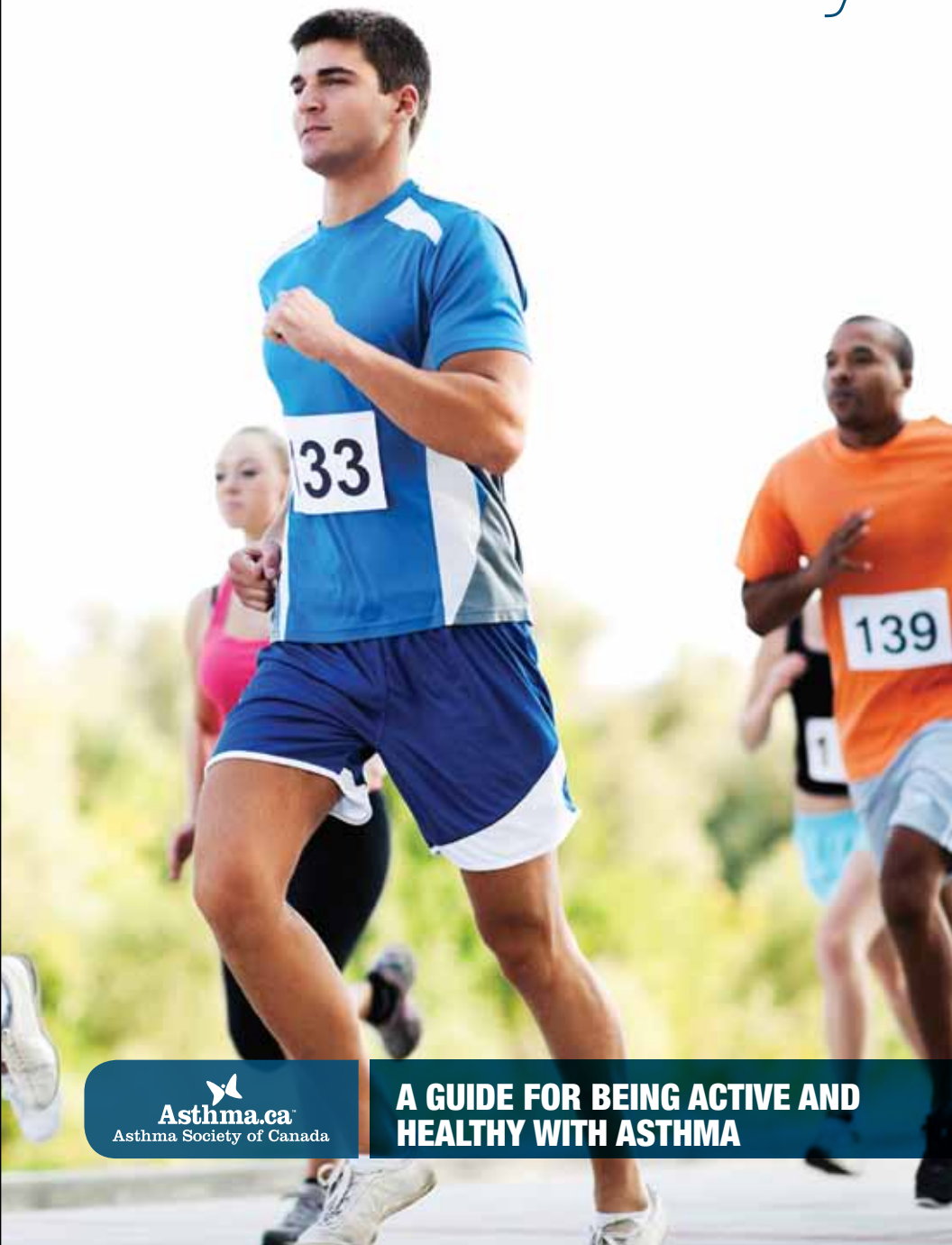


Breathe Easy




Asthma.ca
Asthma Society of Canada

**A GUIDE FOR BEING ACTIVE AND
HEALTHY WITH ASTHMA**

GETTING STARTED

QUICK FACTS:

- ▶ Approximately three million Canadians live with asthma^{1,1}
- ▶ More than two million Canadians experience asthma symptoms during exercise – some experience asthma symptoms only with exercise²
- ▶ 45% of people with asthma^{2,1} – 1.5 million Canadians – choose not to engage in regular exercise. 60% of people with asthma view their asthma as a barrier to participating in physical activity^{2,2}.

