table. Actual route: genuine teacher-assigned data and rubric replace the fictional records, draft errors and counts. Complete one table only. Ask for missing actual inputs and authorization; after uploading, check that Schoology shows Submitted.
65–77 minutes	Use S1 to check the table and changed work checks, then save or submit through the linked assignment. Actual route: genuine teacher-assigned data and rubric replace the fictional records, draft errors and counts. Complete one table only. Ask for missing actual inputs and authorization; after uploading, check that Schoology shows Submitted.
77–80 minutes	Answer the S1 replication exit with one reason; do not invent a protocol. Actual route: genuine teacher-assigned data and rubric replace the fictional records, draft errors and counts. Complete one table only. Ask for missing actual inputs and authorization; after uploading, check that Schoology shows Submitted.

Your response record

Use these labels on paper or in your document. The space below also works when this page is printed.

Source before correction

Original route: answer both H1 questions using H1 only. Actual route: use genuine source/draft or mark missing input.

Actual route: genuine teacher-assigned data and rubric replace the fictional records, draft errors and counts. Complete one table only. Ask for missing actual inputs and authorization; after uploading, check that Schoology shows Submitted.

Use this space or the same labeled section in your existing document. Add paper when your table, graph or drawing needs more room.

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Verify one table and log

Original route: use D1/D2/R1, preserve every row, log each source-backed change and keep every value D1 confirms.

Actual route: genuine teacher-assigned data and rubric replace the fictional records, draft errors and counts. Complete one table only. Ask for missing actual inputs and authorization; after uploading, check that Schoology shows Submitted.

Use this space or the same labeled section in your existing document. Add paper when your table, graph or drawing needs more room.

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Mean and sample SD per condition

Original route: use C1 to record each condition's n , missing/excluded count/reason, mean and sample SD with units and two final decimals.

Actual route: genuine teacher-assigned data and rubric replace the fictional records, draft errors and counts. Complete one table only. Ask for missing actual inputs and authorization; after uploading, check that Schoology shows Submitted.

Use this space or the same labeled section in your existing document. Add paper when your table, graph or drawing needs more room.

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One-line reliability note

Original route: use Q1 to distinguish checked documentation from unavailable measurement quality.

Actual route: genuine teacher-assigned data and rubric replace the fictional records, draft errors and counts. Complete one table only. Ask for missing actual inputs and authorization; after uploading, check that Schoology shows Submitted.

Use this space or the same labeled section in your existing document. Add paper when your table, graph or drawing needs more room.

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Chosen-route document and work checks

Both routes: update S1's work checks, use the linked assignment or save locally if blocked and ask for help with the missing input or access problem.

Actual route: genuine teacher-assigned data and rubric replace the fictional records, draft errors and counts. Complete one table only. Ask for missing actual inputs and authorization; after uploading, check that Schoology shows Submitted.

Use this space or the same labeled section in your existing document. Add paper when your table, graph or drawing needs more room.

Can the table alone support replication?

Both routes: answer the S1 exit with one reason from known or missing method information.

Actual route: genuine teacher-assigned data and rubric replace the fictional records, draft errors and counts. Complete one table only. Ask for missing actual inputs and authorization; after uploading, check that Schoology shows Submitted.

Use this space or the same labeled section in your existing document. Add paper when your table, graph or drawing needs more room.

Check your product

- Original route: one labeled table retains all five D1 pairs, units and traceable draft corrections; every value D1 confirms remains unchanged.
- Original route: A and B each report n, missing/excluded counts with reasons, mean and sample SD in bpm with two final decimals.
- Chosen route: one reliability sentence separates documented checks from unsupported measurement quality; exit identifies a method-information limit.
- Actual route: genuine data/provenance/rubric replace all fictional counts, corrections and calculations; no duplicate table.
- Both routes: use genuine evidence of the actual protocol and official completion; check the linked assignment and whether Schoology shows Submitted.

Keep the limit: Invented records support calculation and documentation practice only. Summaries cannot prove calibration, reliability, physiological benefit, causation or actual completion.

Turn in your work

Open the linked March 8 BI assignment and check its format. Keep one labeled table, summaries, brief change log and reliability sentence together. Paper documentation only. No new human measurement, device operation or intervention is authorized. Actual collection requires the responsible teacher's approved protocol and authorization. After uploading, check that Schoology shows Submitted.

If blocked, save locally and ask for help with the missing input or assignment access.

[Open this assignment in Schoology.](#)

Carry forward

A trustworthy table preserves source values and traceable changes; summaries describe included records but do not certify measurement quality.

March 10 examines biometric privacy. A prepared table does not grant permission to share health information. Who should be able to access the health information in your proposed table?

Sources and resources

[Open today's page](#)

NIST-SCALE · Measures of Scale

NIST/SEMATECH e-Handbook

<https://www.itl.nist.gov/div898/handbook/eda/section3/eda356.htm>

NIST-OUTLIER · Detection of Outliers

NIST/SEMATECH e-Handbook

<https://www.itl.nist.gov/div898/handbook/eda/section3/eda35h.htm>