BONUS LESSON 4:
Quick Reaction

OVERVIEW

Educational Goal: Develop an understanding of peripheral vision and reaction time.

Topics Covered

- Peripheral vision
- Reaction time

Learning Objectives and National Health Education Standards (SEE PAGE VI FOR "STANDARDS")

At the end of this lesson, students will be able to:

1. Define peripheral vision and explain why it's important to bicycling. (Standards 1, 5, and 7)
2. Define reaction time and explain why it's important to bicycling. (Standards 1, 5, and 7)

BONUS LESSON 4

Timeline

15 MINUTES
Quick! Think Fast! 101

15–30 MINUTES
Out of the Corner of My Eye
(JUMP ROPE ACTIVITY–OPTIONAL) 103

Materials and Equipment

- Open space: parking lot, field, gym
- Ten to twelve yardsticks
- Paper and pencil for each pair of students
- Calculators (OPTIONAL)
- Illustration of peripheral vision (RESOURCE GUIDE PAGE 204)
- Five or six long jump ropes (OPTIONAL)

QUICK! THINK FAST!

Focus Point: Cyclists have to be prepared to respond quickly when they hear or see something threatening and/or unexpected while they are riding. This activity reinforces the concept of reaction time.

Materials and Equipment

- Whiteboard and markers or Smartboard
- Ten to twelve yardsticks
- Paper and pencil for each pair of students
- Calculators (OPTIONAL)

Tips to Differentiated Learning

- Make considerations when pairing students for this activity so a student with mobility limitation can participate as able with another student's assistance. If needed, place students in a group of three to accommodate the student with a disability.

Discussion

1. Write the word "reaction time" on the board and ask students to define it. Write down acceptable answers and if needed, have someone look up the word in the dictionary.

2. Explain that reaction time is the time elapsed between when an object is recognized and an individual responds with an involuntary or voluntary action.

3. Demonstrate what is meant by "involuntary reaction" by suddenly dropping a heavy book, slamming a door, or clapping your hands loudly and unexpectedly. Point out that most students automatically had a reaction or response to what they heard. Perhaps they flinched, ducked or—at a minimum—blinked their eyes.

VOCABULARY

Reaction time: the time elapsed between when an object is recognized and an individual responds with an involuntary or voluntary action

Involuntary reaction: not under a person's conscious control

Voluntary reaction: a reaction that a person has control over

4. Ask students if they can think of other involuntary reactions. Acceptable answers: pulling away from something hot, ducking when something is thrown at them, etc. They don't have to think about what to do in these situations; they just do it/react.

5. Remind students that the definition of "reaction time" also includes "voluntary reaction." A voluntary reaction is one that a person has control over. Ask for examples of a voluntary reaction in reference to sports—it may be easier for students to understand. Acceptable answers: batting at a ball in baseball, kicking a ball that is in motion, hitting a hockey puck, blocking a pass, grabbing a rebound, etc.

6. Explain to students that many athletes practice to improve their reaction times, even though they don't know exactly when they will need to use a specific reaction.

Activity

1. Divide students into pairs. Each pair needs a paper, pencil, and yardstick. Have one student hold a yardstick near the end (highest number) at shoulder level and let it hang perpendicular to the floor. The student holding the yardstick will unexpectedly let go. Have another put his or her open hand at the bottom of the yardstick without touching it, ready to grab the yardstick.

2. Ask the student holding the yardstick to drop it, sometime within a ten-second period, without warning the other student. The student waiting to catch the yardstick must do so as fast as he or she can after it is dropped. Have one of the students record the level (inches or centimeters) at which they catch the yardstick.

3. Repeat with the same student three to five times (have the student holding the yardstick vary the time dropping it within the ten-second "drop-zone" so the other person cannot guess when it will start to fall). Record the level each time: the inches or centimeters at which they caught the yardstick.

4. Then have the members of the pair switch roles to test the other student's reaction time and record the level each time.

5. Have each student calculate his/her "average" reaction time. Students may use calculators. To calculate the average, instruct students to add the three to five numbers and divide the sum by three or five, depending on how many times they repeated the activity. Ask for volunteers to share their average time and write it on the board. Note the variation of reaction performance in the class.

6. Discuss how reaction time relates to riding a bicycle.

Review

1. Ask students what reaction time means for them. Answers may vary but should summarize that the time elapsed between when an object is recognized and an individual responds with an involuntary or voluntary action.

2. Ask two students to name an involuntary reaction (example: pulling away from something hot, ducking when something is thrown at them), and two other students to name voluntary reaction (example: hitting a hockey puck, blocking a pass).

OUT OF THE CORNER OF MY EYE

Focus Point: Peripheral vision is important to understand when bicycling because it provides a means of securing an "early warning" of hazards that may be approaching such as a motorist, another bicyclist, an animal, or pedestrian.

Materials and Equipment

- Whiteboard and markers or Smartboard
- Illustration of peripheral vision (RESOURCE GUIDE PAGE 204)
- (OPTIONAL) Five or six long jump ropes for two turners and a jumper

Tips to Differentiated Learning

- Make accommodations for students with mobility limitations when completing the first activity; asking a student to extend their arms may show differently with each student. Encourage every student to do as much as they are able.
- Students with mobility limitations may not be able to complete the jump rope activity, but could hold the rope for the students who may be jumping.