Whether you're interested in becoming physically active and don't know where to start, or a seasoned athlete wanting a quick review of the basic facts, we hope this resource provides information you need to live an active and symptom-free life.

This resource does not substitute the advice of your healthcare team, including your asthma care physician or Certified Asthma/Respiratory Educator. Never make any changes to your asthma treatment plan or begin an exercise program without speaking to your doctor.



WHO WE ARE

THE ASTHMA SOCIETY OF CANADA

Our vision at the Asthma Society of Canada is to empower every child and adult in Canada with asthma to live an active and symptom-free life.^{1,2}

The Asthma Society of Canada [ASC] is the balanced voice for asthma in Canada, advancing optimal-self management, prevention research and health care. The ASC seeks to provide evidence-based, market tested, age appropriate asthma information, education, management tools and support programs for Canadians with asthma.

THE NATIONAL ASTHMA PATIENT ALLIANCE

The National Asthma Patient Alliance [NAPA] is a network of people across Canada living with, or affected by, asthma. Through grassroots patient-to-patient advocacy and education, NAPA members strive to encourage people living with asthma to strive for optimal asthma control and live healthy symptom free lives.

NAPA's mission is to ensure each and every one of the 3 million Canadians diagnosed with asthma has the support and resources he/she needs to enjoy a high quality of life.^{1,3}

TEAM ASTHMA

A program of NAPA, Team Asthma members have chosen to not let asthma become a barrier to living an active life. Across the country, Team Asthma members participate in a wide variety of physical activities—through wearing Team Asthma t-shirts members become a visual representation of asthma advocacy and empowerment through active living.

WHAT IS THE AIR QUALITY HEALTH INDEX?

The Air Quality Health Index [AQHI], developed by Environment Canada, provides a simple scale-based reference point for ranking the air quality in communities across Canada. This resource provides information to Canadians to better understand the potential health effects of air pollution, particularly those deemed “at-risk”, including people with asthma.



TABLE OF CONTENTS

GETTING STARTED.....	2
Quick Facts	2
WHO WE ARE	3
The Asthma Society of Canada	3
The National Asthma Patient Alliance	3
Team Asthma	3
What is the Air Quality Health Index?.....	3
ACTIVE WITH ASTHMA: THE BASICS.....	6
Exercise Induced Asthma	6
Treating EIA	8
Planning an Exercise Routine.....	9
Asthma triggers and exercise	12
THE AIR QUALITY HEALTH INDEX: A DECISION MAKING TOOL	14
MOVING FORWARD	16
Making Change: A Team Effort	16
Exercise buddies.....	16
Groups, classes and teams.....	16
Events	16
Do it SMART: Goal Setting.....	17
Team Asthma	18
RESOURCES.....	20
REFERENCES	22

ACTIVE WITH ASTHMA: THE BASICS

EXERCISE INDUCED ASTHMA

While it's no secret that engaging in regular physical activity is among the best choices we can make to stay healthy, it can be hard to get started—especially if your asthma symptoms are triggered by exercise. Exercise induced asthma [EIA], also known as *exercise induced bronchoconstriction*, can affect people with and without other symptoms of asthma.

In people with EIA, asthma symptoms (coughing, chest tightness, shortness of breath [dyspnea] and/or wheezing) can begin within 10-15 minutes of starting the physical activity, or within 5-15 minutes following exercise⁴. These symptoms are caused by *inflammation* (when

the airways become swollen or “puffy”), and *constriction* (when the muscles surrounding your airways tighten), which cause your airways to become narrow and make it difficult to breathe.

If you experience asthma symptoms with exercise, it is important to discuss these symptoms with your asthma care team. There are a variety of treatments to help manage exercise induced asthma symptoms that you and your doctor can discuss, most importantly the role of medication. A Certified Asthma/Respiratory Educator can also explain additional strategies to help manage the symptoms of EIA..

UNTREATED LUNG AIRWAY WITH ASTHMA

www.asthmanet.ca

LUNG AIRWAY AFTER ASTHMA TREATMENT

www.asthmanet.ca



TREATING EIA

Inhalers

Most often, your doctor will recommend the use of an inhaler 10-15 minutes before activity to decrease asthma symptoms during exercise⁴. It is important to use all inhalers as your doctor has instructed—inhaled corticosteroids used to reduce the inflammation in your lungs should be used daily as your doctor directs, but will not help immediately treat symptoms.

