

Getting Physically Active

Background Information

One reason humans need food is for energy. This energy serves a variety of functions, such as fueling muscle movement and brain function, meeting basic energy requirements for other organs and tissues, and helping to maintain our body temperature.

Oxygen is used by our bodies to break down food for energy. Without oxygen, **aerobic organisms** – plants and animals that require oxygen – could not survive. When oxygen is used to break down food for energy, **carbon dioxide** is released as a waste product. For this to happen, oxygen must be transported to different parts of our bodies where it can be used to release energy from food, and carbon dioxide that is released as part of this process must be transported from different parts of our bodies so it can be disposed of.

The **cardiovascular system** consists of the **lungs, heart,** and a network of **veins** and **arteries** that transport blood. The blood carries oxygen and carbon dioxide to and from our tissues and organs, and also carries nutrients to different parts of the body. The heart can be thought of as a pump that consists of two halves: the right half and the left half. The right half of the heart includes the **right atrium** and **right ventricle**; the left half of the heart is made up of the **left atrium** and **left ventricle**. The lungs are where **gas** exchange with the atmosphere occurs. Oxygen is brought into the body through **inhalation**; carbon dioxide is released into the atmosphere through **exhalation**.

The pathway blood travels through the body is a closed circuit (i.e., everything is connected). After food has been broken down and used for energy in different tissues of the body, like muscles, carbon dioxide is carried in the blood to the heart via the veins where it enters the right atrium of the heart. The right atrium then pumps the blood to the right ventricle. After entering the right ventricle, the blood that is high in carbon dioxide is pumped to the lungs where gas exchange with the atmosphere takes place: carbon dioxide is exhaled, and oxygen enters the blood through inhalation. The oxygen-rich blood moves from the lungs to the left atrium of the heart where it then travels to the left ventricle. From the left ventricle, the oxygen-rich blood is pumped to the rest of the body through arteries where the oxygen will be used to help break down food for energy.

When we are physically active, our bodies need more fuel to do the physical work. The demands for oxygen depend on the levels of intensity of physical activity. The higher the intensity, the more demand there is for oxygen. As a result, **heart rates** and **breathing rates** will increase to meet this demand.

Concepts and Vocabulary

- **Aerobic organism:** an organism that requires oxygen to create energy.
- **Arteries:** vessels that carry oxygen-rich blood from the heart to the rest of the body.
- **Blood:** the fluid that carries oxygen and nutrients, and is pumped by the heart through vessels and moves throughout the body.
- **Breathing rate:** the frequency of breathing, expressed as the number of breaths per minute.
- **Carbon dioxide:** a colorless, odorless gas that is expelled by aerobic organisms as a waste product.
- **Exhalation:** the act of breathing out air from the lungs through the nose or mouth.
- **Heart rate:** how frequently the heart beats, expressed as the number of heart beats per minute.
- **Heart:** an organ that pumps blood throughout the body.
- **Inhalation:** the act of breathing in air through the nose or mouth into the lungs.
- **Intensity (of physical activity):** the degree of effort required to perform an activity.
- **Left atrium:** the upper left chamber of the heart that receives oxygen-rich, carbon dioxide-poor blood from the lungs.
- **Left ventricle:** the lower left chamber of the heart that receives oxygen-rich, carbon dioxide-poor blood from the left atrium.
- **Lungs:** the organ that transfers oxygen and removes carbon dioxide from the blood, allowing animals to breathe and function properly.
- **Oxygen:** a colorless, odorless gas that is required for aerobic organisms to live.
- **Pulse:** the regular expansion and contraction of blood vessels caused by the heart pumping blood throughout the body.
- **Right atrium:** the upper right chamber of the heart that receives oxygen-poor, carbon dioxide-rich blood from the rest of the body.
- **Right ventricle:** the lower right chamber of the heart that receives oxygen-poor, carbon dioxide-rich blood from the right atrium.
- **Veins:** vessels in the body that are rich in carbon dioxide and take this gas from parts of the body and back to the heart.

Life Skills

Learning to learn, problem solving, critical thinking, keeping records, communication, cooperation, social skills, sharing, contributions to group effort, teamwork

Subject Links

Science, English-Language Arts

Educational Standards Supported

Discovering Healthy Choices curriculum supports Next Generation Science Standards, Common Core State Standards, and California Nutrition Education Competencies. For specific details on standards and grade levels, please see page 9.

Activity 2.1: Classroom Activity

Getting Ready

1. Make 1 copy of the *Container Labels* (Appendix 2A), cut them into separate labels and secure one to each container.
2. Make copies of the *Human Body Outline* (Appendix 2C), two for each group of four youth, one for each group of three youth.
3. Make 5 copies of *Blood Flow Cards Set 1* (Appendix 2D).
4. Make 1 copy of *Blood Flow Cards Set 2* (Appendix 2E).
5. Cut out each of the Blood Flow Cards, Sets 1 and 2. Fold each of the cards into quarters and place them in the container with the matching label. For example, a card that states, “Blood high in carbon dioxide and low in oxygen flows from the BRAIN to the RIGHT ATRIUM” would be placed in the container labeled “Brain”.
6. Organize the 15 containers in the classroom or multi-purpose room according to the configuration shown in *Classroom Orientation* (Appendix 2B).

Facilitator Tip: The activity works best if there is some distance (e.g., 15-20 feet) between containers, thus a large area is recommended (e.g., multi-purpose room, school gymnasium, or playground).

7. Organize the class into small groups of 3 to 4 youth.

Facilitator Tip: these can be the same groups that were formed in Lesson 1, Activity 1. By doing so, the youth may continue developing teamwork skills with the same group members.

