

Wildfire Smoke and Outdoor Exercise

Exercising outdoors is a healthy summertime activity for most people, but it should be done with caution under smoky conditions.



Exercise is good for physical and mental health.

However, some people are at higher risk of experiencing health effects while exercising when it is smoky outside:

- People with conditions such as asthma, chronic obstructive pulmonary disease (COPD), or respiratory infections
- People with other chronic health conditions such as heart disease and diabetes
- Pregnant women and their developing infants
- Children
- Older adults

Children may be especially susceptible to wildfire smoke.

- Although children have smaller lungs than adults, they breathe more air per unit of body weight.
- The lungs of children are not fully developed. The sensitive tissues continue to branch and grow into late adolescence.
- Children are generally more active than adults, especially outdoors.



People breathe more quickly and more deeply when they are exercising.

- The average adult breathes about 7 litres of air per minute (L/min) when resting. This increases steadily with more intense exercise (Figure 1).
- **An adult doing strenuous exercise breathes at least 10 times more air than an adult who is resting.** The same principle applies for children.

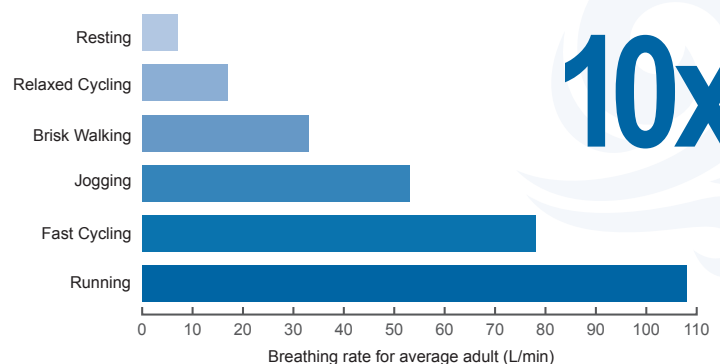


FIGURE 1: Breathing rates in litres per minute (L/min) for the average adult doing activities of different intensity.



BC Centre for Disease Control
Provincial Health Services Authority

FOR MORE INFORMATION bccdc.ca/wildfiresmoke

Exercising outdoors can drastically increase your wildfire smoke exposure.

- The fine particulate matter (PM_{2.5}) in wildfire smoke can be inhaled deep into the lungs.
- Choosing a cleaner indoor environment can significantly reduce the amount of PM_{2.5} inhaled (Figure 2).

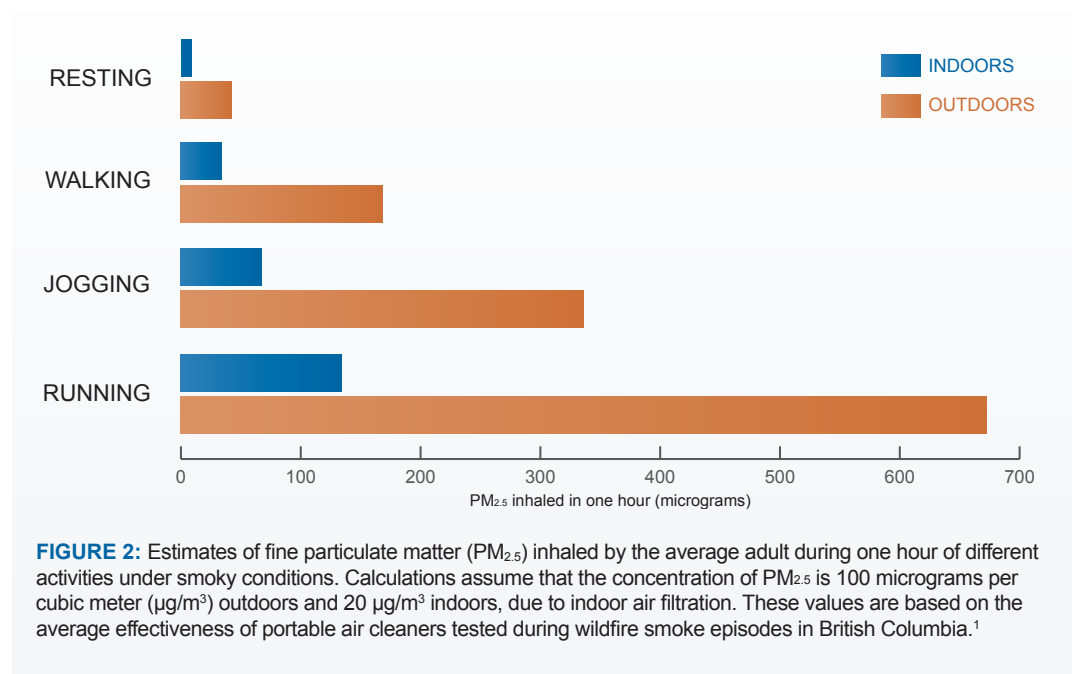
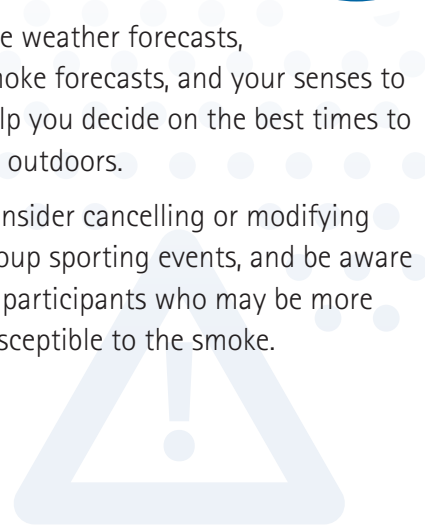


FIGURE 2: Estimates of fine particulate matter (PM_{2.5}) inhaled by the average adult during one hour of different activities under smoky conditions. Calculations assume that the concentration of PM_{2.5} is 100 micrograms per cubic meter (µg/m³) outdoors and 20 µg/m³ indoors, due to indoor air filtration. These values are based on the average effectiveness of portable air cleaners tested during wildfire smoke episodes in British Columbia.¹

¹ Barn P, Larson T, Noullett M, Kennedy S, Copes R, Brauer, M (2008). Infiltration of forest fire and residential wood smoke: an evaluation of aircleaner effectiveness. *Journal of Exposure Science and Environmental Epidemiology* 18: 503–511

If you exercise outdoors during smoky conditions, following some simple guidelines can help to reduce the impacts of wildfire smoke.

- Choose lower-intensity activities than usual, such as walking instead of jogging, or jogging instead of running.
- Reduce the amount of time you spend exercising.
- Drink lots of water before, during, and after exercise to help your body cope with the smoke.
- Listen to your body. If you are experiencing symptoms, stop exercising or reduce the intensity.
- Allow everyone to gauge their own signs and symptoms, and to make their own decisions about how to participate.
- Look out for others, especially children and older adults.
- Use weather forecasts, smoke forecasts, and your senses to help you decide on the best times to go outdoors.
- Consider cancelling or modifying group sporting events, and be aware of participants who may be more susceptible to the smoke.



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