For the Coach

Asthma

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Overview

Asthmatics, if suitably treated, should be able to play most sports, and many sportsmen and women who have asthma are able to compete at the highest level and gain Olympic and world honours. People who suffer from asthma should be encouraged to take exercise providing they undergo a planned exercise programme which may help them cope with their condition during their everyday life. In sports which rely on oxygen being delivered to the lungs by compressed gases caution should be exercised, for example sub-aqua-divers, free fall parachutists when jumping from high altitudes and mountain climbers who scale the highest peaks.

Definition

Asthma is a reversible condition caused by narrowing of the airways leading to the alveoli in the lungs where the intake of oxygen by the blood takes place. As the diameter of these bronchial tubes in the chest decreases, so the resistance to the air flow through them increases, making it difficult for the subject to breath air in and out. The narrowing is caused by contraction of the muscles surrounding each bronchial tube and in the late stages by the lining swelling or mucus being secreted within the bronchial tree. By definition the narrowing is reversible. In general, the difficulty arises in exhalation and is more noticeable than the difficulty with inspiration; air is trapped in the air sacks (alveoli).

Up to 15 per cent of the population suffer from asthma at some time during their lives. In some people no specific cause can be found (**intrinsic asthma**), but in others there may be a variety of factors which trigger an attack. In general, upper respiratory tract infections and chest infections will make the subject more susceptible to an attack as will psychological stress. However, not all asthmatics will react badly to stress, particularly if they have been trained to cope with it or have an inherent ability to cope with stressful situations either at home, work or during training or competition.

Triggers

In many people who suffer from asthma no cause can

be found for an attack (**intrinsic asthma**), but in others there are definite causes. This I will call **extrinsic asthma**. The first group of extrinsic asthmatics may react to an allergy to an irritant such as pollen, dust, moulds, smoke, animals or their fur and saliva or to birds' feathers. They may only be allergic to one or to several of these factors. They therefore suffer from **allergic asthma**. Secondly, up to 30 per cent of the population may experience mild asthma if they exercise in very cold dry air (-10°C). Finally, the third group of extrinsic asthmatics may suffer an attack brought on shortly after exercise, (**exercise induced asthma**). The attack comes on six to ten minutes after finishing a hard vigorous period of exercise lasting six to ten minutes or more when the heart rate reaches 170 beats per minute and mouth breathing occurs. The **refractory period** after an attack of **exercise induced asthma** is the period during which a further bout of asthma during exercise is unlikely to occur. The refractory period lasts about 60 minutes. In my experience, up to 33 per cent of international rowers may suffer from **exercise induced asthma** at sometime during their career, and in international cyclists up to 50 per cent may suffer from the so-called '**pursuiters cough**'.

Asthma

Intrinsic	No cause; may be brought on by infection
Extrinsic	<div> <div>→ pollen</div> <div>→ dust/smoke</div> <div>→ mould</div> <div>→ animals</div> <div>→ feathers</div> </div> <div> <div>→ Allergies</div> <div>→ Cold air (-10°C)</div> <div>→ Exercise</div> </div>

Diagnosis

During an attack of asthma the subject may complain of a burning throat, chest tightness, coughing, shortness of breath, difficulty in breathing and wheezing. In extreme cases there may be an elevated pulse rate and indrawing of the chest wall between the ribs on inhalation. The state of the bronchial tubes can be assessed by using a **peak flow meter**. The subject breathes out as hard as possible into a small hand held meter which measures on a scale the **peak expiratory flow (PEF)**. As the airways narrow and the resistance to the air flow increases, so the PEF will decrease. Asthmatics should be **encouraged to use a peak flow meter**

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Figure 1. Response to exercise

regularly during training to monitor the state of their airways. With exercise induced asthma, the PEF decreases after the cessation of exercise, reaching a low after six minutes. The PEF then slowly returns to normal taking perhaps up to 60 minutes to reach normal pre-exercise levels. It is important to stress that individual's peak flow is not an indication of fitness or susceptibility to asthma. An asthmatic who is not having an attack may have a very high peak flow and a normal person who does not suffer from asthma may similarly have a lower normal peak flow. In a group of athletes of similar ability the highest peak flow doesn't indicate the one with the best athletic performance and *vice versa*.

Some people with asthma, whether exercise induced or not, may show only a small drop in the PEF during an attack, but nevertheless suffer distressing symptoms, particularly a dry cough. These people can be given medication; if the symptoms clear up it is usually diagnostic of asthma.

Treatment

Fortunately asthma can usually be controlled in a number of ways. **Three main types of medication are used in athletes all of which are quite within the rules** laid down in the International Olympic Committee's doping regulations. All three types of drug can be **inhaled either in aerosol form or as a fine powder**. The three main drugs used are **sodium cromoglycate (Intal)**, **salbutamol (Ventolin)** and the corticosteroid, **beclomethasone (Becotide)**. [Corticosteroids are *not* the same as anabolic steroids!] **It is possible to give salbutamol (Ventolin) and beclomethasone (Becotide) in both tablet form and by injection but neither of these routes of administration are permissible under the doping rules. Sodium cromoglycate**

(Intal) is generally used as a prophylactic drug when the asthma is triggered by an allergy, i.e. pollen, dust, feathers, animals. Salbutamol (Ventolin) acts quickly on the airways and reverses the muscle spasm around the airways. It can be used before, during and after exercise. The corticosteroid beclomethasone (Becotide) is generally used as a back-up to either of the other two drugs and acts more on a long term basis over a matter of a few days.

Chest infections and upper respiratory tract infections should be treated early and exercise in cold dusty gyms avoided if at all possible. Contact with animals and feathers should be reduced. The athlete may need to take his or her own pillow to sleep with him if staying away from home. The athlete should sleep with the **windows closed in the hayfever season** in order to reduce the pollen count which reaches a peak late on in the day. **The athlete must be responsible for his or her own treatment and ought to carry around an inhaler at all times.** Although swimming produces less exercise induced asthma for any given work load due to the air being moist, swimming in cold venues may equally produce an attack. Likewise, in indoor pools with chlorinated water exposed to strong sunlight the chlorine which evaporates and settles as a fine mist over the water surface will eventually produce a crop of coughing swimmers, some of whom may begin to wheeze.

Those people who suffer from exercise induced asthma and who may be called upon to compete or train more than once in a short space of time ought to continue to exercise during the refractory period. This is the time during which an athlete who has exercised and who has had an episode of exercise induced asthma can perform another exercise challenge without having another bout of exercise induced asthma. It will not recur if the athlete resumes activity in less than one hour. The athlete should therefore be encouraged to warm up and continue to do so approximately every 45 minutes after the first bout of exercise induced asthma.

Summary

Asthmatics should be encouraged to increase the quality and intensity of exercise gradually in order to allow the body to adapt to the training load. If sensible precautions are taken and if adequately controlled with medication, asthmatics can reach the top in even the most arduous of sports.