Career and Personal Planning 12
20,000 Breaths a Day

Abstract

Students review their daily activity and develop an action plan to increase their physical fitness and monitor their progress over a few weeks. Students also learn about the respiratory system, asthma and allergies and simulate what it feels like to breathe with asthma.

Logistics

Time Required

- **Class Time:** Several 50 - 60 minute classes, plus check ins ongoing. Extensions will take additional time.
- **Prep Time:** 20 minutes

Materials

- One straw for each student
- **20,000 Breaths a Day Worksheet – Part A** (one per student)
- **Tips to Get Active Information Sheet** (for teacher reference)
- **20,000 Breaths a Day Worksheet – Part B** (one per student)
- **Asthma Factsheet** (one per pair of students)
- Stopwatch per pair of students, if available
- One bean bag per pair of students

Classroom Requirements

- Gymnasium or outdoor area

Learning Objectives

- Analyze the effects of physical activity on the respiratory system.
- Develop an action plan to increase daily activity, monitor breathing and progress on achieving physical fitness.
- Understanding lung diseases such as asthma and the connections between allergies, asthma and air quality.
- Simulate the effects of asthma on breathing.
- Demonstrate the benefits of active living and clean air.

Prescribed Learning Outcomes B.C. Curriculum:

Active Living – Knowledge

- C1 – analyze factors that influence health (e.g. physical activity, nutrition, stress management)

Preparation

Assemble necessary materials.

- Print copies of worksheets for students.
- Gather the equipment: stopwatches, straws and beanbags.

Classroom Implementation

Part A – Students consider 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.
   - For example, if you cycled 5 km to and from school every day you would cycle 2000 km over a school year, about the distance from Abbotsford to Winnipeg.
   - The average person breathes 20,000 times per day.

3. Distribute 20,000 Breaths a Day Worksheet – Part A.

4. Ask students to complete the chart on the worksheet estimating the amount of time they participate in moderate intensity (walking, skating, bike riding) and/or vigorous intensity physical activity (running, soccer, hockey, ringette).

5. Ask students to compare their estimate to the recommendations in *Canada's Physical Activity Guidelines*, which recommend 60 minutes of moderate to vigorous intensity physical activity daily, as explained on the **20,000 Breaths a Day Worksheet – Part A**. For more information: http://www.csep.ca/en/guidelines/get-the-guidelines

6. 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 daily 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 active transportation (walking, biking). Extracurricular activities and even shopping are ways to get around and 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 walking or biking instead of driving, 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 with small steps in increments of 5 to 10 minutes rather than one big leap.

7. Discuss ways that students can increase their amount of daily activity. Share *Tips to Get Active* from the Public Health Agency of Canada: www.phac-aspc.gc.ca/hp-ps/hl-mvs/pa-ap/04paap-eng.php or from the **Tips to Get Active Information Sheet**. Ask students to complete the table in the **20,000 Breaths a Day Worksheet – Part A** for Week 1, making a commitment to increase their daily activity by 5 to 10 minutes each day.

8. Ask students to complete the charts for weeks 2 through 6 (pages 2-3) of the **20,000 Breaths a Day Worksheet – Part A**. Ask students to record the week number on the worksheet. At the beginning of each week, students record their current activity and indicate how they will increase their activity if they are not yet achieving the recommended guidelines. During the week, students record whether they achieved increasing their activity level.

Tips to Get Active

> Physical Activity Tips for Youth (12-17 years)

Be active – at home, at school, at play – inside or outside – with family and friends.
You'll have more energy, feel healthy and strong, and good about yourself!

1

Every step counts.
Try to do **an hour every day** of moderate- to vigorous-intensity activity. Choose vigorous activities at least three days a week.

2

Get stronger by doing activities that **build muscles and bones** at least **three days** a week.

3

Combining **aerobic and strengthening activities** will improve your health and well-being.

Tips to help you get active

What activities you choose to do is up to you:

- ☑ Walk, run or bike instead of getting a ride
- ☑ Do something you enjoy — run, jump, swim, skateboard, snowboard, ski, skate, toboggan
- ☑ Check out yoga, hip-hop, or aerobics classes
- ☑ Try indoor rock climbing, play soccer, ride a bike
- ☑ Take the dog for a walk
- ☑ Dance to your favourite music
- ☑ Rake the leaves, shovel snow, carry the groceries home
- ☑ Join a team at your school
- ☑ Choose activities you like or be creative and try something new
- ☑ Set physical activity goals with your friends and family
- ☑ Reduce screen time

Be more active after school. Every step counts!