8. Provide each group with a sheet of flip chart paper and markers to answer opening questions.

Time Required

60 to 75 minutes

Suggested Groupings

Small groups of 3 to 4 youth

Materials Needed for Each Group

(*Materials provided in curriculum)

- Flip chart paper
- Markers or writing utensils
- One red marker and one blue marker for each pair
- 15 containers (paper lunch bags, shoe boxes, etc.)
- **Container Labels* (Appendix 2A)
- **Classroom Orientation* (Appendix 2B)
- **Human Body Outline* (Appendix 2C)
- **Blood Flow Cards Set 1* (Appendix 2D)
- **Blood Flow Cards Set 2* (Appendix 2E)

Opening Questions/Prompts

Ask the youth to respond to each question/prompt below by recording them on the flip chart paper provided and sharing their ideas verbally.

- Explain what you know about the human heart.
- Explain what you know about human lungs.

Procedure (Experiencing)

1. Have each group of 4 youth split into 2 pairs. If there are groups of 3, they will remain a group of 3 youth.
2. Provide a copy of the Human Body Outline to each pair or group of 3 youth.
3. Explain the layout of the room is a human body, and each container represents a different body part. Walk around to each station, reading aloud the names of each container so that the youth become familiar with the layout of the room.
4. Distribute the pairs and groups of 3 equally among the fifteen stations.
5. Ask the youth to imagine they are blood cells (very small parts of the body that are found in the blood) moving through blood vessels to different parts of the body.

Procedure (Experiencing) (continued)

6. Instruct the youth to draw a card from the container at their station and read it. Ask them to pay close attention to which station they are starting from, where they are directed to go next, and whether the blood is high in oxygen or high in carbon dioxide.
7. Ask the youth to refold the card and place it back in the container.
8. Instruct the youth to move to the next station as directed by the card.

Facilitator Tip: There is likely to be a large group that forms at the left ventricle. Ask the youth to be patient and wait their turn to move.
9. When the youth have arrived at their destination, ask them to draw a line on their diagrams representing where they started and where they went. Explain that they should use a red marker for blood that is high in oxygen and low in carbon dioxide, and a blue marker for blood that is high in carbon dioxide and low in oxygen.
10. Allow enough time for the pairs and groups of 3 to discuss what happened and to draw the lines on the Human Body Diagram.
11. Once they have finished drawing the lines on their diagrams, ask the youth to select a card from the container where they just arrived. Ask them to read the card before placing it back in the container, go to the next station as directed by the card, and then draw the corresponding line on their diagrams, red for blood high in oxygen and low in carbon dioxide, and blue for blood that is high in carbon dioxide and low in oxygen.
12. Allow the youth to complete several rotations (at least 10) so they are able to get to several parts of the body.
13. Have the pairs get back into their original groups of 4. The groups of 3 will remain the same. Ask the groups to discuss what they discovered about blood flow as they traveled around the human body.

Sharing, Processing, and Generalizing

1. Have the youth share their diagrams of the human body.
2. Follow the youth's lines of thinking through their general thoughts, observations and questions. If necessary ask more targeted questions/prompts:
 - Explain how you went about completing the diagram, and how you arrived at your conclusions.
 - As a blood cell, explain what you observed as you moved through the body.
 - Explain what you noticed about carbon dioxide and oxygen in different parts of the body.
 - Explain what you noticed about the role of the heart and lungs.

Concept and Term Discovery/Introduction

Youth should understand the basic anatomy of the heart (**ventricles** and **atria**); the gases that are exchanged (**oxygen** is taken in and **carbon dioxide** is expelled); and how blood that is high in oxygen is pumped from the heart through **arteries** to different tissues of the body, and blood that is high in carbon dioxide flows through **veins** to the heart to be pumped to the **lungs** where it becomes high in oxygen again. Youth should also understand that humans are **aerobic organisms**, needing oxygen for survival. Additionally, make sure that key vocabulary terms are either discovered by the youth or introduced to them: **lungs, heart, left atrium, left ventricle, right atrium, right ventricle, arteries, veins, oxygen, carbon dioxide, and aerobic organism**.

Activity 2.2: Classroom Concept Application

Getting Ready

- This activity uses the same 15 containers with labels (Appendix 2A), blood flow cards (Appendix 2D and 2E) folded and placed in the containers, and classroom orientation (Appendix 2A) as Activity 2.1.
- Organize the 15 containers in the classroom or multi-purpose room according to the configuration shown in Appendix 2B.
- **Facilitator Tip:** The activity works best if there is some distance (e.g., 15-20 feet) between containers, thus a large area is recommended (e.g., multi-purpose room, school gymnasium, or playground).

Time Required

10 to 15 minutes

Suggested Groupings

Individuals

Materials Needed for Each Group

(*Materials provided in curriculum)

- 15 containers (paper lunch bags, shoe boxes, etc.)
- **Container Labels* (Appendix 2A)
- **Classroom Orientation diagram* (Appendix 2B)
- **Blood Flow Cards Set 1* (Appendix 2D)
- **Blood Flow Cards Set 2* (Appendix 2E)
- **Introduction to Heart Rate and Breathing Rate* (Appendix 2F)
- Clock with a second hand or a stopwatch

Procedure (Experiencing)

Facilitator Tip: This procedure is important to introduce youth to the concept of finding their pulse and observing the differences in heart rate and breathing rate between rest and during physical activity. This will help prepare them for Activity 3: Garden Concept Application.

