

HEART & LUNGS LAB

A hands-on body science mission / ages 3-9

MINI MEDICAL SCHOOL

Why does my heart speed up?

Captain Heart sends oxygen-carrying blood on a delivery route. The lungs add oxygen from the air. What changes when your legs start marching?

- 1 DISCOVER a body clue**
- 2 TEST a model or make an observation**
- 3 SOLVE a case and explain your reasoning**

WHAT IS INSIDE

Facilitator guide / illustrated concept / experiment / child worksheet / four mission cards / older-kid challenge / answer key / certificate

TIME 30 minutes **AGE TRACKS** 3-5 and 6-9

A grown-up leads this activity. Children practice with props and observations, never with real patients.

FACILITATOR PLAYBOOK

Read once, then run the mission together

Gather materials

Paper, pencil, timer, two paper cups, straw for an adult demonstration only.

Ages 3-5 / 15-20 minutes

Put a hand on your chest. Breathe in and out. March gently for 30 seconds, then describe whether breathing feels faster. An adult may help find a wrist pulse.

Ages 6-9 / 25-40 minutes

Predict which count will be higher. Count a wrist pulse for 15 seconds at rest and after 30 seconds of easy marching. Repeat once and compare; do not interpret counts as a medical test.

The teaching move

Ask: "What do you notice?" Then: "What would you predict?" Then: "What else could explain it?"
Accept an observation before introducing the science word.

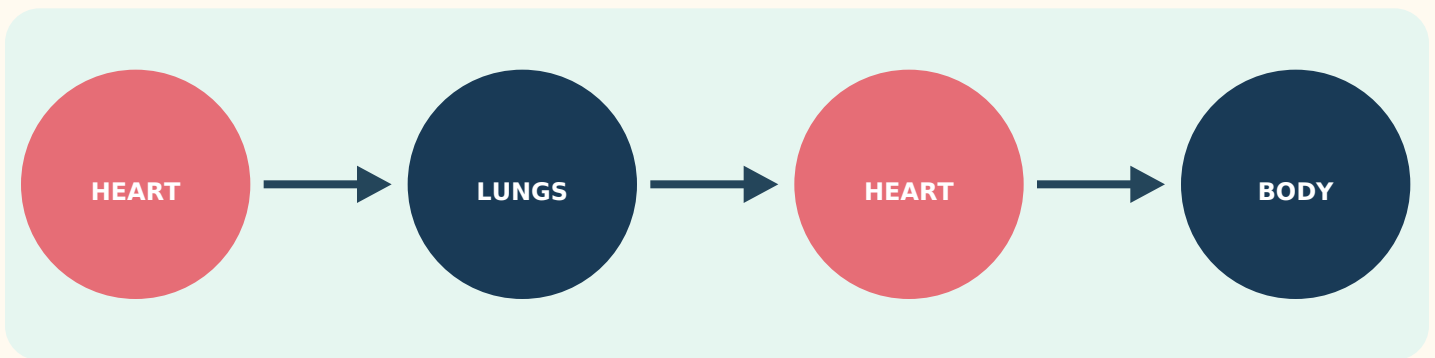
SAFETY & ACCESS

Adult supervision. Skip movement if a child feels unwell; use a seated observation instead. Offer pointing, speaking or drawing as equal ways to participate. All cases are pretend.

THE SCIENCE MAP

Read the story, then follow the arrows

Captain Heart sends oxygen-carrying blood on a delivery route. The lungs add oxygen from the air. What changes when your legs start marching?



What the model means

The heart pumps blood. In the lungs, blood picks up oxygen. Working muscles need more oxygen, so breathing and heart rate often increase with movement.

Say it back in your own words

I notice _____

The first part of the path is _____

A question I still have:

Models help us think. Real bodies are more complex than four circles and arrows. Ask children what the picture leaves out.

TRY THE BODY LAB

Prediction / observation / explanation

Before you start: what do you predict?

I think _____

Do the experiment

Sit and notice your breathing. Count beats for 15 seconds if you can feel a pulse. March in place for 30 seconds, stop, and count again. Take a break if uncomfortable.