Salbutamol (Ventolin, Apo-Salvent)	Inhalers (typically blue) that contain a rapid acting bronchodilator medication that will decrease constriction in your airways. These inhalers can alleviate symptoms for 4-6 hours.
Formoterol (Symbicort, Zenhale)	Maintenance inhalers that contain a rapid-onset long-acting bronchodilator* that works for 10-12 hours. These may also be used to prevent exercise induced symptoms.
Salmeterol (Advair)	Rarely, maintenance medications that contain a long-acting bronchodilator may be used to control exercise-induced asthma symptoms. ⁴

Other Medications

Occasionally, doctors may try using medicines like Singular (montelukast) to reduce exercise induced asthma symptoms. This type of medication is in the form of a pill, and is taken once a day. As these medications best protect against EIA 12 hours following administration⁶, they can pose difficulty in adhering to both exercise and medication because both must be planned rigidly for maximal effect.

Your doctor may suggest other types of medication to help manage your EIA—always talk to your doctor before changing any aspects of your treatment.

Other Basic Strategies

Keeping your asthma well controlled is important in preventing exercise-induced symptoms. Your asthma is controlled when you use your rescue inhaler fewer than 4 times per week, including the use before exercise. If you have other asthma triggers, it is important to keep them in mind when planning physical activity. Your doctor or Certified Asthma/Respiratory Educator may have additional suggestions based on your chosen activity and other asthma triggers.

If at any time during exercise you experience symptoms, stop and take your rescue inhaler—even if you used it prior to beginning exercise. Don't resume activity until your symptoms have completely resolved.

PLANNING AN EXERCISE ROUTINE

The best way to get engaged in physical activity is to be realistic about it. The following diagram (**Chart 1**) may help you find a starting point based on your current level of physical activity and feelings towards exercise, to more successfully transition into modifying your physical activity. If you are not already physically active, reference the Resources section for more information on ensuring you are healthy enough to do so safely^A.

Where do I start?

The good news is that health benefits of physical activity start at just ten minutes per day—and the more active you are, the better the results and impact on your health will be. For many people, the biggest question is: what do I do, and how do I get started?

Exercise programs are usually broken down into three main types of activities: Cardiorespiratory, resistance/strength and flexibility (stretching activities, which often include balance training). Each category has its own specific health benefits—(**chart 2**) provides a quick overview of how much of each type of exercise is recommended per week.

Getting Started

If you're approaching physical activity for the first time, start with what you believe you can successfully work into your schedule.

Avoid becoming overwhelmed by planning less to start and adding more as things work. It's also important to remember that while exercise may increase your asthma symptoms in the short-term, your lungs may respond better to exercise as your fitness improves⁴.

Enjoyment

Above everything, it is most important to choose activities you enjoy: work with what fits into your life, your interests, and what works best with your asthma. If you're not having fun, it will be a lot more difficult to move forward with your plan to get active!

Choosing Activities

There are a lot of things to consider when choosing which activities to take part in. Overwhelmingly, people with asthma can participate in any activity they choose. The notable exception has been SCUBA diving, however, this may not be completely off-limits to people with *mild asthma* that is *well controlled*¹⁴. Your current asthma control and other triggers may play a role in which activities work best for you.

If you have asthma symptoms during exercise, stop immediately and use your rescue inhaler. Ensure symptoms are completely gone prior to resuming activity.

CHART 1 – PLANNING AN EXERCISE ROUTINE

Reference: 9 11.1

I am not interested in engaging in physical activity.

- ▶ Keep reading!
- ▶ When you're ready, you'll know where to find information on how to get started
- ▶ Learn about why engaging in physical activity is a positive health choice

I am seriously considering becoming more physically active.

- ▶ Keep learning about how to engage in physical activity
- ▶ Start making specific plans.
- ▶ Be open to encouragement
- ▶ Share intentions with a trusted person in your life who can help you get started and stick to your plan!

I am ready to learn.

- ▶ I want to start making small changes.
- ▶ Visit your doctor to discuss your intentions and ensure you are healthy enough to move forward
- ▶ Review your asthma treatment plan, medications, and pre-exercise medication if needed.
- ▶ Set small goals; determine how your plan fits into your life.
- ▶ Begin to create change with small steps towards your end goal.
- ▶ Ask for help if you need it: share your goals, work with a partner... be accountable!

