

# Breathing Easy

## Abstract

Students review their daily activity, learn about the respiratory system, asthma and allergies and simulate what it feels like to breathe with asthma.

## Logistics

### Time Required

- **Class Time:**  
50 minutes
- **Prep Time:**  
15 minutes

### Materials

- One standard size straw per student
- Stopwatch per pair of students, if available
- One beanbag per pair of students
- Copy of “Breathing Easy Student Worksheet” for each student

### Classroom Requirements

- Gymnasium or outdoor area

## Learning Objectives

- To analyze the effects of physical activity on the respiratory system.
- To monitor breathing during physical activity.
- To understand asthma (e.g., triggers and symptoms) and to understand the connections between allergies and asthma.
- To simulate the effects of asthma on breathing.
- To understand the benefits of active living and clean air.

## Prescribed Learning Outcomes BC Curriculum:

- Relate personal physical and emotional health benefits to regular participation in physical activity (e.g., energy, endurance, stress management, fresh air and sunshine when done outside).
- Relate the development of muscular strength and endurance, cardiovascular endurance, and flexibility to participation in specific physical activities.
- Analyze nutritional considerations for physical activity.
- Monitor own exertion while participating in physical activity.
- Set personal goals for attaining and maintaining a physically active lifestyle.

- Participate daily (e.g., five times a week) in a variety of moderate to vigorous physical activities that develop muscular strength and endurance, cardiovascular endurance, and/or flexibility.
- Demonstrate safe procedures for specific physical activities.
- Demonstrate leadership in respecting individual differences and abilities during physical activity.

## Preparation

1. Obtain a copy of the “Air Aware- Asthma Fact Sheet” from the website:  
[http://www.cleanairchampions.ca/programs/air\\_aware/fact\\_sheets.php](http://www.cleanairchampions.ca/programs/air_aware/fact_sheets.php)  
Or from Appendix B of the Resource Package.
2. Print copies of worksheets for students.
3. Gather the necessary equipment: stopwatches, straws and beanbags

## Classroom Implementation

### Part A

Students begin to think about active living and their own activity levels.

1. In gymnasium or outdoor area, begin with a discussion about active living. For instance, ask: “What is active living?”
2. Seize students’ attention by sharing an amazing fact or giving them a challenge.
3. Handout the “**Easy Breathing Student Worksheet.**”
4. Explain to students how to complete the chart on the worksheet estimating the amount of time they participate in moderate-intensity physical activity (walking, skating, bike riding) and/or vigorous-intensity physical activity (running, soccer).
5. Have students complete question 1 of the worksheet to compare their estimates to the recommendations in *Canada’s Physical Activity Guidelines* for 60 minutes of moderate- to vigorous- intensity physical activity daily as explained in the “Did you know?” boxes.
6. Share more information about active living found on “Active Living Information Sheet.”
7. Ask students to complete questions 2 and 3 and encourage them to discuss with a partner.
8. Invite students to share the conditions that affected their breathing. Follow this by sharing information from the “Air Quality and Health Sheet.”

### Part B

Students explore activity intensity and are introduced to asthma.

1. Explain to students that they will monitor their breathing while doing various activities found on the “Breathing When Active” section of the Student Worksheet. They will work in pairs and perform each activity for one minute. While they are doing their activities, they are to carry on a conversation with their partner. They will then rank each activity according to their ease of breathing.
2. Allow the students time to complete these activities. Make beanbags and stopwatches available at this time.
3. Discuss the activities that had the biggest impact on breathing. Mention to students that as fitness level increases, the rate at which they breathe will also change (e.g., gasp less and be able to carry on conversation).
4. Share that assessing the ability to talk during an activity is one way of measuring the intensity. However, a more accurate method would be measuring heart rate.
5. Share information on asthma from the “Air Aware - Asthma” information sheet, found at [http://www.cleanairchampions.ca/programs/air\\_aware/fact\\_sheets.php](http://www.cleanairchampions.ca/programs/air_aware/fact_sheets.php) or from Appendix B of the Resource Package.

## Part C

Students explore what it would be like to breathe with asthma.

1. Introduce the Breathing Through a Straw Activity. Review the safety precautions found on the worksheet and demonstrate how to conduct the activity. Remind students that if anyone is having difficulty breathing or is feeling light-headed or dizzy, they should stop breathing through the straw, sit down and regain normal breathing.  
  
NOTE: Ensure you are following the safety guidelines for your school board/district and/or province to know the medical background and physical limitations of your students. You must be aware of which students have asthma or any other lung condition.
2. Monitor students closely or ask students who may not be able to participate to help you monitor the other students.
3. Ask students to complete questions 1 to 4 on the Breathing Through a Straw section of the worksheet.
4. Discuss how breathing through a straw is similar to how people with asthma feel when their asthma is triggered. Remind students of two categories of asthma triggers: allergic and non-allergic. Point out that certain air pollutants are non-allergic asthma triggers.

