Tips to Remember: Exercise-induced asthma

Do you experience coughing, wheezing, or chest tightness when you exercise? Do you feel extremely tired or short of breath when you exert yourself? If you have these symptoms, you may be one of many people with exercise-induced asthma (EIA).

Approximately 7% of the population, or about 20 million Americans, are reported to suffer from asthma, according to the American Lung Association. With strenuous physical exercise, most of these individuals experience asthma symptoms. In addition, many non-asthmatic patients-up to 13% of the population, up to 40% of patients with allergic rhinitis and often people who have a family history of allergy-experience asthma associated with exercise.

Symptoms and triggers
If you have exercise-induced asthma, you may experience breathing difficulty within 5-20 minutes after exercise. Symptoms may include wheezing, chest tightness, coughing and chest pain. Other EIA symptoms include prolonged shortness of breath, often beginning 5-10 minutes after brief exercise.

Patients with EIA have airways that are overly sensitive to sudden changes in temperature and humidity, especially when breathing colder, drier air. During strenuous activity, people tend to breathe through their mouths, allowing the cold, dry air to reach the lower airways without passing through the warming, humidifying effect of the nose. With mouth breathing-also common in patients with colds, sinusitis and allergic rhinitis ("hay fever")-air is moistened to only 60-70% relative humidity, while nose-breathing warms and saturates air to about 80 to 90% humidity before it reaches the lungs.

In addition to mouth-breathing, air pollutants, high pollen counts, and viral respiratory tract infections can also increase the severity of wheezing with exercise.

Diagnosis
To confirm a diagnosis of EIA, a physician:

1. Obtains a patient history.
2. Performs a breathing test when the patient is at rest to ensure that the patient does not have chronic asthma.
3. Often may perform a breathing test after exercise.

Measurement can be done in a medical facility or "on the field." In the office setting, a patient exercises for six to eight minutes using a treadmill or cycle to create enough exertion to maintain a heart rate at 80-90% of the age-related maximal predicted value. The patient breathes into a breathing machine called a spirometer, which processes the patient's ability to breathe out, or *expire* air. This test is performed before exercise and at various intervals from two to 30 minutes after exercise stops. A decrease of at least 12-15% in the volume of air blown out (as compared to the starting value) by the patient in one second (termed the *forced expiratory value in one second* , or *FEV 1*) indicates possible EIA.

On the field, expiratory airflow can be evaluated before and after a six- to eight-minute "free run" or after participation in a sport or activity that usually

induces respiratory symptoms. Airflow is again measured for 30 minutes after exercise ends. Although a portable spirometer can be used, physicians often recommend a small, relatively inexpensive peak flow meter to demonstrate the characteristic post-exercise decrease in expiratory airflow. In this case a 15-20% decrease is required for the test to be considered positive for EIA.

Recommended activities
Although the type and duration of recommended activity varies with each individual, some activities are better for people with EIA. Swimming is often considered the sport of choice for asthmatics and those with a tendency toward bronchospasm because of its many positive factors: a warm, humid atmosphere, year-round availability, toning of upper body muscles, and the way the horizontal position may help mobilize mucus from the bottom of the lungs. Walking, leisure biking, hiking and free downhill skiing are also activities less likely to trigger EIA. In cold weather, wearing a scarf or surgical mask over the mouth and nose can decrease symptoms by warming inhaled air.

Team sports that require short bursts of energy, such as baseball, football, wrestling, golfing, gymnastics, short-term track and field events or surfing are less likely to trigger asthma than sports requiring continuous activity such as soccer, basketball, field hockey or long-distance running. Cold weather activities such as cross-country skiing and ice hockey are also more likely to aggravate airways. However, many asthmatics have found that with proper training and medical treatment, they are able to excel as runners or even basketball players.

Treatment
Inhaled medications taken prior to exercise are helpful in controlling and preventing exercise-induced bronchospasm. The medication of choice in preventing EIA symptoms is a short-acting *beta 2 agonist bronchodilator spray* used 15 minutes before exercise. These medications, which include *albuterol, pirbuterol,* and *terbutaline,* are effective in 80 to 90 percent of patients, have a rapid onset of action, and last for up to four to six hours. These drugs can also be used to relieve symptoms associated with EIA after they occur.

In the school setting, these medications may be administered to children by school nurses. A long-acting bronchodilator spray that lasts up to 12 hours is also available. By using this before school, many children are able to participate in physical education class and other sports throughout the day without needing short-acting sprays.

If symptoms are not readily controlled by medications, patients should talk to their physician about using daily medication that treats the underlying asthma-the inflammatory process that is causing increased "twitchiness" or sensitivity of the airways.

In addition to medications, a warm-up period of activity before exercise may lessen the chest tightness that occurs after exertion. A warm-down period, including stretching and jogging after strenuous activity, may prevent air in the lungs from changing rapidly from cold to warm, and may prevent EIA symptoms that occur after exercise.

Athletes should restrict exercising when they have viral infections, when temperatures are extremely low, or-if they are allergic-when pollen and air pollution levels are high. Pursed (narrowed) lip breathing may also help reduce airway obstruction.

Asthma and the Olympics
According to a recent study, at least one in six athletes representing the United States in the 1996 Olympic Games had a history of asthma. Although 4-7% of the general population is reported to have asthma, the number of Olympic athletes who reported asthma was considerably higher. Out of 699 athletes, 117 (16.7%) were found to have a history of asthma, or to have used asthma medications, or both. Seventy-three (10.4%) of the athletes had active asthma, based on their need for asthma medication at the time of the games, or their need for medication on a permanent or semi-permanent basis.

Among the Olympic athletes, asthma was most common among cyclists and mountain bikers and least common in athletes competing in badminton, beach volleyball, table tennis and volleyball. Interestingly, nearly 30% of the 1996 U.S. Olympians who had asthma or took asthma medications won team or individual medals in their Olympic competition, faring as well as athletes without asthma (28.7%) who earned team or individual medals.

Exercise is beneficial to both physical health and emotional well-being. Even if they are not striving for an Olympic medal, almost all people with EIA should be able to exercise to their full ability with appropriate diagnosis and treatment.

When to see an allergy/asthma specialist
The AAAAI's *How the Allergist/Immunologist Can Help: Consultation and Referral Guidelines Citing the Evidence* provide information to assist patients and health care professionals in determining when a patient may need consultation or ongoing specialty care by the allergist/immunologist. Patients should see an allergist/immunologist if they:

- Have exercise-induced symptoms that are unusual or do not respond well to pre-treatment with albuterol, nedocromil, or cromolyn.
- Have had exercise-induced anaphylaxis or food-dependent exercise-induced anaphylaxis.
- Want to SCUBA dive and have a history of asthma.

Your allergist/immunologist can provide you with more information on exercise-induced asthma.

Tips to Remember **are created by the Public Education Committee of the American Academy of Allergy, Asthma and Immunology.**