1. Provide each youth with a copy of the Introduction to Heart Rate and Breathing Rate handout (Appendix 2F). Ask the youth to sit down and be quiet for a few minutes so that they can obtain their resting heart rate and resting breathing rate.
2. Ask the youth to find their pulses. Note: youth may need help with this. Pulses can be found by using the tips of the index and middle fingers of the left hand and pressing gently on the left side of the throat, just below the jaw; or by placing the tips of the index and middle fingers of their right hand on the inside of their left wrist below their left thumb (Diagram in Appendix 2K).
3. Ask the youth to count the number of pulses they feel for 6 seconds. Using a clock with a second hand or a stopwatch, tell the youth when to start and stop. To find the number of beats per minute, have them then multiply that number by 10. This number is their heart rate. Have them record their heart rate in the chart for resting heart rate.
4. Ask the youth to count the number of times they inhale in 6 seconds. Using a clock with a second hand or a stopwatch, tell the youth when to start and stop. Have them multiply that number by 10 to find breaths per minute (respiration rate). This is their respiration (breathing) rate. Have them record their breathing rate on the chart for resting breathing rate.
5. Divide the youth evenly among all 15 stations. Ask them to draw a card, read where to go next, replace the card, but this time, they will move as quickly as they can to the next station. Have them do this for at least 3 rotations.
6. Ask the youth to find their pulses and count them for 6 seconds. Using a clock with a second hand or a stopwatch, tell the youth when to start and stop. Note: youth may need help with this. Using a clock with a second hand or a stopwatch, tell the youth when to start and stop. To find the number of beats per minute, have them then multiply that number by 10. This number is their heart rate. Ask them to record this on the chart as active heart rate.
7. Ask the youth to count the number of times they inhale in 6 seconds. Using a clock with a second hand or a stopwatch, tell the youth when to start and stop. Have them multiply that number by 10 for breaths per minute (respiration rate). This number is their respiration (breathing) rate. Ask them to record this on the chart as active breathing rate.
8. Ask the youth to make a bar graph of the heart rates and breathing rates using the graph on the handout.

Facilitator Tip: If the youth are unfamiliar with a bar graph, give them an introduction to allow them to complete the activity.

Sharing, Processing, and Generalizing

1. Discuss the findings as a class. Follow the youth's lines of thinking through general thoughts, observations, and questions as they discuss their findings. If necessary, ask more targeted questions/prompts:
 - Explain what you observed about the differences between your heart and breathing rates between when you were quiet and resting compared to after you were active and ran between stations.

Concept and Term Discovery/Introduction

Youth should understand that **heart rate** and **breathing rate** will be different when we are quiet and resting and when we are physically active. Additionally, make sure that the key vocabulary terms have been discovered by the youth or introduced: **heart rate**, **breathing (respiration) rate**, **pulse**, **inhalation**, and **exhalation**.

Activity 2.3 Garden Concept Application

Getting Ready

- Make copies of the *Heart and Breathing Rate Chart* (Appendix 2G), one for each youth.
- Make copies of the *Heart and Breathing Rate Graph* (Appendix 2H), one for each youth.
- Divide the garden space into small plots, one for each group.
- Set up two stations in the garden:
 - Station 1: Planning and recording: select a place where groups can organize and plan what they will plant in their garden plot.
 - Station 2: Soil preparation and planting: arrange soil, tools, plants, seeds, so the youth can access them easily.

Facilitator Tip: If there is limited space in the garden, divide the groups equally between the two stations and have them rotate between them. This will allow for the groups at the soil preparation and planting station to spread out among the plots and have more room to work.

- Organize the class into small groups of 3 to 4 youth.

Facilitator Tip: These can be the same groups that were formed in Lesson 1, Activity 1. By doing so, the youth may continue developing teamwork skills with the same group members.

- Provide each group with one sheet of flip chart paper and markers to answer opening questions.

Time Required

60 to 75 minutes

Suggested Groupings

Small groups of 3 to 4 youth

Materials Needed

(*Materials provided in curriculum)

- Flip chart paper
- Markers or writing utensils
- **Heart and Respiration Rate Chart* (Appendix 2G)
- **Heart and Respiration Rate Graph* (Appendix 2H)
- Blank paper
- Plant stakes
- Permanent markers
- Soil
- Gardening tools
- Seeds and Plants:
 - See the list of recommended plants can be found in Appendix 2L
 - Include vegetables that were chosen by each group from Lesson 1: Introduction to Nutrition, Agriculture, and Gardening Activity 1.3.
 - Chose vegetables to represent every MyPlate vegetable category (Appendix 2L).
 - Select habitat plants (plants that serve as habitats for beneficial insects) that youth can choose from in preparation for Lesson 7: Consumerism Garden Activity (Appendix 2M).

Opening Questions/Prompts

Ask the youth to respond to each question below by recording them on the flip chart paper provided and sharing their ideas verbally.

- Explain what you know about how blood flows through the body, and what major organs are involved.
- Explain what you know about heart rate and breathing rate.
- Explain what you know about why exercise is important.
- Explain what you know about gardening.
- Explain how gardening could be an important form of exercise for some people.

Procedure (Experiencing)

1. Provide each youth with a copy of the Heart and Breathing Rates Chart (Appendix 2G).
2. At the planning station, provide each group of 3 to 4 youth with some blank paper to plan their assigned garden plot, and plant stakes and permanent markers to make plant markers.
3. Explain to the youth what vegetable plants and seeds are available.
 - a. Ask the youth to select the vegetables they want to plant and plan their garden plot.
 - b. Have them write down the vegetables they will plant including why they chose them, where they will plant them, and what tools and methods they will use to plant them.
 - c. Ask them to prepare a plant marker for each vegetable they will plant, using a plant stake or permanent marker.
 - d. Additionally, have the youth choose a habitat plant for their plot. Ask them to inspect the choices of plants and select one they think will best attract beneficial insects. Ask them to record why they thought it would be a good habitat plant and what types of insects they think the plant might attract.

