

ACTIVITY #1: BREATHING EASY

TIME 50 minutes

REQUIRED RESOURCES

Activity

- “Breathing Easy Student Worksheet,” one for each student
- Gymnasium or outdoor area
- One straw for each student

Making it Real

- Projecting online video (computer, projector, screen) for Asthma video
 - Paper and pencil for interview
 - Computer lab for learning about Champions on the Clean Air Champions website
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The Big Idea

1. To analyze the effects of physical activity on the respiratory system.
2. To monitor breathing during physical activity.
3. To understand lung diseases such as asthma and to simulate the effects of asthma on breathing.
4. To understand the benefits of active living and clean air.
5. To learn about Clean Air Champions and discuss how athletes are positive role models for active living.

Curriculum Connections

Grades 6 to 9, Physical Education. Curriculum connections are listed by province, grade and subject on the Air Aware website, <http://www.airaware.net>.

Activity

1. In the gymnasium or outdoor area, begin with a discussion about active living. Ask: “What is active living?”
2. Distribute the “Breathing Easy Student Worksheet.”
3. Have students complete the chart with their daily activities estimate by categorizing their activities as moderate (walking, skating, bike riding) or vigorous (running, soccer).
4. Ask students to compare their estimate to the recommendations in *Canada’s Physical Activity Guide* (60 minutes of moderate activity and 30 minutes of vigorous activity daily) as explained on the worksheet.
5. Share the following information about 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. Biking or walking to work or school, extracurricular activities and even shopping are ways to both get around and get some exercise. Other examples include shovelling snow or raking leaves instead of relying on snow or leaf blowers, using a push mower, or taking the stairs instead of the elevator. Listed below are the recommended daily step goals from Canada's Daily Physical Activity Guide:

- *10,000 steps a day for adults (an average adult takes approximately 1300 steps in a kilometre)*
- *12,000 steps a day for youth*
- *12,000 to 16,000 a day for children*

Making small changes such 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.

6. Ask students to complete questions two to four on the worksheet. Tell them to discuss their answers with a partner and read the "Did you know?" at the bottom of page one.

Invite students to share the conditions that affected their breathing. Share the following information about Air Quality and Health.

*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, lungs) by:*

- *Making it harder to breath and irritating your respiratory system*
- *Triggering asthma attacks and more Chronic Obstructive Pulmonary Diseases (COPD)*
- *Making lung conditions such as chronic bronchitis and emphysema worse*
- *Triggering heart conditions such as angina, heart attack, heart failure and heart rhythm problems*
- *Early death.*

Everyone reacts differently to air pollution depending on their 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, immune, and respiratory diseases such as coronary artery disease (angina or heart attack), heart rhythm problems, heart failure, chronic obstructive pulmonary disease and asthma, to name a few. Diabetics also appear to be at greater risk, most likely due to the relationship between diabetes and heart disease.

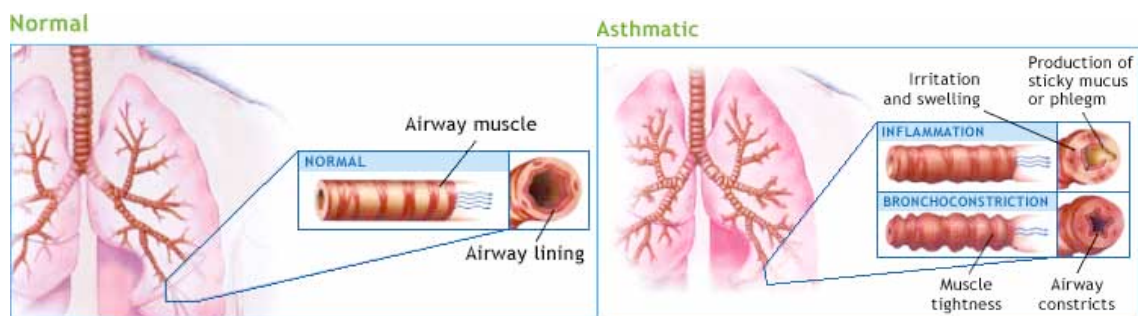
Another at-risk group are people who are physically active like the Clean Air Champions. Athletes, particularly high performance athletes (like Olympians and Paralympians), train

long hours, usually outside, and inhale ten times the volume of air compared to an inactive person.