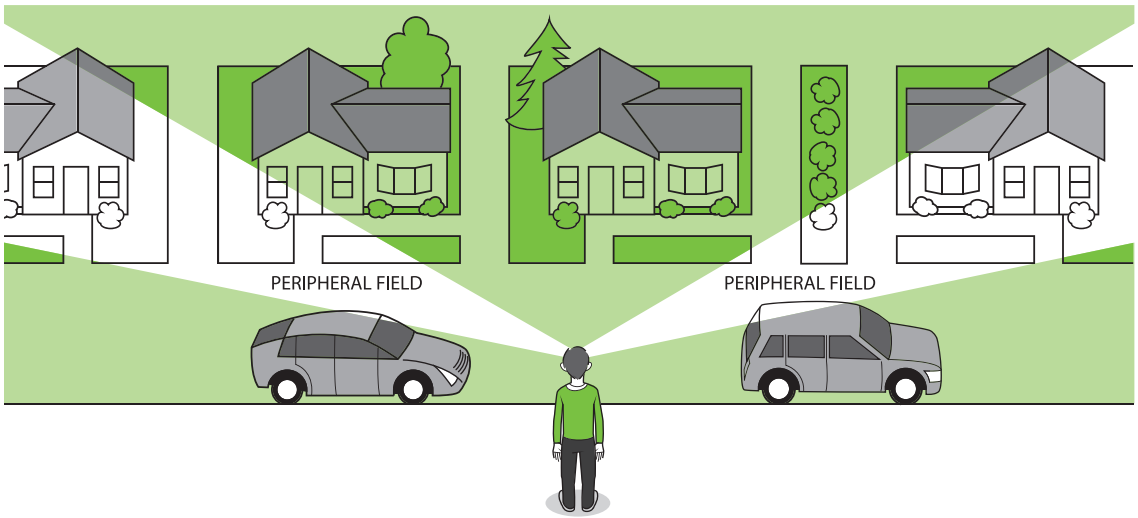
NOTE: Although children as young as eight have peripheral vision capabilities equivalent to adults, they are less able to ignore distracting information.

VOCABULARY

Peripheral vision: a way to visually perceive things at the side of the head and body without turning the head, that is, vision from the corners of the eye, not the central vision

Discussion

1. Write the word "peripheral vision" on the board and ask students to define it. Write down acceptable answers and if needed, have someone look up the word in the dictionary.
2. Explain that peripheral vision is being able to look ahead and focusing on



an object, but seeing other things on each side. Use the following illustration to help define the word.

3. Demonstrate what is meant by peripheral vision. Ask students to look straight ahead while extending their arms straight out from their shoulders to either side and slightly behind the plane of the shoulders (where they can't see their hands).

4. Demonstrate how to move your hands forward, holding your arms parallel to the ground and wiggling your fingers, until you see your fingers with your eyes looking straight ahead and without moving your eyes in either direction.

5. Have each student repeat this experiment several times, noting where their hands are the very first moment they can see them. Remind students to keep their eyes looking straight ahead during this activity. Emphasize that they should focus more attention on what they see in their peripheral vision.

6. Ask students to explain why they think it would be important to understand peripheral vision when bicycling. Answers may vary.

7. Point out how being able to see "out of the corner of the eye" can be useful in bicycling because it provides a means of securing an "early warning" of hazards that may be approaching, such as a motorist, another bicyclist, an animal or pedestrian.

Activity (OPTIONAL)

1. Jumping rope can be used as an activity-oriented method to teach some of the same safety-related, decision-making skills that are used by bicyclists in bicycling. These include responding to nonverbal facial expressions, using peripheral vision, and reacting quickly and appropriately. Get more information and ideas about teaching jump rope activities from USA Jump Rope at **www.usajumprope.org**.

2. Divide the class into groups of four or five and introduce the jump rope activity. Give each group one rope. Two students will turn the rope, three will take turns jumping, but students will alternate these roles so all have an opportunity to jump and to turn during the activity.

3. Stress that it will take teamwork and practice to transition the jumping responsibilities without breaking the rhythm of the turning, just as it takes teamwork to coordinate smooth turning and a smooth entry and exit for the jumpers.

4. Begin with the "Front Door" jump roping exercise:
   - Turners turn the rope from the top towards the jumper.
   - Jumper stands next to a turner, watching the rope as it passes over toward the jumper.
   - Jumper follows it into the middle between the turners, faces one of the turners, jumps four times, then exits to the other side.
   - Verbal cues of "ready," "set," "go" can be given for each jumper's entry. Jumpers should be aware that the rope touches the ground in the middle and this is where they should aim to enter and begin jumping. They will have difficulty jumping it if they enter too close to the turners.

OUT OF THE CORNER OF MY EYE
(CONT.)

- After each jumper has jumped in response to verbal cues, switch to visual cues, for example, head nods and facial expressions.
- For the third round, direct the jumpers to enter and exit using only the visual cues.
- Ask the students if they used peripheral vision in this exercise. Answers may vary.

5. After practicing the "Front Door" method, advance to "Chain Jumping." The goal is to reduce the number of jumps performed by each jumper until they enter one after the other without any turns of the rope in between. This is known as "Rapid Fire."
   - Start with each jumper doing four jumps and exiting, then three jumps, and then two jumps. Stress the importance of teamwork and timing in this jump.
   - Have students work out facial signals for other actions to be performed during the jump period, such as turning around, hopping on one foot, clapping, etc. Students then do another chain jump, responding to each of the facial signals in turn.
   - Add an activity that involves responding to hand signals. Assign a student to be the "signal caller." This person should be standing directly to the left or right of the jumper.
   - The student jumping faces straight ahead, looking directly at one of the students turning the rope.
   - Meanwhile , the caller gives jumping hand signals, such as signals to turn around, jump on one foot, double jump, etc. The student jumping may need to practice seeing these signals using only his/her peripheral vision in order to make the appropriate response.
   - Ask the students if they used peripheral vision in this exercise. Answers may vary.