Facilitator Tip: this step is important because the habitat plants will be needed for Lesson 7: Consumerism Activity 7.3.
4. Allow the youth 20 minutes to complete the planning.
5. Immediately following completion of the garden planning, ask the youth to find their pulses and count them for 6 seconds. Note: youth may need help with this. Tell the youth when to start and stop. To find the number of beats per minute, have them then multiply that number by 10, this number is their heart rates. Ask the youth to count the number of times they inhale in 6 seconds. Have them multiply that number by 10 for breaths per minute to determine breathing rate.
6. Have the youth record their heart and breathing rates on the chart, along with a description of the activities they performed.
7. Ask the groups of youth to go to the soil preparation and planting station. Introduce them to the tools that are available for preparing the soil for planting. Show each group where their assigned garden plot is, and explain that it will be their own garden plot throughout the lessons.
8. Ask them to prepare the soil in their assigned garden plot by turning it over, making furrows, removing weeds, etc. Then ask the youth to plant the vegetables they previously planned to plant. Allow them to do these activities for 20 minutes.

Facilitator Tip: save the seed packets and plant labels for use in Lesson 6: Food Labels Activity 6.3.

Procedure (Experiencing) (continued)

Facilitator Tip: If dividing the class into two rotating groups, the group that starts at the soil preparation and planting station can choose the plants they wish to select during the planting. When they rotate to the planning and recording station they will record how they prepared and organized the garden, what vegetables they planted and why, what habitat plant they planted and why, and what tools and methods they used to plant them.

9. Immediately following completion of the soil preparation and planting, ask the youth to find their pulses and count them for 6 seconds. Note: youth may need help with this. Tell the youth when to start and stop. To find the number of beats per minute, have them then multiply that number by 10, this number is their heart rates. Ask the youth to count the number of times they inhale in 6 seconds. Have them multiply that number by 10 to determine breathing rate.
10. Have the youth record their heart and breathing rates on the chart along with a description of the activities they performed.
11. Provide each youth with a copy of the Heart and Breathing Rates Graph (Appendix 2H).
12. Ask the youth to graph the results on the Heart and Respiration Rate graph.
13. Have the groups discuss what they observed about their heart rates and breathing rates at each station.

Sharing, Processing, and Generalizing

1. Have the groups share their graphs and findings for the heart and breathing rates. Follow the youth's lines of thinking through their general thoughts, observations, and questions. If necessary, ask targeted questions/prompts:
 - Explain how you went about planning your garden plot and how you made your decisions about what to plant and how to do so.
 - Explain what you observed about your heart and breathing rates.
 - Explain why you think your heart rate and breathing rate differed between activities.
 - Explain what you observed about the different heart rates among your group members for each of the activities.

Concept and Term Discovery/Introduction

Youth should understand that **heart rate** and **breathing rate** will be different at resting, and at different **intensities** of physical activity. Additionally, make sure that the key vocabulary terms have been discovered by the youth or introduced: **heart rate**, **breathing (respiration) rate**, **pulse**, **intensity**, **inhalation**, and **exhalation**.

2.4

Activity 2.4: Goal Setting Application**Time Required**

5 to 10 minutes

Materials Needed

(*Materials provided in curriculum)

- **Goal Setting* (Appendix 2I)

Getting Ready

1. Make copies of the *Goal Setting* handout, one for each youth.

Procedure (Experiencing)

1. Provide a copy of the *Goal Setting* handout to each youth.
2. Explain that it is recommended that we participate in 60 minutes of physical activity every day to maintain a healthy body.
3. Ask the youth to take home the Goal Setting sheet (Appendix 2H) and complete it with their families. They will answer the following questions:
 - What are some things you can do to meet this recommendation?
 - What are some things your family can do to meet this recommendation?
4. When the youth return with the completed sheet, ask the youth to share the goals they set for themselves and for their families to meet the recommendation.

2.5

Activity 2.5: Home Concept ApplicationGetting Ready

1. Make copies of the *Getting Physically Active with My Family* handout, one for each youth.

Procedure (Experiencing)

1. Provide each youth with a copy of the *Getting Physically Active with My Family* handout.
2. Ask them to take home the handout and complete the activity with their families. Explain that this activity asks them to participate in physical activity with their families. They will record everyone's heart beat and breathing rates before and after the activity, and then make a graph or chart of them.
3. When the youth return with the completed sheet, ask the youth to share their findings.

Time Required

5 to 10 minutes

Materials Needed

(*Materials provided in curriculum)