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, hospital 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.

7. Explain to students that they will monitor their breathing while they are doing various activities. They will work in pairs and perform each activity for two minutes. While they are doing their activity, they are to carry on a conversation with their partner. They will rank each activity according to their breathing.
8. Ask the students to pair up and complete the activities and ranking on the worksheet.
9. After they have completed the activities, discuss with the students the activities that had the biggest impact on their breathing. Share with students that as their fitness levels increase, their breathing rates also change. They will still breathe more often and take deeper breaths, but they will gasp less and be able to carry on a conversation.
10. Refer back to the discussion regarding when their breathing has been affected. Share the information about asthma below from the Air Aware website,

Asthma is a "chronic inflammatory disease of the airway" that causes the following symptoms: shortness of breath, tightness in the chest, coughing, and wheezing. Asthma can vary in its severity, can vary from person to person, and can flare up from time to time. The cause of asthma is not known and currently there is no cure. People with asthma often have trouble breathing when they are in the presence of what are called "triggers." When someone has asthma and their symptoms are "triggered," it means that the flow of air is obstructed as it passes in and out of the lungs. Asthma can affect anyone. Most people with asthma can live full, active lives. Asthma symptoms can be managed, and the goal is to be symptom-free by avoiding asthma triggers, by taking medication, and by following an asthma action plan. Asthma triggers include dust mites, animals, pollens, air pollutants, smoke, exercise, and cold air.



Source: Asthma Society of Canada, <http://www.asthma.ca/adults/about/whatisAsthma.php>

11. Explain that the next activity will help you understand what it feels like to breathe with asthma symptoms. Invite students to complete the breathing through a straw activity to demonstrate how it feels to breathe with asthma. Review the safety precautions that are

provided on the “Breathing Easy” worksheet with the students and demonstrate how the students should complete the activity. Ask students to indicate their experience using a thumbs up if it remains easy to breathe or a thumbs down if it gets harder to breathe. Remind students that if anyone is having difficulty breathing or feeling light-headed or dizzy, they should stop breathing through the straw, sit down and regain normal breathing. Make sure you are aware of any students that have asthma or any other lung conditions. Monitor them closely or ask these students to help you monitor the other students rather than participate in the activity.

12. Discuss how breathing through a straw is how people with asthma feel when their asthma is triggered. When air quality is very poor this also affects everyone but it puts people with lung diseases and asthma “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 all people but it also helps people with asthma.
13. Introduce the Champion athlete who will be visiting your school. Ask students why they think the Champion would participate in an education program on active living, asthma and air quality.

Making It Real

- Use the online video from the Asthma Society of Canada to illustrate the respiratory system and the affects of asthma on breathing.

<http://pubmodules.machealth.ca/asthma/management/player.html>

On the website select **Asthma Myths & Facts** and then select **Breathing with Asthma**. Ensure speakers or headphones are turned on.

- Ask students to interview someone they know with asthma. They can use the following questions to guide their interviews. Remind students that they when they gather private information from the people they interview, it should not be shared with others.

When were you diagnosed with asthma?

How has it impacted your life?

How do you treat your asthma?

What are the triggers (things that can lead to an asthma attack) for your asthma?

Encourage students to also make up their own question(s) based on what they would like to know about living with asthma.

- Using the list of Champions on the Clean Air Champions website <http://www.cleanairchampions.ca/CAC/ListChampions.aspx>, divide students into groups to learn about various Champions. Students can work online, or you can print the Champion profiles for them. Either assign champions by province or by sport type (choose sports with

more than three athletes). Ask students to select at least three athletes and answer the following questions about them:

What inspires the athlete to compete at an elite level?