NOTE: If students indicate that their breathing has often felt similar to when they are breathing through a straw you can refer them to the Asthma Society of Canada website, *How to Tell if You Have Asthma*. <http://www.asthma.ca/adults/about/howToTell.php>

5. When air quality is very poor, everyone is affected, and people with lung diseases and asthma are put “at risk” for their symptoms to worsen. Hospital visits increase during poor air quality, and it can even lead to unexpected death. Reinforce the importance of air quality for individuals with active lifestyles and discuss how air quality might affect those who often train outdoors such as elite athletes or those who suffer from lung disease such as asthma. Exercise has many benefits for everyone, including people with asthma.
6. Lead a discussion on what people who train outdoors or who do outdoor activities could do to ensure they remain active while also reducing their exposure to poor air quality.

## Extension

### Option 1: Interview

Ask students to interview someone with asthma. Handout the Student Reporter Tip Sheet: Interview Strategies, for students to use to plan/prepare for the interview. This activity/homework assignment could be done in connection with another course, such as Language Arts where the students develop the guide themselves to conduct the interview.

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### Option 2: Being Active

Knowing your heart rate helps you measure your exercise level and progress in a fitness program. Ask each student to develop a personal physical fitness goal. Ask them to pick one moderate- to vigorous-intensity physical activity to focus on over a period of weeks. Over a period of weeks students measure and record their breathing and heart rate during this activity, and then analyze the impact of regular physical activity on their breathing and heart rate. With the class discuss the principles of fitness training – FITT- frequency, intensity, time and type. Share information about target heart rates during exercise using the Target Heart Rate Calculator.

[http://exercise.about.com/cs/fitnesstools/l/bl\\_THR.htm](http://exercise.about.com/cs/fitnesstools/l/bl_THR.htm)

To monitor their heart rate, students count their rate for 10 seconds and then multiply by 6 to record their heart rate per minute. To find their pulse:

**Radial Pulse:** Using the tips of your middle and index finger of the right hand, place these fingers on your other wrist (palm facing up) just below the base of the thumb.



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Carotid Pulse: Using the middle and index finger of the right hand, find the carotid artery. This artery is found on the neck between the windpipe and the neck muscle, just under the lower jawbone.



Students will feel a pulse once they have found the artery. Have them hold the two fingers in place while counting the pulse for 10 seconds.

Give activity Handout for students to take home for the duration of this assignment. When the period of weeks is complete, ask students to return the analysis to class and discuss the results together during a class period.

## Teacher's Active Living Information Sheet

What is active living?

Active living is a commitment to incorporate physical activity into one's daily lifestyle. Active living can occur in all aspects of our everyday routine, including activities at home, work, school and leisure.

One way to have an active lifestyle is to include active transportation in our daily lives. Depending on where you live, you may be able to choose more active transportation (walking, biking). Sports and other extracurricular activities and even shopping are ways to get some exercise. Other examples include shoveling snow or raking leaves instead of relying on snow or leaf blowers, using a push mower, or taking the stairs instead of the elevator.

Making small changes such as walking or biking instead of driving will contribute to active living and in turn benefit our environment by keeping our air free of harmful pollutants. Encourage students to increase their daily activity in increments of 5 to 10 minutes – make it easy to increase in small steps instead of one big leap.

Check out the “Tips to Get Active” from Public Health Agency of Canada found by copy and pasting the following website into your internet browser:

<http://www.phac-aspc.gc.ca/hp-ps/hl-mvs/pa-ap/04paap-eng.php>

## Teacher's Air Quality and Health Information Sheet

There are many things that have a negative effect on the respiratory and cardiovascular system such as smoking, second-hand smoke, inactive lifestyles and air pollution. Air pollution can have a negative and detrimental effect on the respiratory system (lungs and airways), cardiovascular system (heart function and blood circulation) and major organs (heart and lungs). Air pollution:

- Makes it harder to breathe and irritating your respiratory system
- Triggers asthma attacks and other lung diseases
- Makes existing heart and lung conditions worse
- Causes premature death

Everyone reacts differently to air pollution depending on his or her personal health. It is important to know if you are especially sensitive to air pollution. Groups of people that are especially at risk include children, the elderly, and those with pre-existing cardiac (heart) and respiratory diseases such as coronary artery disease (angina or heart attack), heart rhythm problems, heart failure, chronic pulmonary disease and asthma, to name a few.

During exercise, athletes take more breaths per minute than the average person, and they also take deeper breaths. High performance athletes, such as the Clean Air Champions, spend countless hours training outdoors- it is their office! Air quality is very important to maintaining their good health and for allowing them to perform at their best. The same applies to anyone exercising outdoors – we all need clean air to have healthy bodies.

Negative health effects increase as air pollution worsens. Studies have shown that even small increases in air pollution can cause small but measurable increases in emergency room visits, hospitals admissions and death. In fact, it has been shown that even small increases in air pollution levels for a short period of time can worsen illness among sensitive or at-risk people.

## Student Reporter Tip Sheet: Interview Strategies

Successful reporters plan their interviews. The tips below will help you plan and conduct effective interviews.

### 1. Plan your interview.

What do I need to find out?	Who should I contact to be interviewed?
What questions should I ask? Examples: <ul style="list-style-type: none"> <li>• <i>When were you diagnosed with asthma?</i></li> <li>• <i>How has it impacted your life?</i></li> </ul>	What do I need to say when I make appointments for the interviews?

2. Conduct the interview(s). Ask and record responses for about 10 questions.

3. Remember to thank the persons you interviewed and share something you learned from their responses.

4. Record and organize the information you gather. Create a T-chart to record responses to interview questions. Return your organized information from the interview by the indicated due date.