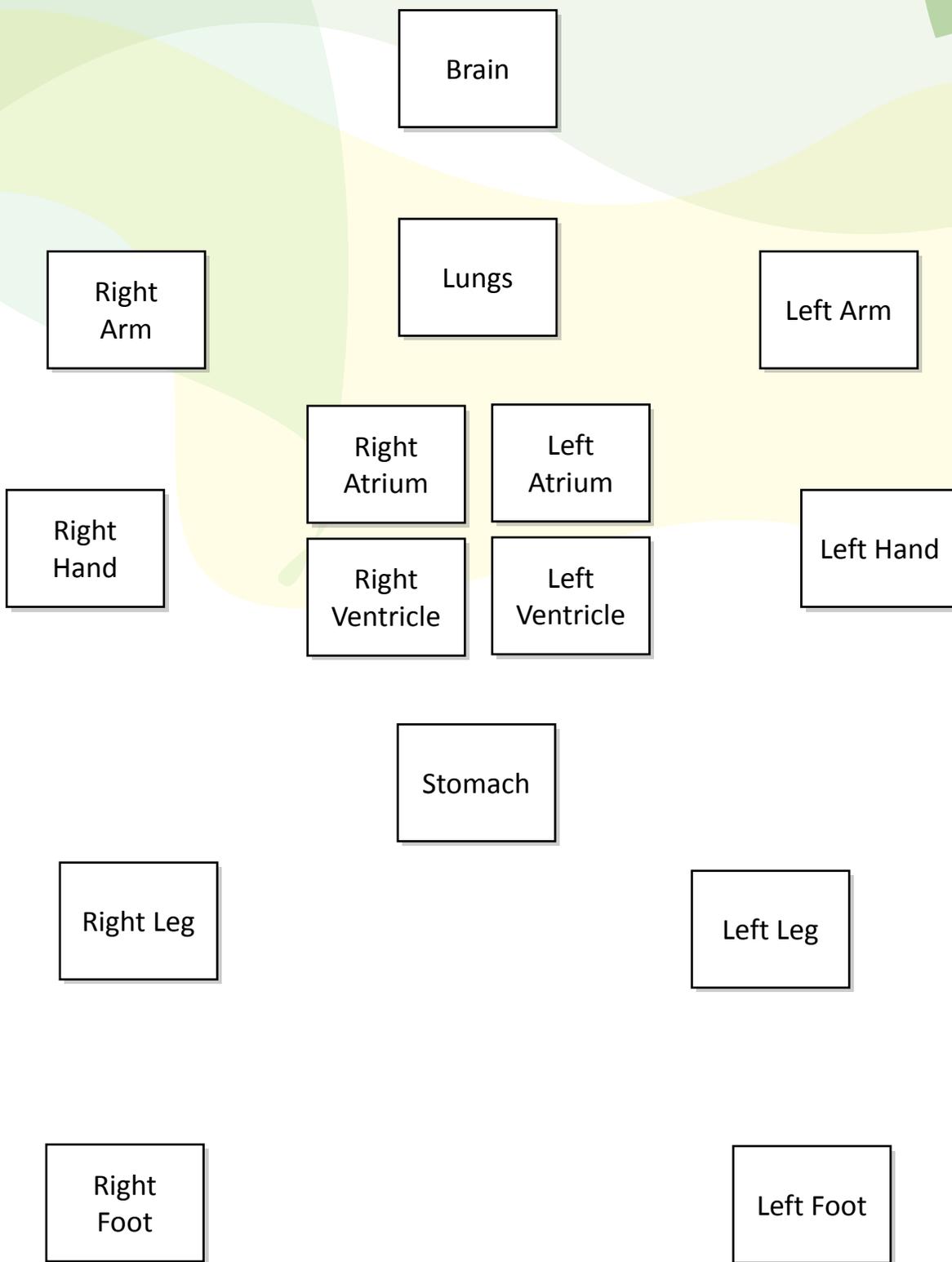
- **Getting Physically Active with My Family* (Appendix 2J)

APPENDIX 2A: Container Labels

Brain	Lungs
Right Arm	Right Hand
Left Arm	Left Hand
Right Leg	Right Foot
Left Leg	Left Foot
Right Atrium of the Heart	Right Ventricle of the Heart
Left Atrium of the Heart	Left Ventricle of the Heart
Stomach	

APPENDIX 2B: Classroom Orientation

(Front of Room)

