



Air pollution and exercise

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The environment you exercise in, especially the air quality, is just as important as the exercise itself.

A recent study of amateur cyclists who exercise vigorously outdoors found that even very low levels of ozone in the air can significantly reduce lung function, causing shortness of breath, chest tightness, and wheezing.

Also, we often breathe through the mouth when exercising, bypassing the nasal mucous filtering line of defence and inhaling more pollutants. This irritates the respiratory tract and leads to impaired aerobic performance.

People who are already vulnerable to air pollution are especially susceptible. They include children, the elderly, and people with allergic rhinitis, asthma, and heart and lung diseases. Children who compete in sports in communities with more polluted air have a 3-4 times higher risk of developing respiratory illness than non-athletic children and are more likely to be diagnosed with asthma.

Precautions

1. Check local outdoor air quality before engaging in vigorous activities. Postpone exercise when ozone exceeds 0.20 ppm/hour.

2. Work out early in the morning or later in the evening. Avoid rush hours. The highest levels of ozone typically occur during late afternoon. However, pollen counts may be a concern as they are highest in the morning. Also, beware of local pollen seasons (usually from March to October).
3. Exercise away from traffic. Avoid exercising in dusty, damp, and moldy places.
4. If you have asthma or other lung conditions, check with your physician for appropriate medication to use prior to the exercise. Symptoms and risks may be reduced.
5. Avoid smoking or exposure to cigarette smoke before and during exercise.
6. Engage in nasal breathing only, if possible. Wearing a carbon-impregnated facemask (e.g. nuisance odour mask) can reduce the amount of air pollutants entering the lungs through the nose and mouth.
7. Stop the activity if symptoms such as serious shortness of breath or wheezing appear.

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Exercise and immunity

Moderate physical activity is associated with an optimal immune response to infections. But exercise physiologists now realize that athletes are at a greater risk of developing infections, particularly upper respiratory tract infections, during periods of heavy training and competition. There is now strong scientific evidence that very heavy exercise increases the prevalence and/or the persistence of respiratory symptoms.

How it becomes too much?

Prolonged or endurance exercise causes the body to release stress hormones, which lead to suppressed immune response and inflammation. In addition, decreases in nasal and salivary immunoglobulin concentration, nasal mucous clearance ability, and nasal neutrophil (a type of white blood cell) function can occur, thus lowering resistance to the common cold, flu, and sore throat. This altered immunity

state may last between 3 to 72 hours, and the risk of infection may be elevated during training and up to 2 weeks after.

Protection

Boosting and regularly maintaining a strong immune system is the best protection. Recent research also suggests that we can keep the blood level of certain specialized immune cells higher during exercise by ingesting carbohydrates. For training longer than 60 minutes, it is recommended to take in between 30 to 60 grams of carbohydrate every hour. This may be in the form of moderate to high glycemic carbohydrate, a sports drink, an energy bar, or dried fruit.

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