I am moving forward.

- ▶ I have a goal and a plan to get there.
- ▶ Track and reward progress. Use visual reminders to keep yourself moving towards your goal
- ▶ Keep your routine interesting. If your goals aren't working or you're bored, make changes.
- ▶ Ask people in your life for support to help reach your goal.
- ▶ If your commitment is important to you, it's important to those who care about you: Tell them how they can help.
- ▶ Can a friend care for your kids while you go for a bike ride? Will your partner make dinner while you go to the gym?

I am engaging in regular physical activity and want to stay on track.

- ▶ Keep it routine, but keep it interesting!
- ▶ Meet new people, try new things, keep it fun!
- ▶ Find an exercise buddy or group, challenge each other, be accountable!
- ▶ Maintain a good thing . . . for life!¹⁰

Warm-Up and Cool-Down

Regardless of the activity you choose, including a warm-up in your routine is among the most important things you can do to prevent symptoms of EIA. Include a long, gradual warm-up¹⁵ (10-15 minutes) before you begin and a 5-10 minute cool-down after intense activity.

Staying hydrated

Not only will dehydration decrease your performance, not having enough water in your body can cause your airways to “dry out” more quickly, increasing asthma symptoms—remember to drink water before, during and after activity.

CHART 2 – TYPES OF EXERCISE

Chart 2 ⁴	Cardiorespiratory (Cardiovascular)		Resistance (Strength)	
	Starting	Progressing	Starting	Progressing
What it is	Activities that increase your heart/breathing rate.		Repetitive actions done to increase muscle strength	
Canadian Guidelines ^{13 B}	At least 150 minutes per week, 10+ minutes per session. Moderate-to-vigorous intensity.		At least two days per week.	
Frequency (how often)	2-3 days/ week	5-6 days/ week	2 days/week	3 days/week
Intensity (how strenuous)	Light: I can still talk comfortably	Light to moderate: I can't have a conversation or sing	1-2 sets of 8-12 repetitions at comfortable weight.	Increase repetitions or weight 2-3 sets of 8-12 repetitions
Time (how long)	10+ minutes	20-30 minutes Increase to 150+ minutes/ week	Repeat to fatigue.	Repeat to fatigue
Activities	Walking, running, swimming, cycling, aerobics, dancing, skating		Weight machines, free weights (i.e. dumbbells, medicine ball), body weight exercises (i.e. push-ups, plank, climbing)	



ASTHMA TRIGGERS AND EXERCISE

Always be mindful of how you're breathing, before, during and after exercise. Not all asthma is Exercise Induced. In fact, most people have asthma attacks triggered by environmental factors. Avoid your triggers⁷ as much as possible, including allergies (dust/dust mites, mold, pollen, pet dander), and non-allergic triggers (smoke/smoking, chemicals, air pollution, humidity). Other things that may make your asthma worse include stress and illness.

If you have asthma, you should not exercise if:

- ▶ You are having asthma symptoms
- ▶ Your asthma is not well controlled (you need your rescue inhaler more than four times per week)
- ▶ You are sick (have a cold or the flu)
- ▶ You have allergies and the pollen or mold count is high
- ▶ It is too hot or too cold outside.
- ▶ The Air Quality Health Index (AQHI) is above¹⁰

You should modify your plans to exercise if:

- ▶ The AQHI is between 4 and 10 for the at risk population or between 7 and 10 for the general population



INDIVIDUAL/DUO ACTIVITIES	TRIGGERS ⁷ TO CONSIDER
WALKING/CYCLING	<ul style="list-style-type: none"> ▶ Outdoor allergens: Pollen, dust, molds ▶ Smoke ▶ Air pollution ▶ Cold air ▶ Humidity
SWIMMING/AQUAFIT	<ul style="list-style-type: none"> ▶ Humidity ▶ Mold ▶ Chlorine
MARTIAL ARTS	<ul style="list-style-type: none"> ▶ Molds present in some gym environments ▶ Cleaning chemicals
ROCK CLIMBING	
WEIGHT TRAINING	
SKIING/SNOWBOARDING	
SKATING	<ul style="list-style-type: none"> ▶ Cold air
SURFING/WATER SKIING	<ul style="list-style-type: none"> ▶ Outdoor allergens: Pollen, dust, molds ▶ Smoke ▶ Air pollution
GOLF	
RACQUET SPORTS	
RUNNING/HIKING	
GYM ACTIVITIES ▶ CARDIO MACHINES ▶ WEIGHT MACHINES ▶ GROUP CLASSES	<ul style="list-style-type: none"> ▶ Other participants: fragrances, smoke, pet dander, etc.
DANCE	
HOCKEY	<ul style="list-style-type: none"> ▶ Cold air ▶ Arena chemical fumes