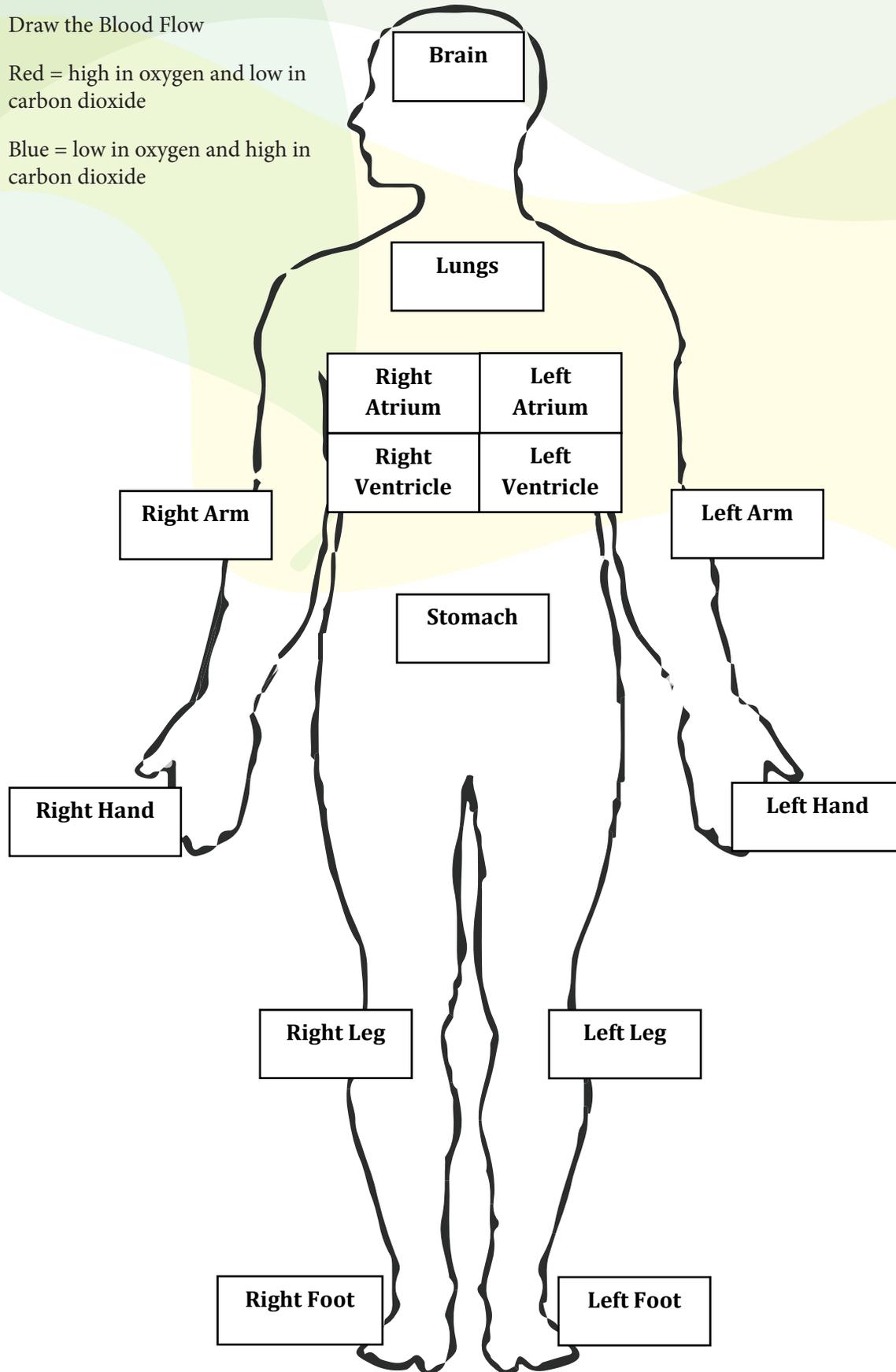


APPENDIX 2C: Human Body Outline

Draw the Blood Flow

Red = high in oxygen and low in carbon dioxide

Blue = low in oxygen and high in carbon dioxide



APPENDIX 2D: Blood Flow Set Cards 1

Blood high in carbon dioxide (CO₂) and low in oxygen (O₂) flows from the BRAIN to the RIGHT ATRIUM.

Blood high in carbon dioxide (CO₂) and low in oxygen (O₂) flows from the RIGHT HAND to the RIGHT ATRIUM.

Blood high in carbon dioxide (CO₂) and low in oxygen (O₂) flows from the RIGHT ARM to the RIGHT ATRIUM.

Blood high in carbon dioxide (CO₂) and low in oxygen (O₂) flows from the LEFT ARM to the RIGHT ATRIUM.

Blood high in carbon dioxide (CO₂) and low in oxygen (O₂) flows from the RIGHT LEG to the RIGHT ATRIUM.

Blood high in carbon dioxide (CO₂) and low in oxygen (O₂) flows from the LEFT HAND to the RIGHT ATRIUM.

Blood high in carbon dioxide (CO₂) and low in oxygen (O₂) flows from the STOMACH to the RIGHT ATRIUM.

Blood high in carbon dioxide (CO₂) and low in oxygen (O₂) flows from the RIGHT FOOT to the RIGHT ATRIUM.

APPENDIX 2D: Blood Flow Set Cards 1

Blood high in carbon dioxide (CO₂) and low in oxygen (O₂) flows from the LEFT LEG to the RIGHT ATRIUM.

Blood high in carbon dioxide (CO₂) and low in oxygen (O₂) flows from the LEFT FOOT to the RIGHT ATRIUM.

Blood high in carbon dioxide (CO₂) and low in oxygen (O₂) flows from the RIGHT ATRIUM to the RIGHT VENTRICLE.

Blood high in oxygen (O₂) and low in carbon dioxide (CO₂) flows from the LUNGS to the LEFT ATRIUM.

Blood high in oxygen (O₂) and low in carbon dioxide (CO₂) flows from the LEFT ATRIUM to the LEFT VENTRICLE.

Blood high in carbon dioxide (CO₂) and low in oxygen (O₂) flows from the RIGHT VENTRICLE to the LUNGS.

APPENDIX 2E: Blood Flow Set Cards 2

Blood high in oxygen (O₂) and low in carbon dioxide (CO₂) flows from the LEFT VENTRICLE to the LEFT ARM.

Blood high in oxygen (O₂) and low in carbon dioxide (CO₂) flows from the LEFT VENTRICLE to the LEFT FOOT.

Blood high in oxygen (O₂) and low in carbon dioxide (CO₂) flows from the LEFT VENTRICLE to the LEFT LEG.

Blood high in oxygen (O₂) and low in carbon dioxide (CO₂) flows from the LEFT VENTRICLE to the LEFT HAND.

Blood high in oxygen (O₂) and low in carbon dioxide (CO₂) flows from the LEFT VENTRICLE to the RIGHT ARM.

Blood high in oxygen (O₂) and low in carbon dioxide (CO₂) flows from the LEFT VENTRICLE to the RIGHT LEG.

Blood high in oxygen (O₂) and low in carbon dioxide (CO₂) flows from the LEFT VENTRICLE to the STOMACH.

Blood high in oxygen (O₂) and low in carbon dioxide (CO₂) flows from the LEFT VENTRICLE to the BRAIN.

