



What is Exercised-Induced Asthma (EIA)?

Running, jumping, playing...Ah! To do all those things without a cough or a wheeze! For some people who have asthma, even a climb up a short flight of stairs is enough to make breathing difficult. Although exercise is touted as “good for you,” the very mention of the word may be enough to send dread, even fear, through your mind. If so, you could be one of those people who have asthma that is aggravated by exercise, or you could have what is termed “exercise-induced asthma” (EIA), also known as “exercise-induced bronchospasm.”

What is EIA?

Exercise-induced asthma (EIA) is a temporary narrowing of the airways caused by strenuous exercise or activity. EIA may begin during exercise (typically within 15 minutes) or after exercise has ended. It may also reappear as a seemingly unrelated episode hours later, referred to as a “late-phase response” (occurring 4-12 hours after exercise).

Some people with EIA describe feeling winded, tired, or dizzy after exercising and may even experience a stomachache. They may feel as if their chest is too small for their lungs. Others experience a cough, chest pain or tightness. EIA affects approximately 12% of people in the United States . EIA occurs in 80 to 90% of people with asthma and in almost 50% of people with hayfever (allergic rhinitis).

Children are more likely to have EIA than adults. Children may notice that they have a hard time keeping up with their friends when running and playing. EIA in children is frequently overlooked by parents, physicians, teachers and even the children themselves. Many children with EIA learn to avoid outdoor play, sports and other physical activities that produce asthma symptoms. Untreated EIA can limit normal activities. This may result in lasting physical and psychological effects along with poor self-image. If you suspect that you or your child has EIA, consult your physician at the Asthma and Allergy Center.

Why EIA Happens

There is no simple answer to explain what happens to a person with EIA, and a combination of factors may be responsible triggers. The cause of EIA has been the subject of considerable debate and controversy over the past few years. Most researchers believe that EIA is in some way caused by a cooling of the airways or by a loss of water within the airways. Experimentally, if people inhale cold

air, or if there is rapid re-warming of the airways, the symptoms of EIA can result. EIA symptoms can also be caused by breathing in water with a salt content either much greater than or much less than that of normal body fluids. Experimental procedures can cause what people with EIA have observed themselves. Breathing warm, humidified air, (such as by taking a shower or swimming in a heated pool) can completely or partially prevent EIA. Breathing cold, dry air seems to make EIA symptoms worse for many people.

Testing for EIA

When checking for EIA, your physician will take a thorough history and may perform a series of tests. One such test is an exercise challenge performed in a laboratory (running on a treadmill), or in an informal setting (such as running outdoors), where the exercise can resemble what you usually do. The physician will then measure how well your lungs function using a computerized device called a spirometer.

Medical investigators have observed that specific chemicals are released into the blood during episodes of EIA. One such chemical is histamine, which can lead to allergic reactions such as a runny nose and stuffiness, and itchy, watery eyes.

Triggers and Factors Associated with EIA

Air pollutants, such as sulfur dioxide and ozone, are known to aggravate EIA. People with allergies to pollens, molds or other allergic substances in the air, may find that their symptoms of EIA are worse during seasons and times of the day when allergen counts are high. Discuss with your physician the best times for you to exercise.

A unique feature of EIA is that some people can “run through” an episode. This “refractory period” means that one EIA reaction can reduce the effect of a second exercise period that follows within about 2 hours. EIA from the second exercise period is much less. In this respect, it may be helpful for those with EIA to perform warm-up exercises, one-quarter to one-half hour prior to exercise.

Another triggering factor that can make EIA worse is eating foods (such as shrimp, celery, peanuts, egg whites, almonds and bananas) up to two hours before exercise. In fact, some cases of food-related EIA result in more than breathlessness, causing weakness, a drop in blood pressure, and even collapse.

Medications and Treatments for EIA

The goal of treating EIA is to let you participate in physical activities without triggering asthma. Once your physician determines that you have EIA, he or she will devise a plan which will permit you to participate in the exercise program or activity of your choice. The goal is to help you stay active.

A plan will be individualized according to your needs. Techniques, medications, and devices commonly used to treat EIA include:

- Modified training techniques
- Medications such as
- peak-flow monitoring

Cromolyn sodium, an inhaled medication that blocks the allergic response, has the ability to block early and late phase reactions of EIA.

Modified Training Techniques

Modified training may mean a longer warm-up and cool-down period or pacing yourself for endurance instead of speed. It may mean that you learn a new sport or replace one activity for another. Modified training allows you to gradually increase your physical strength and lung capacity without being defeated by EIA symptoms.

Medications

In addition to modified training techniques, a variety of medications may prevent or treat EIA. Adrenaline-like medications, such as albuterol (Ventolin?, Proventil?) inhaled approximately 15 minutes before exercise, can protect most patients from EIA and they have few side effects. The inhaled form of these medications opens the airways for 4-6 hours. An oral medication called theophylline is thought to be effective against EIA and seems to work best if used regularly and long term (taken on a daily, routine basis). Anticholinergic medications, such as atropine sulphate and ipratropium bromide (Atrovent?), taken 1-2 hours before exercise, may protect you for 3-5 hours. Discuss medication options with your doctor to determine which one(s) would be best for you.