TEAM SPORTS	
VOLLEYBALL	<ul style="list-style-type: none"> ▶ Other participants: fragrances, smoke, pet dander, etc.
BASEBALL/SOFTBALL	<ul style="list-style-type: none"> ▶ Outdoor allergens: Pollen, dust, molds ▶ Smoke ▶ Air pollution
FOOTBALL	
BASKETBALL	<ul style="list-style-type: none"> ▶ Other participants: fragrances, smoke, pet dander, etc.
SOCCER	<ul style="list-style-type: none"> ▶ Outdoor allergens: Pollen, dust, molds ▶ Smoke ▶ Air pollution

GOOD CHOICES TO START WITH	MAY REQUIRE MORE PLANNING	MAY BE MORE DIFFICULT.
-----------------------------------	----------------------------------	-------------------------------

THE AIR QUALITY HEALTH INDEX: A DECISION MAKING TOOL

The Air Quality Health Index (AQHI) developed by Environment Canada and Health Canada¹⁷ is a tool that simplifies the use of air quality scores and allows Canadians a reference point to consider the impact of air quality on their health^C.

Air quality changes rapidly in response to constantly changing levels of substances in the air that cause air pollution, including exhaust from factories, burning of fossil fuels, vehicles, and smoke^{19,1}. The AQHI measures for three different pollutants in the air (ozone, particulate matter and nitrogen oxides) in your community that materialize from these sources of air pollution¹⁸—from this measurement, we are provided a reference point from 1-10+ on the AQHI scale. By understanding how the AQHI works, you will be able to quickly discover the air quality in your community and what impact it might have on your health.



At-Risk Populations

While all Canadians can benefit from using the AQHI, it is especially important for people in certain at-risk populations to be aware of the potential impact of air quality on their health. These groups include^{19,2}:

- ▶ People with respiratory disease, including asthma
- ▶ People with cardiovascular disease
- ▶ Young children and the elderly
- ▶ People who are physically active outdoors, for work, sport or play.

AQHI and Asthma

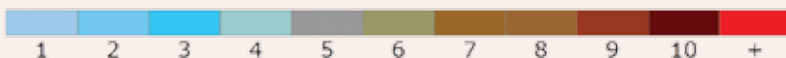
There is a very direct link between air quality and asthma symptoms. People with asthma not only experience an increase in asthma symptoms when the air quality is poor^{19,2}, but as a result use more healthcare services for asthma care on “bad air days”^{18 1.4}. During physical activity, our bodies need more oxygen to provide our muscles, causing us to breathe deeper and more rapidly—this also means that we’re inhaling more harmful substances from the air than usual. It is important to continue to closely follow your asthma action plan when air quality is poor^{19,3}.

Using the AQHI

The AQHI is a health protection tool that is designed to help you make decisions to protect your health by limiting short-term exposure to air pollution and adjusting your activity during increased levels of air pollution. The AQHI indicator numbers provide health recommendations based on how at-risk you may be to adverse health reactions from air quality. The lower the number,

the better the outcome—just think of it like a golf score. The corresponding health messages^{19.4} are directed towards at-risk populations, including people with asthma.

Those considered “at-risk” should monitor the AQHI daily and regularly adjust outdoor activities accordingly in order to properly manage asthma symptoms^{19.3}.



MOVING FORWARD

Whether you're just getting started, or you've been exercising regularly for awhile, it's important to keep things interesting. The following section is intended to provide suggestions to help you stay on track.

MAKING CHANGE: A TEAM EFFORT

Let people help—but motivate yourself

People in your life will want to help you be successful at your goal—give them ways to help, such as taking care of your kids while you go to the gym, or asking them to text you a reminder to keep you accountable. However, make sure you can keep yourself on track—your goal should matter most to you, so find ways to remind yourself to stick to your plan. Leave your shoes in front of the coffee maker to get you out for your morning walk—sometimes, the more unusual, the better.