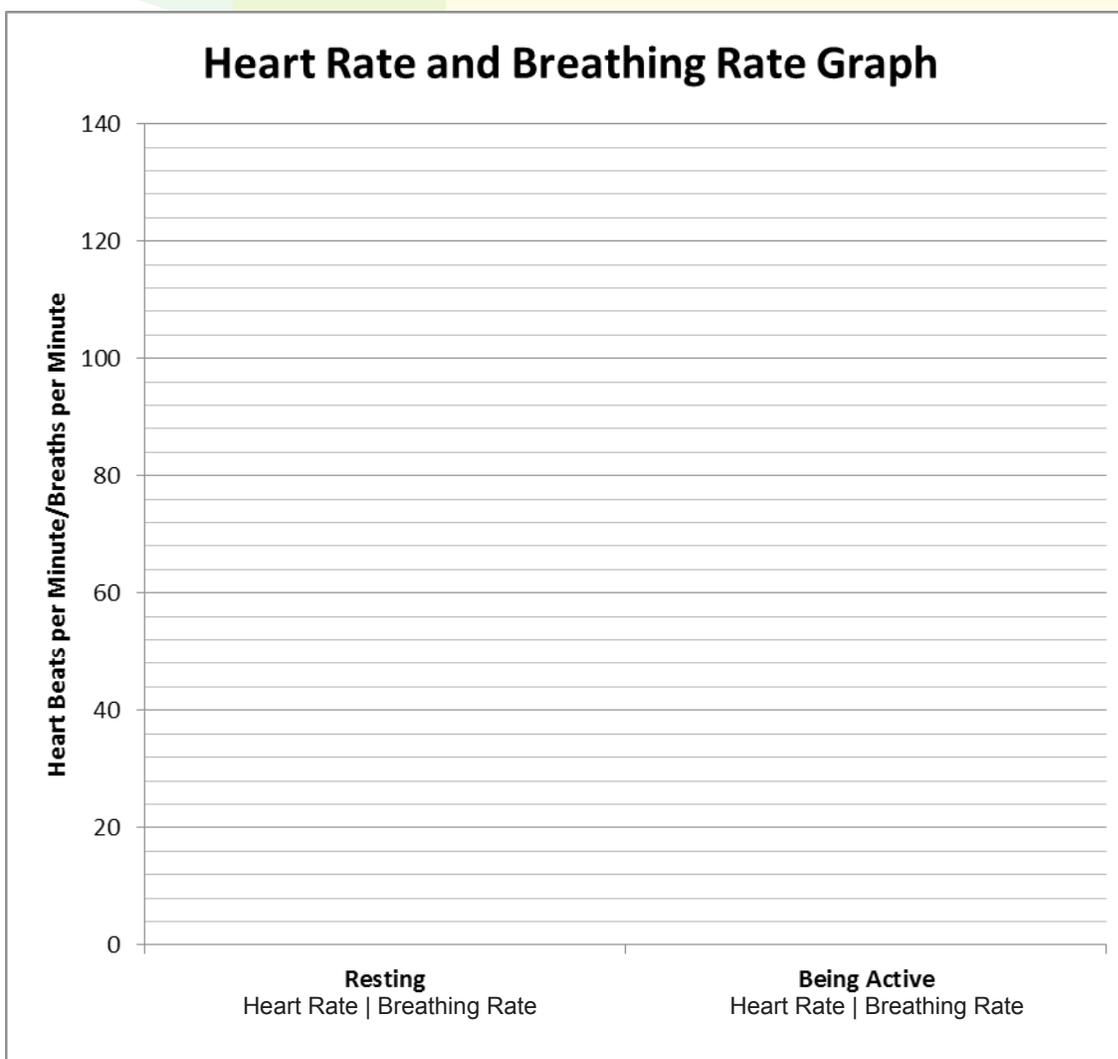
APPENDIX 2E: Blood Flow Set Cards 2

Blood high in oxygen (O₂) and low in carbon dioxide (CO₂) flows from the LEFT VENTRICLE to the RIGHT FOOT.

Blood high in oxygen (O₂) and low in carbon dioxide (CO₂) flows from the LEFT VENTRICLE to the RIGHT HAND.

APPENDIX 2F: Introduction to Heart Rate and Breathing Rate

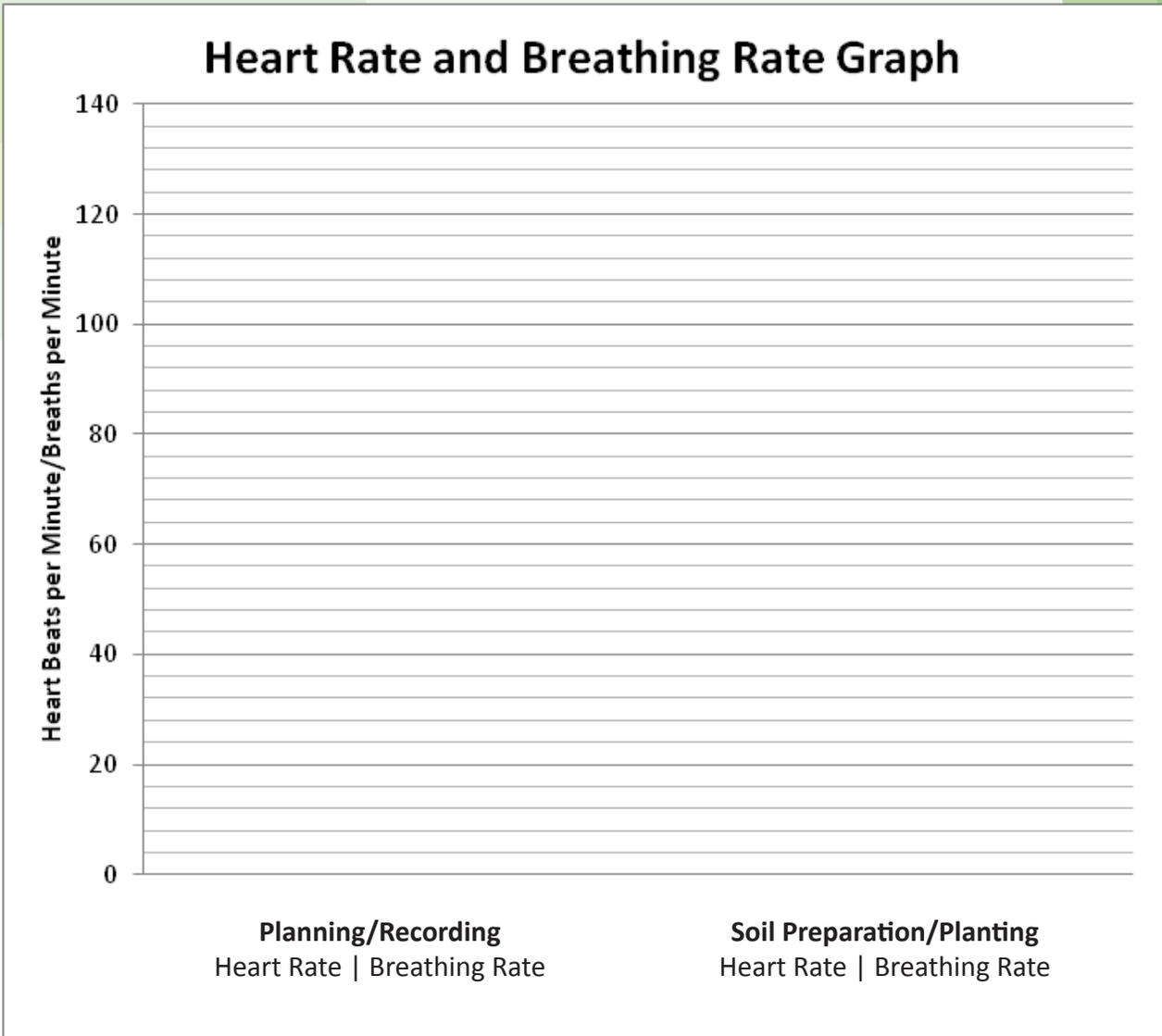
	Heart Rate (heart beats per minute)	Breathing Rate (breaths per minute)
Resting		
Active		



