The Beating Heart

Materials you will need:
50 CO₂ cards to represent de-oxygenated blood (print on blue cardstock & laminate for durability)
50 O₂ cards to represent oxygenated blood (print on pink or red cardstock & laminate for durability)

What you and students will do:
- Review the diagram of movement and locate and open area where this physical activity can be done with your class.
- Assign one student to be the left side of the heart (Heart 1) and one student to be the right side of the heart (Heart 2). These two students will be in the middle of the movement area.
- Assign two students to collect and distribute cards in the lung. One will collect blue cards (Lung 1) and one will pass out red cards (Lung 2).
- Assign two students to collect and distribute cards in the big toe. One will collect the red cards (Big Toe 1) and one will distribute blue cards (Big Toe 2).
- All remaining students will be blood cells. To start they will line up at the lungs to receive oxygen (red cards).
- The two heart students begin to chant (pump, pump, pump . . . ). The students in line begin to file past Lung 2 who gives them a red card.
- After receiving their red card, they head for the heart where Heart 1 pumps them out (directs them) to the Big Toe.
- At the Big Toe, students pass off their red cards to Toe 1 and pick up a blue card from Toe 2 and head back to the heart.
- This time they file past Heart 2 and they are redirected back to the Lung 1.
- Students hand off their blue card to Lung 1 and pick up a red card from Lung 2 and the process begins again.
- Also designate someone to continually replenish card supplies between Big Toe 1 and Lung 2 (red cards) and Lung 1 and Big Toe 2 (blue cards)
- Since the heart can speed up if the body is more active or slow down at rest, every so often announce things like:
  - You are running for a touchdown . . . speed UP! You are taking a nap . . . s l o w D O W N!
  - This activity does not simulate the 4 chambers of the heart but you can add that.
  - For follow-up have students make a diagram of the journey from lung to heart to big toe, to heart, to lung in their journals. They can use red and blue arrows to show oxygenated vs de-oxygenated blood in the route.
  - Simulate how strong the heart muscle is by asking students to squeeze a new tennis ball as many times as they can in one minute.
  - Tell students what they felt is the work of the heart. The force the heart needs to pump one time is about the same as the force needed for one squeeze of the tennis ball. The heart beats an average of 72 beats per minute for the number of years we live.
Activity Diagram

- **Lung 1** — collects blue cards & directs students to Lung 2
- **Lung 2** — hands out red cards and directs students to Heart 1
- **Heart 1** — directs students with red cards to Big Toe 1
- **Heart 2** — directs students with blue cards to Lung 1
- **Big Toe 1** — collects red cards & directs students to Big Toe 2
- **Big Toe 2** — hands out blue cards & directs students to Heart 2

Students form a line here to give up their blue cards

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