What is the athlete's interest or connection to air quality?

What do you find interesting about the athlete's sport?

What interests you about the athlete?

Have you ever tried the sport? If yes, what was it like? If no, what would you have to do to experience the sport?

Ask the groups to report back on the names of the athletes, the athletes' sport, and what they find interesting about the athletes and their sport.

Active Break

1. Knowing your heart rate helps you measure your fitness level and lets you monitor your progress in a fitness program. Ask each student to develop a personal physical fitness plan. Ask them to pick one activity to focus on over a period of weeks. Students measure and record their heart rate during this activity over a period of weeks and then analyze the impact of regular physical activity on their 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 Ontario Ministry of Health Promotion and Sport website, <http://www.mhp.gov.on.ca/en/active2010/tools/target.asp>.



To monitor their heart rate, students count their heart rate for 10 seconds and then multiply by 6 to record their heart rate per minute. To find their 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 wind pipe and neck muscle, just under the lower jaw bone.
- 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.

2. Refer to Getting Active for Cleaner Air at the Clean Air Champions website for other active games: <http://www.cleanairchampions.ca/CAC/EKits.aspx>.

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STUDENT WORKSHEET

Did you know? Half of Canadian children and youth are not active enough for optimal growth and development.

Source: Public Health Agency of Canada

Daily Activity Estimate

Record the amount of time you spend doing moderate (walking, skating, bike riding, chores) and vigorous activity (running, soccer) each day and calculate your daily total.

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Moderate							
Vigorous							
Total							

Did you know? *Canada's Physical Activity Guide* for youth ages 10 to 14 recommends 60 minutes of moderate activity and 30 minutes of vigorous activity each day. The goal is to achieve 90 minutes of daily physical activity. The *Guide* suggests that you increase your physical activity throughout the day in periods of at least 5 to 10 minutes.

1. How does your daily total compare to the "Did you know?" recommendations above?
2. Do you prefer indoor or outdoor activities? Why?
3. When you have exercised outdoors, has there been a time when your breathing was more difficult? What do you think made your breathing more difficult?

Did you know? Athletes take more breaths per minute than the average person, and also take deeper breaths. Because they often train outdoors, air quality is very important to maintain their health and to perform at their best.

Breathing When Active

Did you know?

- Adults generally take fewer breaths per minute than young people.
- When we are exercising, we take more breaths than when we are resting.
- Work with a partner to complete each of the activities below for one minute.
- As you are doing the activity, continue talking with your partner.
- On the table below, rank the activities according to your breathing while you were doing the activity and talking with your partner.

Activity	Ranking – circle 1 if your breathing remains normal, 3 if it gets harder to keep the conversation going , 5 if you have to stop the conversation to catch your breath				
	NORMAL BREATHING	HARD TO TALK	HARDER TO TALK	VERY HARD TO TALK	CAN'T TALK
Walking normally	1	2	3	4	5
Walking quickly	1	2	3	4	5
Hacky Sack/Bean Bag*	1	2	3	4	5
Jogging	1	2	3	4	5
Sprinting	1	2	3	4	5

* Hacky Sack/Bean Bag: with your partner, try to keep the hacky sack/bean bag off the ground using only your feet for the one minute.

Breathing Through a Straw

- Take turns walking quickly for one minute while breathing through a straw.
- Use a thumbs up to indicate if your breathing remains easy. Use a thumbs down to indicate if your breathing becomes more difficult.

Safety First!

- If at any time you are feeling light-headed or dizzy, stop breathing through the straw, and sit down until your breathing returns to normal.
- Let your teacher know if you have health concerns that would prevent you from participating in this activity.

How did you feel during the breathing through a straw activity?

What would be some challenges for being active if you had/have asthma?