EXERCISE BUDDIES^{11.2 20}

Find a friend to keep you on track! By having someone to be accountable to, you'll be more likely to stick to your goal. Exercise buddies can be people who you are already spending time with and together you can commit to using that time to exercise in each other's company—instead of sitting around at a coffee shop, take your coffee for a walk; instead of going to a movie, head to a nearby bowling alley or skating rink. It can also be fun to try new activities together, like rock climbing or skiing.

GROUPS, CLASSES AND TEAMS

By surrounding yourself with people who are making the choice to include physical activity as a bigger part of their life, it can be easier to stick to your goals. Whether it's joining a running or cycling group, a Zumba, aquafit or step class, or joining a sports team, by becoming a part of something bigger, you'll be more committed to making it happen—and, you'll meet new friends who share similar goals to help keep you on track.

EVENTS

Events can be a fun way to help motivate yourself towards your goal. Running or walking a race with Team Asthma, or participating in a cycling tour are all great ways to encourage yourself to be persistent—if you have a group of friends, you can also enter many events as a team.

DO IT SMART: GOAL SETTING^{11,3,21}

There are five steps to setting a concrete goal that will help you figure out how to get closer to what you want to be able to do:

SPECIFIC: Know your goal! Why do you want to be successful?

I want to run a 5K race on July 20th.

I will be able to be a better coach for my daughter's soccer team by increasing my fitness and stamina. A 5K will also help me prepare for a 10K run my friends are doing with Team Asthma in August.

MEASURABLE: Can you track your progress towards successfully completing your goal?

I will start training on May 5th using the Couch to 5KE program. I will track my progress using a fitness tracking app^F on my phone. Each week that I complete successfully²¹, I will buy a new album to listen to while I train.

ADAPTABLE (ATTAINABLE): Allow for flexibility—life happens! Schedule conflicts, weather, high AQHI days, traffic and illness aren't controllable—but your response to them is.

By beginning to train in May, I will have time to make changes if the plan isn't working—I'll re-evaluate on June 5th.

If I miss my morning run, I'll go for a short walk in the evening to ensure I get my exercise in.

REALISTIC: Ensure you have the resources in place to meet your goal.

I have enough time to complete this goal. I can run before work, and when I improve, I can join the morning running group at work. If I miss my run, my daughter can join me for a walk in the evening.

TIME-BOUND: Is there an end in sight? Give your goal an end point—but ensure it's near enough that you don't procrastinate or forget!

I am going to start on May 5th to be ready for this event on July 20th.

After I complete this 5K race I will buy myself new racing shoes as a reward and tool for training to race with Team Asthma in August!

When used effectively, it can also be helpful to use rewards²¹ when you successfully complete your goal. Including mini-goals and rewards within your plan to meet your final goal can be helpful for tracking progress. For example, if new racing shoes are your reward for successfully completing your first race, you could use purchasing new songs for your workout soundtrack as your weekly success reward.

TEAM ASTHMA

Across Canada, Team Asthma members are active in their communities—but also have opportunities to race together as a team. Additionally, Team Asthma members regularly participate in physical activities in their community proudly wearing the Team Asthma logo to show that asthma can't stop them from reaching their goals.

Team Asthma members motivate each other to get healthy and stay active. Visit www.asthma.ca/teamasthma to learn more, and connect with others through the Team Asthma group on Facebook at www.facebook.com/groups/teamasthma.

Why wait when you've got today? Get engaged, get out there, and get active!





RESOURCES

The Canadian Society for Exercise Physiology [CSEP]

^A*Physical Activity Readiness Questionnaire Plus: The Physical Activity Readiness Questionnaire for Everyone (PAR-Q+)*

http://www.csep.ca/CMFiles/publications/parq/PARQplusSept2011version_ALL.pdf

This quick questionnaire will help you determine if it is safe for you to engage in physical activity without seeing your doctor first. If you have no other chronic medical conditions, following page 1, move on to Section 6 which will help determine your level of asthma control and how to proceed with physical activity.

Canadian Physical Activity Guidelines

In 2011 CSEP reframed Canadian physical activity guidelines to increase physical activity across the nation.