APPENDIX 2G: Heart and Breathing Rate Chart

	What did you do during each activity?	Heart Rate (heart beats per minute)	Breathing Rate (breaths per minute)
Planning/ Recording			
Preparing Soil/ Planting			

APPENDIX 2H: Heart and Breathing Rate Chart



APPENDIX 2I: Goal Setting

What are some things you can do to meet the recommendation of 60 minutes of physical activity every day?

What are some things your family can do to meet the recommendation of 60 minutes of physical activity every day?

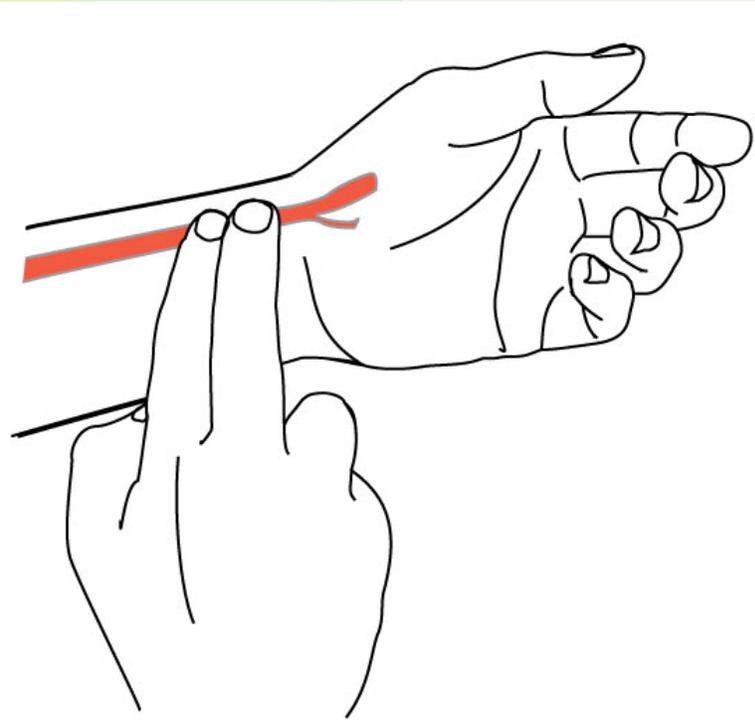
APPENDIX 2J: Getting Physically Active with My Family

Get physically active with your family. Physical activity can be biking, playing ball, jumping rope, walking, or even household activities like vacuuming or gardening. Before you and your family start the physical activity, have everyone find their heart rate and breathing rate and record it. After you and your family completed a physical activity, have everyone find their heart rate and breathing rate and record it. Afterwards, complete the questions below:

Draw a graph or chart of the heart rate and breathing rates of you and your family members.

What did you observe about the similarities and differences between the heart rates and breathing rates of you and your family members?

APPENDIX 2K: Finding Your Pulse



APPENDIX 2L: Recommended Fruits and Vegetables for Growing in California

Fruit or Vegetable	Season	MyPlate Vegetable Subgroup
Beets	Cool to Warm	Other
Black Beans	Warm	Beans & Peas
Black-Eyed Peas (cowpeas)	Warm	Beans & Peas
Broccoli	Cool	Dark Green
Cabbage	Cool	Other
Carrots	Cool	Red & Orange
Corn	Warm	Starchy
Cucumbers	Warm	Other
Eggplant	Warm	Other
Fresh Peas	Cool	Starchy
Garlic	Warm	Other
Green Beans	Warm	Other
Kale	Cool	Dark Green
Kohlrabi	Cool	Other
Leeks	Warm	Other
Lettuce	Cool	Other
Okra	Warm	Other
Onion	Warm	Other
Chiles	Warm	Other
Potatoes	Cool to Warm	Starchy
Radishes	Cool	Other
Soybeans	Warm	Beans & Peas
Spinach	Cool	Dark Green
Strawberries	Cool to Warm	n/a
Summer Squash	Warm	Other
Sweet Potatoes	Warm	Red & Orange
Swiss Chard	Cool to Warm	Dark Green
Taro Root	Warm	Starchy
Tomato	Warm	Red & Orange
Winter Squash	Warm	Red & Orange

Recommended Herbs

Herb	Season
Basil	Warm
Cilantro	Cool to Warm
Mint	Cool to Warm
Parsley	Cool to Warm

APPENDIX 2M: Recommended Habitat Plants for Growing in California

Facilitator Tip: In selecting habitat plants for the Lesson 2 garden concept application, select 4 to 6 plants for the students to choose from (if 4 to 6 plants is not doable, a minimum of 2 different types of plants is recommended). Lesson 2 will allow the students to select a habitat plant based on their prediction of which will be best for attracting beneficial insects

Plant Name	Type	Edible/Non-edible
Butterfly Bush	Perennial	Non-edible
Fennel	Perennial	Edible bulb and fronds
Milkweed	Perennial	Non-food
Sunflower family	Annual	Non-edible
Mint (Herb)	Perennial	Edible
Sage (Herb)	Perennial	Edible
Salvias	Perennial	Non-edible
Native Buckwheat species	Perennial	Non-edible
Pincushion Flower	Perennial	Non-edible