Peak Flow Monitoring

EIA can also be prevented if you understand how your airways perform the tasks required during exercise. You may not know your limits or be aware when you are having difficulty. For example, a child who can't keep up with his friends on the playground, no matter how hard he tries, may think that he is always going to be that way and will avoid situations involving physical activity. Another example might be a 40 year-old woman who has been jogging for twenty years. Suddenly, following a bout of pneumonia, she is left with EIA. Her airways feel like they are on fire every time she runs. But she's tough in her own mind, tougher than asthma – or so she thinks. Both of these people are sadly mistaken, and neither is likely to achieve goals of physical conditioning until they learn to understand and respond to the needs of their airways.

The peak flow meter is a device that can show you easily and accurately how well your airways are working during physical activity. Much in the same way that a thermometer measures your body temperature, a peak flow meter measures the openness of your airways. The more open the airways,

the less likely you will have a problem with EIA. Depending on the treatment plan prescribed by your physician, the peak flow meter can help you decide to use medication before an activity or to delay activity until your airways are more fully recovered.

The Perfect Exercise

There is no such thing as the “perfect exercise” for people with EIA. The key is to select a sport or exercise you enjoy and feel good doing. Very light or nonaerobic exercise (such as walking or weight training) rarely results in EIA. Running tends to produce symptoms easier than bicycling or walking. Indoor swimming, because it is performed in a humid and often warm environment, may be better tolerated than running or bicycling. Other sports relatively well tolerated include football, isometric exercises, and downhill skiing. These long-lasting, endurance-type exercises are usually tolerated better in individuals with EIA than are high-intensity sports of short duration such as basketball, soccer, or track. The choice of sport can also affect your need for medications.

Training in Competition

Physical conditioning or training for people with EIA begins with proper breathing. Breathing slowly through your nose warms and humidifies the air in your nasal passages. This reduces the tendency to hyperventilate (breathing rapidly through the mouth) which can make you dizzy or lightheaded. When exercising in cold weather, cover your nose and mouth with a mask or scarf. This will make the air you breathe warmer and more humid.

Exercising in spurts of less than 5 minutes each, fewer than 40 minutes apart, can reduce your chances of triggering EIA. U.S. athletes with asthma or EIA have won numerous gold, silver and bronze medals in various Olympic games. In the 1988 Summer Olympics in Seoul, South Korea, 62 of 667 U.S. athletes had confirmed EIA. In those games, the athletes with EIA won medals in the same proportion as those who did not have the condition.

The Value of Exercise

Athletes do well, despite their EIA, partly because their long-term training makes airways adapt better to exercise. The flow of air actually increases with conditioning, causing better opening of the airways. In fact, people with asthma, who take their medications as prescribed, exercise regularly, and participate in aerobic exercise, develop stronger lung function and capacity than do sedentary people who don't have asthma. Exercise seems to train the respiratory muscles to work more efficiently. Exercise also can help people reduce high blood pressure (hypertension). Although exercise by itself may control only mild hypertension, it may help some people lower their need for blood-pressure medication enough to reduce or eliminate any adverse side effects.

Exercise lowers the body's cholesterol level and provides a general sense of well-being. Although there are age and sex-related osteoporosis (rapid loss of calcium and bone), exercise will often slow down the loss of calcium, thereby reducing the chance for developing osteoporosis.

Exercise can raise one's self-esteem and feeling of accomplishment. Endorphins (natural hormones or chemicals released by the brain) can also produce a feeling of well being or a "high" after prolonged periods of exercise.

Overdoing a Good Thing

Too much exercise can create fatigue and a feeling of heaviness in the muscles. It can cause extreme weight loss, anemia, inability to fight infection, and even early-degenerative arthritic changes. Frequent bursts of exercise may lead to kidney damage and a rapid breakdown of muscle.

Some people become addicted to exercise. These people may reason that if running 5 miles is good for them, then running 10 miles must be twice as good. Injuries can easily develop after too many bouts of exercise. If someone becomes addicted to a sport such as running, then cross-training with a combination of other sports might reduce the chances of developing injuries. Female athletes who train intensely can develop amenorrhea (the absence of regular menstrual periods), osteoporosis, and eating disorders, characterized by frequent vomiting, extreme weight loss, and overuse of medications such as laxatives, diet pills or water pills. These "exercise addicts" should seek out the advice of a physician.

In Summary

EIA, when treated properly, should not limit or disrupt a person's participation in physical activities. Although we do not fully understand what causes EIA, with proper conditioning and proper medication, almost all individuals with asthma can actively participate in sports they enjoy.

**Adapted from the Allergy and Asthma Network and Mothers of Asthmatics, Inc.