All guidelines: <http://www.csep.ca/english/view.asp?x=804>

^BFor adults: http://www.csep.ca/CMFiles/Guidelines/CSEP_PAGuidelines_adults_en.pdf

^C*The Air Quality Health Index*

Environment Canada

Learn more about the Air Quality Health Index and how it affects people with and without asthma, as well as those living with other chronic health conditions.

www.airhealth.ca

The Asthma Society of Canada

Learn more about what the ASC is doing to educate Canadians with asthma about the AQHI <http://www.asthma.ca/global/aqhi.php>

^D*Keeping Track of the Air Quality Health Index*

Visit www.airhealth.ca to view the current AQHI in your area.

AQHI Apps

Several widgets are available to keep the AQHI accessible on your computer or mobile device. With options for both Windows and Mac, as well as an Android and iPhone app, visit <http://mirtchovski.com/code/AQHI.html>

Android

If you're using an Android smartphone, you can download the latest version of the Mirtchovski AQHI app for Android here: http://mirtchovski.com/code/AQHI_android.html *

iOS

You can download the latest version of the Mirtchovski AQHI app for iOS here on the iTunes App Store: <http://itunes.com/apps/aqhi>*

*The preceding is shared but not endorsed by Environment Canada

ECouch to 5K [C25K] Running Program

A 9 week training program that can help you ease into running a 5K. C25K can also be adapted by walkers to improve speed. *Note that C25K includes a very short warm-up. People with asthma may have success extending this 5 minute warm-up to 10-15 minutes* ^{15 16}.

Find it at http://www.coolrunning.com/engine/2/2_3/181.shtml

FSelf-Tracking

There are hundreds of websites offering different ways to track your physical activity—here are just a few unique examples:

- ▶ Dailymile.com – Pure fitness tracker, also offers an app for iOS. Receive encouragement from members.
- ▶ Fitocracy.com – Log your workouts and track success towards—and earn points to level up in the process! Features apps for iOS and Android. Connect with others by joining groups and adding friends.

There are also many devices, or wearables, that can motivate you to be more active—while pricier than a free app, devices like Fitbit, Jawbone and Nike's FuelBand can help keep you on track.



REFERENCES

- 1.1 Asthma Society of Canada. (n.d.). Asthma facts and statistics FAQs. Accessed 22 January 2014 via asthma.ca
- 1.2 Asthma Society of Canada. (n.d.). Mission, vision and structure. Accessed 22 January, 2014 via asthma.ca
- 1.3 Asthma Society of Canada. (n.d.). The National Asthma Patient Alliance. Accessed 25 January, 2014 via asthma.ca
- 1.4 Asthma Society of Canada (n.d.). Air Quality Health Index. Accessed 22 February, 2014 via asthma.ca
- 2 Parsons, J., Craig, T., Stoloff, S., Hayden, M., Ostrom, N., Eid, N., & Colice, G. (2011, November). Impact of exercise-related respiratory symptoms in adults with asthma: Exercise-Induced Bronchospasm Landmark National Survey. In *Allergy and Asthma Proceedings* (Vol. 32, No. 6, pp. 431-437). OceanSide Publications, Inc.
- 2.1 Mancuso, C., Sayles, W., Robbins, L., Phillips, E., Ravenell, K., Duffy, C., & ... Charlson, M. E. (2006). Barriers and facilitators to healthy physical activity in asthma patients. *Journal of Asthma*, 43(2), 137-143. doi:10.1080/02770900500498584
- 2.2 State of Illinois. (2013, July). Chronic disease burden update. 2(8). Illinois: Illinois Department of Public Health. Accessed 22 January, 2014 via idph.state.il.us
- 3 Centers for Disease Control. (n.d.). Asthma's impact on the nation. *Centers for Disease Control*. Accessed 26 January, 2014 via cdc.gov/asthma
- 4 Clark, C. & Cochrane, L. (2009). Asthma. In: Durstine, J. L., Moore, G., Painter, P. & Roberts, S. [Eds.] (2009). ACSM's exercise management for persons with chronic diseases and disabilities. 3rd ed. (pp.143-149). Champaign, IL, Windsor, ON: Human Kinetics.
- 5 Caspersen, C. J., Powell, K. E., & Christenson, G. M. (1985). Physical activity, exercise, and physical fitness: definitions and distinctions for health-related research. *Public health reports*, 100(2), 126.
- 6 Peroni, D. G., Piacentini, G. L., Ressa, M., Bodini, A., Loiacono, A., Aralla, R., & Boner, A. L. (2002). Time efficacy of a single dose of montelukast on exercise-induced asthma in children. *Pediatric allergy and immunology*, 13(6), 434-437.
- 9 Mack, D., Sabiston, C., McDonough, M., Wilson, P., & Paskevich, D. (2011). Motivation and behavioural change. In Crocker, P. (Ed.), *Sport and exercise psychology: A Canadian perspective* 2nd ed. (pp.79-110). Toronto: Pearson Canada.
- 10 Greenfeld, J. M. (2011, 28 September). Transtheoretical model and social ecological model. *Physical activity: Promotion and adherence* [lecture].