Public Health Agency of Canada | Agence de la santé publique du Canada

Canada

20,000 Breaths a Day Worksheet – Part A

Daily activity estimate

Did you know? *Canada's Physical Activity Guideline* for youth ages 12 to 17 recommends 60 minutes of moderate to vigorous intensity physical activity each day. The *Guideline* also recommends that through the week:

- Vigorous activities should occur at least three days per week
- Activities that strengthen bones and muscles should occur at least three days per week

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

Daily activity estimate

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Moderate							
Vigorous							
Total							

Did you know? Only 7% of Canadian youth (ages 6 to 19) meet the recommended 60 minutes of moderate to vigorous physical activity (MVPA) 6 days a week, and less than half meet the 60 minutes of MVPA 3 days per week. Source: Canadian Health Measures Survey, 2007 to 2009.

1. How does your daily total activity compare to the 'Did you know?' recommendations?

2. What you could do to increase your daily activity?

Did you know? In the 2006, 2008 and 2010 Olympic Games, approximately 7% of athletes had asthma, making asthma the most common medical condition experience by Olympic athletes.
Source: Australian Association for Exercise and Sport Science, *Position Statement on Exercise and Asthma, 2011*.

Using the charts below, develop an action plan to increase your activity level over the next five weeks. For Week 1, use the information you recorded on the previous page to complete the chart. Once you have completed the new activities, mark the table with an X. Total the minutes in the last row.

For Weeks 2 to 6, use the information from the previous week to complete the first two rows. Compare your progress at the end of Week 6 by referring back to the table on the previous page.

Activity Monitoring Week 2

	Type of Activity	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Current Activity – moderate								
Current Activity – vigorous								
New activity, 5 to 10 min								
Total minutes								

Activity Monitoring Week 3

	Type of Activity	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Current Activity – moderate								
Current Activity – vigorous								
New activity, 5 to 10 min								
Total minutes								

Activity Monitoring Week 4

	Type of Activity	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Current Activity – moderate								
Current Activity – vigorous								
New activity, 5 to 10 min								
Total minutes								

Activity Monitoring Week 5

	Type of Activity	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Current Activity – moderate								
Current Activity – vigorous								
New activity, 5 to 10 min								
Total minutes								

Activity Monitoring Week 6

	Type of Activity	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Current Activity – moderate								
Current Activity – vigorous								
New activity, 5 to 10 min								
Total minutes								

Classroom Implementation

Part B – Students explore activity intensity and simulate breathing with asthma.

1. Explain the breathing activity, outlined on the **20,000 Breaths a Day Worksheet – Part B**. Students work in pairs to monitor their breathing while they are doing various activities for one minute. While doing an activity, students are to carry on a conversation with their partner, then rank each activity according to their breathing.

2. Ask the students to pair up and complete the breathing activity along with the ranking on the **20,000 Breaths a Day Worksheet – Part B.**

3. Ask students which activities had the biggest impact on their breathing. Explain that as their fitness levels increase, their breathing rates also change. During exercise, they will still breathe more often and take deeper breaths, but they will gasp less and be able to carry on a conversation.

4. Each week, have students complete the breathing activity again and record the information on pages 2-3 of the **20,000 Breaths a Day Worksheet – Part B,** comparing the current week to the previous week.

5. At the end of the six weeks, ask students to compare Week 6 to Week 1 to see their progress on increasing their activity and fitness levels.

6. Explain that the next activity will help students understand what it feels like to breathe with asthma symptoms. Invite students to complete the Breathing Through a Straw activity. Review the safety precaution in the **20,000 Breaths a Day Worksheet – Part B** and demonstrate how students should complete the activity. Ask them 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 wait until they regain normal breathing.

   NOTE: Ensure you are following the safety guidelines for your school district and/or province to know the medical background and physical limitations of your students. For the Breathing Through a Straw activity, you must be aware of which students have asthma or any other lung condition.

