



ASTHMA & EXERCISE IN SPORT

What is asthma ?

Asthma is a long-term disease which can be controlled with proper treatment. Unfortunately it cannot be cured. It affects as many as 1 in 5 children and 1 in 10 adults in Australia. It is the cause of many lost school days and a lot of time off work.

People with asthma have episodes of shortness of breath which may be brought on or made worse by certain trigger factors. Shortness of breath is due to narrowing of the small airways within the lungs as a result of inflammation and muscle spasm. Episodes of asthma, often called 'attacks', may be provoked by a variety of trigger factors. Some are specific to an individual person with asthma – such as contact with pollens or cats in those with a specific allergy to them, and others are non-specific – such as exercise.

Exercise-induced asthma if untreated often interferes with the enjoyment of exercise and with attempts to train and compete in active sporting programs.

How do the lungs work?

Every breath you take draws air into the windpipe or trachea. The windpipe splits into two further tubes called the bronchi, which then divide into smaller and smaller airways called bronchioles, eventually leading to small air sacs called alveoli. It is here in the alveoli that oxygen in the air passes into the bloodstream. At the same time, carbon dioxide produced in the tissues of the body moves from the blood into the air sacs and then out of the body.

What happens during an asthma attack?

Asthma is due to constriction and inflammation of the small airways. In asthma there is a special type of inflammation which narrows the small airways and makes them 'twitchy' and very sensitive to any environmental changes. The airways also become blocked with sticky mucus.

During an asthma attack breathing becomes harder, even at rest. There may be a cough or wheezing. Asthma can also occur at night during sleep. Asthma can vary in severity from mild chest tightness with cough and wheeze during exertion, to a life-threatening attack of severe breathlessness requiring urgent medical treatment.

The difficult breathing during an asthma attack results from partial blockage of the small tubes (bronchi and bronchioles) through which air passes to and from the lung tissue. This increases the effort required to move fresh air containing oxygen (O₂) in, and the 'stale' air containing carbon dioxide (CO₂) out of the body. A person experiencing an asthma 'attack' is aware that more effort than usual is needed for breathing.

What is exercise induced asthma (EIA)?

Exercising requires more oxygen to be sent to the muscles with increased production of carbon dioxide. We need to breathe more air in and out. If the air we breathe is cold, the increased breathing caused by exercise cools and dries the lining of the bronchial tubes. Cooling and drying of the airtubes causes irritant chemicals to be released which cause the



airways to narrow. Asthmatic bronchial tubes are abnormally sensitive to these released chemicals which cause them to narrow. This sometimes occurs during but particularly after exercise.

The factors which determine whether exercise brings on an asthma 'attack' include the type of exercise, its duration and intensity, and the sensitivity of the bronchial tubes to released chemicals. The condition and temperature of the air breathed during exercise is also important.

Is all exercise the same?

No! Running at fun-run pace for 6-8 minutes on a cold dry morning frequently brings on asthma; swimming at an equivalent pace in a heated pool, however, rarely does so.

Is the amount of time spent exercising important?

Yes! Brief exercise - less than 2 minutes - does not often cause asthma; prolonged exercise - say 6 minutes or more - does. A few people with asthma who exercise for more than 10 minutes don't go on to get an asthma attack whereas exercise for a shorter period would have triggered an attack.

Is the intensity of exercise important?

Yes! Gentle exercise at a low fraction of maximum is less likely to trigger asthma than strenuous exercise.

What of air quality?

Breathing cool dry air is more likely to trigger asthma than breathing warm humid air. Allergic particles or irritants in the air might also be important aggravating factors. Cooling and drying of the bronchial membranes are greater during running than swimming because of the difference in temperature and water content of the air breathed.

Can exercise induced asthma be controlled?

Yes! EIA can be reduced or prevented in most people with asthma by improved fitness, warm-up before exercise, and by medications taken before exercise. EIA is minimised by best control of asthma using 'preventers', eg Intal™, Intal Forte™, Tilade™, Becotide™, Becloforte™, Aldecin™, Pulmicort™, or Flixotide™, or relievers such as Ventolin™, Respolin™, Respax™, Asmol™ or Bricanyl™, immediately before exercise. These medications largely or completely prevent EIA in most people with asthma.

An established attack of EIA will usually respond to rest and the inhalation of usual doses of reliever medications. Occasionally exercise-induced asthma is severe; rarely, it might even be life-threatening. Supplemental oxygen therapy and larger doses of reliever medications are then necessary. Skilled medical or paramedical personnel should be consulted for further treatment.

Can people with asthma play sport?

Yes! Almost all people with asthma properly advised and treated can play sport. Many compete successfully at national and even international level. People with asthma, not surprisingly, seem to favour swimming and other water sports and sprint rather than



endurance events. However, they have also succeeded in long distance running and cross country skiing - the most provocative of types and duration of exercise and in the worst climates! Cricket, football and hockey have also attracted many top class performers.

Nevertheless, exercise can provoke severe, even life-threatening asthma in some individuals. Vigorous exercise should be avoided by people with asthma with an already established attack. Measurement of lung function before exercise with a peak flow meter or spirometer will usually detect those at risk. If lung function remains below 80% of personal best after the use of pre-exercise medication, vigorous exercise should be postponed.

Is exercise ever dangerous for people with asthma?

Yes! People with asthma should not use SCUBA gear to dive. Life-threatening complications of the use of SCUBA are predictably more common in people with asthma. The compressed air breathed during SCUBA diving is cold and dry (and therefore potentially provocative of asthma). Fine mists of fresh or salt water which might be breathed through a regulator from time to time can produce or aggravate asthma.

Are any anti-asthma drugs banned for competition sports?

All inhaled anti-asthma drugs are permitted and are legal. These include salbutamol and terbutaline (relievers) and orciprenaline (AlupentTM), salmeterol (SereventTM) and ipratropium bromide (AtroventTM). Inhaled steroids, BecotideTM, BecloforteTM, AldecinTM, PulmicortTM and FlixotideTM are quite legal and permitted. Adrenaline, ephedrine, isoprenaline and fenoterol (BerotecTM) are banned in ANY form! Salbutamol and terbutaline tablets and injectable terbutaline are banned. Oral and injectable steroids are illegal even though these are not the notorious 'body building steroids' written so much about in the media.

What sort of lifestyle can be led?

Asthma should never be regarded as something to hold back enjoyment of life. There are many successful Australian asthmatic athletes at the top of their chosen sport. They always have a reliever medication handy for first aid if asthma symptoms develop. Don't forget that peak physical performance also requires a healthy diet, no cigarette smoking and regular exercise training.

Further information

For more information about asthma in exercise and sport, talk to your doctor, your pharmacist, or local Asthma Foundation.

Please Note: This information is intended by The Australian Lung Foundation to be used as a guide only and is not an authoritative statement. Please consult your family doctor or specialist respiratory physician if you have further questions relating to the information provided here.