- 11.1 Lox, C., Martin-Ginis, K., & Petruzzello, S. (2010). Theories and models of exercise behavior II. *The psychology of exercise: Integrating theory and practice*. (pp. 73-99). Scottsdale, AZ: Holcomb Hathaway Publishers.
- 11.2 Lox, C., Martin-Ginis, K., & Petruzzello, S. (2010). Social influences on exercise. *The psychology of exercise: Integrating theory and practice*. (pp. 101-137). Scottsdale, AZ: Holcomb Hathaway Publishers.
- 12 Thompson, C. (2007). *Prevention Practice: A Physical Therapist's Guide to Health, Fitness, and Wellness*. (p. 85). Thorofare, NJ: SLACK Inc.
- 13 Canadian Society for Exercise Physiology (2011). *Canadian physical activity guidelines: For adults 18-64 years*.
- 14 Lim, M. L., Brazzale, D. J., & McDonald, C. F. (2012). 'Is it okay for me to...?': Assessment of recreational activity risk in patients with chronic lung conditions. *Australian family physician*, 41(11), 852.
- 15 De Bisschop, C., Guenard, H., Desnot, P., & Vergeret, J. (1999). Reduction of exercise-induced asthma in children by short, repeated warm ups. *British journal of sports medicine*, 33(2), 100-104.
- 16 Parsons, J. P., & Mastronarde, J. G. (2005). Exercise-induced bronchoconstriction in athletes. *CHEST Journal*, 128(6), 3966-3974.
- 17 Environics Research Group. (2005). *Development of a health-based air quality index for Canada - public opinion research 2004-05: final report*. [report] Health Canada, p. 9.
- 18 To, T., Shen, S., Atenafu, E. G., Guan, J., Mclimont, S., Stocks, B. & Liciskai, C. (2013). The air quality health index and asthma morbidity: a population-based study. *Environmental Health Perspectives*, 121 (1), p. 46-52.
- 19.1 Environment Canada. (2013, July 16). *Air quality and health*. [Online.] Accessed 22 February, 2014 via <http://ec.gc.ca/cas-aqhi/>
- 19.2 Environment Canada. (2013, July 16). *Are you at risk?* [Online.] Accessed 22 February, 2014 via <http://ec.gc.ca/cas-aqhi/>
- 19.3 Environment Canada. (2013, July 16). *About the air quality health index*. [Online.] Accessed 23 February, 2014 via <http://ec.gc.ca/cas-aqhi/>
- 19.4 Environment Canada. (2013, July 16). *Air quality health index categories and health messages*. [Online.] Accessed 23 February, 2014 via <http://ec.gc.ca/cas-aqhi/>
- 20 Bandura, A. (2004). Health promotion by social cognitive means. *Health education & behavior*, 31(2), 143-164.
- 21 Hales, D. & Lauzon, L. (2010). An invitation to health and wellness. *An invitation to health*, 2nd Canadian ed. (pp.16-18). Toronto: Nelson Education.

A NAPA membership puts you in touch with other Canadians who are working to increase awareness about asthma, improve asthma care, and build a volunteer network to support others affected by asthma. NAPA members also receive important updates and a quarterly newsletter.

To join the National Asthma Patient Alliance or for more information:

Online: www.asthma.ca/napa

E-mail: napainfo@asthma.ca

Phone: 1-866-787-4050

This booklet is also available online at www.asthma.ca

The Asthma Society of Canada will review and update this resource in the future. Your feedback is welcome. Please e-mail your comments to info@asthma.ca


Asthma.ca[™]
Asthma Society of Canada

401-124 Merton Street,
Toronto, Ontario, M4S 2Z2
info@asthma.ca
1-866-787-4050