7. After students complete the questions on page 4 of the **20,000 Breaths a Day Student Worksheet – Part B**, invite them to share their experience with the activity. Share the following information about air quality and health:

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 negative effects 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 irritates 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 sensitive to air pollution. Groups of people that are especially at risk include children, the elderly, and those with pre-existing cardiac (heart) or and respiratory diseases such as coronary artery disease (angina or heart attack), heart rhythm problems, heart failure, chronic obstructive pulmonary disease and asthma.

During exercise, athletes take 10 to 20 more breaths per minute than the average person, and they also take deeper breaths. Air quality is vital to maintaining their good health and for performing at their best. The same applies for anyone exercising outdoors. We all need clean air to have healthy bodies.

Negative health effects increase as air pollution worsens. Studies show even minimal 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.

Have students read and discuss the **Asthma Fact sheet** in pairs.

8. Explain that breathing through a straw is similar to how people with asthma feel when their asthma is triggered. When air quality is very poor, it affects everyone, but it puts people with lung diseases and asthma at risk for their symptoms to worsen.

9. Divide the class in half, with one group representing the general population in North America and the other group representing athletes in North America. The following table indicates the percentage of the general population and the athletic population in North America affected by asthma, respiratory allergies and exercise-induced asthma.

North America	General Population	Athletes
Asthma	10 – 12%	Up to 23%
Respiratory allergies	10 – 25%	Up to 45%
Exercise-induced asthma	5 – 15%	Up to 50%

Use the following table to identify how many people in the general population group would have asthma and how many in the athlete group would have asthma. Repeat this for respiratory allergies and exercise-induced asthma. If your class size is not listed below, use the percentages in the above table to identify the numbers of students for each group.

North America	General Population			Athletes		
Class Size	**24**	**28**	**30**	**24**	**28**	**30**
Asthma*	2	2	2	3	3	4
Respiratory allergies*	3	4	4	6	6	7
Exercise-induced asthma*	2	2	2	6	7	8

*For the general population, this table uses 12% for asthma, 25% for respiratory allergies and 15% for exercise-induced asthma.

10. 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 have lung diseases such as asthma. The benefits of exercise almost always outweigh leading an inactive lifestyle, but one should always be aware of the air quality in their location when exercising outdoors. For people with asthma, exercise helps to strengthen breathing muscles, to boost the immune system and to maintain a healthy body weight.

11. Have students check the Air Quality and Health Index (AQHI) and Ultraviolet (UV) rating. People with seasonal allergies can also check the pollen report. Go online to access weather reports that include the current UV rating and pollen reports. The AQHI can be accessed at: www.bcairquality.ca/readings/index.html

20,000 Breaths a Day Worksheet – Part B

Work with a partner to complete each of the activities listed 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**.**

If you have to stop talking while doing the activity before you reach one minute, you may stop doing the activity.

WEEK 1 **Activity**	NORMAL BREATHING	EASY TO TALK	DIFFICULT TO TALK	HAVE TO STOP TALKING
Walk normally	1	2	3	4
Walk quickly	1	2	3	4
Bean bag*	1	2	3	4
Jog	1	2	3	4
Run quickly	1	2	3	4

*Bean bag: with your partner, try to keep the bean bag off the ground using only your feet, for one minute.

Ranking – circle 1 if your breathing remains normal, 2 if it is still easy to talk while doing the activity, 3 if it gets difficult to talk, and 4 if you have to stop talking

- If you circled 1 or 2, the activity would be considered light.
- If you circled 3, the activity would be considered moderate.
- If you circled 4, the activity would be considered vigorous.

Note: Measuring your activity level based on your ability to talk is an easy and general guideline. Target heart rates for exercise is more accurate and a better guideline to determining your exercise levels.

Did you know?

- Adults generally take fewer breaths per minute than young people.
- When we exercise, we take more breaths than we do when resting.
- During exercise, athletes take more breaths per minute than the average person, and they also take deeper breaths.

