

living-things

One organ in action: investigating the heart

Lesson at a glance

Open by feeling the wrist pulse and wondering what makes it speed up. Pupils place heart, lungs and other organs on the diagram-labeller, then each group chooses two on-the-spot activities to compare with rest. They plan the fair test on the planner interactive, run three 15-second pulse counts per activity, and circle the middle value in the Investigation Journal. Class middle values pool into a bar chart under resting, gentler and livelier labels before a short talk on everyday movement keeping the heart strong.

Learning objectives

- Locate the heart among the main organs of the human body
- Design and run a fair pulse investigation, choosing activities to compare and measuring with repeats
- Use pooled class evidence to explain what makes the heart work harder and how activity keeps it healthy

Before the bell – prep

Print the Investigation Journal pages the day before. Gather stopwatches (or set the on-screen timer) and clear a small floor space per group for on-the-spot marching or dancing. Check quietly who must not exercise and assign them timekeeper or recorder.

Materials

Item	Qty	Per	Source	Low-cost substitute
stopwatch	1	group	school kit	classroom clock with a second hand, or the on-screen timer on the IWB
Investigation Journal pages	1	pupil	provided printable	ruled paper with two headed sections copied from the board
scrap paper for trial counts	1	group	classroom	the back of a reused worksheet

Safety watch-point

Anyone who should not exercise is timekeeper or recorder only. Stop anyone pale, dizzy or short of breath. Keep all activity on the spot — no racing the room.



Teaching moves

- **Getting Started:** Keep stopwatches boxed. Invite a few volunteers to find the wrist pulse with two fingers; try the neck gently if needed and never press hard. Collect two or three ideas on what might speed the beat, then move on.
- **Where does the heart sit?:** Open the diagram-labeller in explore mode with lungs, heart, stomach and intestines off the diagram. Let the class place them before you confirm: heart slightly left of centre, lungs either side. Head off the valentine-on-the-far-left drawing.
- **What shall we test?:** Fix the theme but let each group choose two safe on-the-spot activities to compare with rest. Hear two or three predictions aloud. Point at the three shared bins so every group leaves knowing which choice is gentler and which is livelier.
- **Plan our fair test:** Drive the fair-test-planner on the IWB: change the activity, measure pulse, keep counting time, who is measured, and one-minute exercise the same. Model your own rest-then-march investigation live, then circulate so every Journal page has only one thing in Change.
- **Measure our pulses:** Name the three roles on the board and practise finding the pulse once as a class. Rest first with three sitting counts; then each activity as three full one-minute-then-count goes. Say aloud that rest plus one clean activity already answers the question — do not rush a second activity.
- **Record our readings carefully:** Model ordering 22, 18, 20 and circling 20 before groups touch their own numbers. Circulate for three trials, a circled middle value, and units as beats in 15 seconds — no conclusion sentences mixed into the data.
- **Pool the class results:** Re-line the three bin labels and have every group name which activity sits where before any numbers are entered. Open the data-recorder; groups call out bin label plus middle pulse only. If a bar falls against the pattern, ask what might have gone wrong rather than discarding it.
- **What keeps a heart healthy?:** Draw from the chart that livelier activity raised the pulse, then separate today's short counts from longer studies that link regular movement to a stronger pump. Partner talk on one everyday way they already move; finish with 30 seconds of calm breathing so pulses settle.

What it should show

Resting 15-second counts for this age often sit around the low twenties; livelier on-the-spot activity should raise the middle value so the class bars climb from resting to gentler to livelier. Exact numbers vary widely by child — the rising pattern matters. A group whose pulse falls after exercise usually lost the beat, counted late, or started already breathless; re-check method, not the science.



Misconceptions & interventions

- **Pupils draw the heart as a cartoon valentine stuck on the far left of the chest.** — On the diagram-labeller, place the heart almost in the middle, a little to the left, and show the lungs either side. Have them feel with a flat hand on the left-centre of the chest after a short march.
- **Pupils think a faster pulse during exercise means something is wrong or dangerous.** — Point at the rising bars and say the heart is a muscle meeting the body's need for more oxygen. Danger signs are dizziness, pain or feeling unwell — that is when we stop.
- **Groups do the activity once, then take three sitting counts in a row and treat them as repeats.** — Stop and re-voice the method: each trial is a full one-minute activity then an immediate 15-second count. Three sitting counts after one burst measure a falling pulse, not the same state.

Differentiation

Emerging	Developing	Proficient
• Pair the recorder with a partner to order the three numbers and circle the middle value. • Accept rest plus one clean activity as a full success; that comparison still feeds the class chart.	• Prompt why two groups' resting middle values might differ even with the same method. • If rest plus one is clean, add the second chosen activity before pooling.	• Sketch a second prediction: what would happen after two full minutes of the liveliest activity? • Critique a falling bar on the class chart — which fair-test rule might that group have broken?

Cross-curricular hook

Tie to Maths Data — order three readings for the middle value and read the tallest bar as the mode pattern across the class.