Record what you noticed

Before / first try:

After / second try:

One thing I changed:

One thing I kept the same:

Was your prediction supported? It is okay if it was not. Tell someone what you would try next.

DETECTIVE WORKSHEET

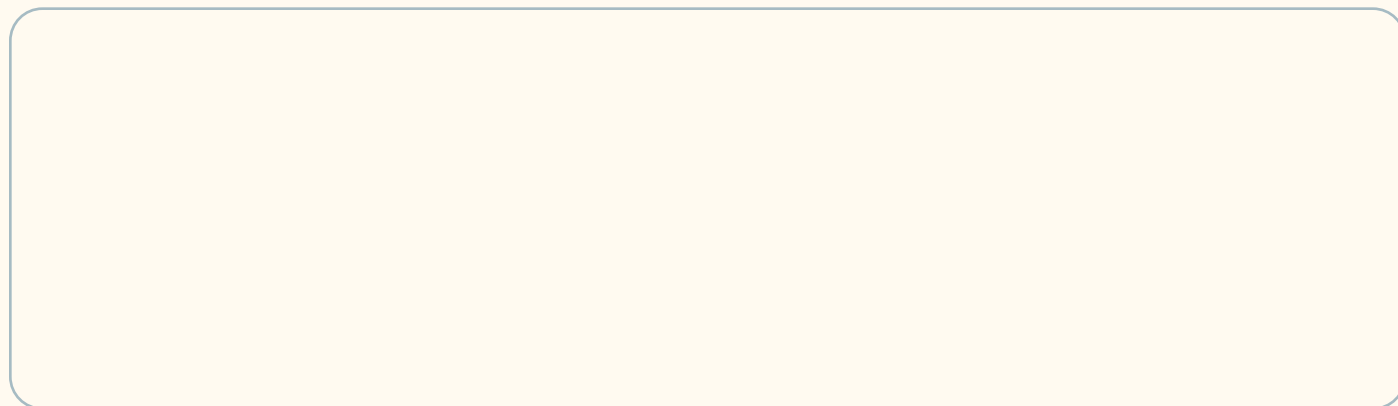
Point, draw, discuss or write

Build the delivery route

Number these stops in the story: BODY muscles use oxygen / LUNGS add oxygen to blood / HEART pumps blood onward. The heart pumps blood to both the lungs and the body; this is a simple route model.

Younger helper

Point to the first clue in the science map. Tell a grown-up what you see. Draw one part of the story below.



CUT-OUT MISSION CARDS

Four quick challenges for partners or a classroom

1 Breath detective

Point to where air enters. Name one thing that changes after marching.

SHOW / SAY / DRAW

2 Pulse explorer

Tell the team your prediction before checking a pulse.

SHOW / SAY / DRAW

3 Delivery driver

Pretend to deliver an oxygen card from the lungs to the body.

SHOW / SAY / DRAW

4 Model checker

Does a higher pulse count alone tell you that someone is sick? Explain why not.

SHOW / SAY / DRAW

THINK LIKE A SCIENTIST

Older-kid extension and grown-up answer key

Start with a question

Why might your heart beat faster during movement?

Extend the investigation

Draw arrows between lungs, heart and muscles. Explain why the model has two trips: heart to lungs and heart to body.

Explain your reasoning:

Grown-up key

Simplified route: lungs add oxygen -> heart pumps oxygen-rich blood -> body uses oxygen. The heart also pumps oxygen-poor blood to the lungs. Activity counts vary by person.

The goal is careful observation, a useful question and a safe handoff. Do not score children on reaching a diagnosis.

MISSION COMPLETE

Celebrate the reasoning, not just the right answer

MINI MEDICAL SCHOOL

BODY DETECTIVE AWARD

Presented to

for completing Heart & Lungs Lab

I noticed, tested and explained a new idea!

Family / educator signature: _____

Take it home

Ask the child to teach someone one idea from the lab, then ask what question they want to investigate next. The activity is educational and is not a way to diagnose a health problem.

Science and safety references

NHLBI: nhlbi.nih.gov/health/heart/blood-flow

NHLBI: nhlbi.nih.gov/health/lungs/breathing-benefits