Ranking – circle 1 if your breathing remains normal, 2 if it is still easy to talk while doing the activity, 3 if it gets difficult to talk, and 4 if you have to stop talking

WEEK 2 **Activity**	NORMAL BREATHING	EASY TO TALK	DIFFICULT TO TALK	HAVE TO STOP TALKING
Walk normally	1	2	3	4
Walk quickly	1	2	3	4
Bean bag*	1	2	3	4
Jog	1	2	3	4
Run quickly	1	2	3	4

WEEK 3 **Activity**	NORMAL BREATHING	EASY TO TALK	DIFFICULT TO TALK	HAVE TO STOP TALKING
Walk normally	1	2	3	4
Walk quickly	1	2	3	4
Bean bag*	1	2	3	4
Jog	1	2	3	4
Run quickly	1	2	3	4

WEEK 4 **Activity**	NORMAL BREATHING	EASY TO TALK	DIFFICULT TO TALK	HAVE TO STOP TALKING
Walk normally	1	2	3	4
Walk quickly	1	2	3	4
Bean bag*	1	2	3	4
Jog	1	2	3	4
Run quickly	1	2	3	4

WEEK 5 **Activity**	NORMAL BREATHING	EASY TO TALK	DIFFICULT TO TALK	HAVE TO STOP TALKING
Walk normally	1	2	3	4
Walk quickly	1	2	3	4
Bean bag*	1	2	3	4
Jog	1	2	3	4
Run quickly	1	2	3	4

WEEK 6 **Activity**	NORMAL BREATHING	EASY TO TALK	DIFFICULT TO TALK	HAVE TO STOP TALKING
Walk normally	1	2	3	4
Walk quickly	1	2	3	4
Bean bag*	1	2	3	4
Jog	1	2	3	4
Run quickly	1	2	3	4

Breathing Through a Straw

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.

With a partner, take turns walking quickly for one minute while breathing through the straw only. Try to breathe through the straw in your mouth as much as possible. Then switch so the other person walks quickly while breathing through their own straw for one minute.

Periodically signal to your partner using a thumbs up to indicate if your breathing remains easy or a thumbs down to indicate if your breathing becomes more difficult.

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

2. Has there ever been a time that your breathing felt similar to when you were breathing through the straw? If yes, how often has this occurred and when?

3. Have you ever been diagnosed or tested for asthma?

4. How are allergies connected to asthma?

Asthma Facts

- An estimated 3 million Canadians have asthma, including 16% of children aged 4 – 11, and almost 12% of young people aged 12 – 19 who have been diagnosed with the disease.
- Asthma accounts for 80 per cent of chronic respiratory disease, making it the most common chronic respiratory disease in children.
- In Canada, about 250 people die each year from asthma. A majority (80 %) of those deaths could be prevented with correct asthma education.
- Sixty per cent of people with asthma do not have their asthma under control.
- Respiratory illness costs the Canadian economy an estimated $5.83 billion a year.
- The cause of asthma is not known, and currently there is no cure.

***Source**: Asthma Society of Canada; Statistics Canada, Health Reports, Vol 16. No. 2, March 2005.*

Extension

Option 1: Walk Score

Transportation is one of the biggest contributors to climate change and ground-level ozone, a component of smog.

Close to 30% of the total energy consumed in Canada is for transportation. More than 50% of all of the energy we use for transportation is used for personal vehicles.

Choosing more active types of transportation is a great way to increase activity levels while also reducing air pollution and the greenhouse gas emissions that contribute to climate change. Have students use Google Maps – http://maps.google.ca – to get directions for different ways of getting to school. Students enter their home address, and then click on Get Directions, then enter the school address. Google Maps will create a map indicating the driving route from their home to school. Click on the icons on the left to get directions for taking the bus, walking, or biking. Google Maps also provides the distance and estimated travel time.

Walk Score – http://www.walkscore.com – can help students compare the walkability of different neighbourhoods. Have students enter their home addresses and compare the walk scores of different communities. The map lists local restaurants, shops, schools, and parks, and the distance to each.

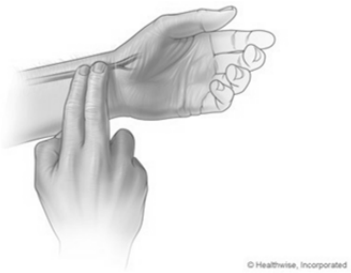
Option 2: Being Active

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, which are 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

To monitor their heart rate, students count their rate for 10 seconds and then multiply by 6 to record their heart beats per minute. To find their radial and carotid 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. (See following diagrams.)



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.

For additional lessons and to complete an evaluation survey, visit: www.fvrd.ca/airquality