

MEDICAL PROBLEMS IN SWIMMERS

Over training Syndrome

A tired athlete is not an uncommon problem within an elite swimming programme. At the heart of sporting success is the ability and desire to push one's body to the limits in both training and competition. This leads to a physiological training response that allows more demanding workloads and improved physical performance. In the correct circumstances, all coaches like seeing their swimmers 'tired'!

The over training syndrome is a term that has been used when this 'tiredness' or fatigue seems excessive and prolonged leading to a period of poor performance. It can be confusing as it infers that it is only caused by the excess demands. Although it is important to look at the training volume, but it is also essential to recognise the importance of sufficient rest, adequate diet, an appropriate level of 'fitness', mental status, lifestyle stresses and the effects of recent illness. When understanding the over training syndrome, it is better to regard it as a breakdown in the balance between the demands placed on the body and its ability to cope with them. It is essentially an 'overuse injury' affecting the whole body.

Little is known about what exactly causes the over training syndrome. There is, unfortunately, no simple warning sign or diagnostic test and so coaches need to keep an open mind. There is also an association with the high intensity; interval training of endurance sports and so is seen relatively commonly in swimmers. The symptoms are often vague but include fatigue, aching heavy muscles, poor sleep and depression. Others are loss of drive, decreased appetite, weight loss, anxiety, excessive sweating and frequent minor infections. Objective signs are inconsistent and may not be of great help in diagnosis. These, however, include a raised resting pulse rate with slow return to normal following exercise, increased postural drop in blood pressure and a low mood. One can see that knowledge of resting pulse rate (i.e. First thing in the morning before rising) and the pulse rate response to test sets can be helpful. Some swimmers like to record this data in their logbooks. Depressed mood may be monitored through a POMS (Profile of Mood State) questionnaire.

When presented with a 'tired' athlete, close inspection of their training history, diet and recent general health is indicated in the first instance as this may highlight an obvious precipitant. The training programme should be assessed for any sudden or large increases in volume or intensity and whether there is adequate periodisation (i.e. in-built rest periods). Does the swimmer appear to be having sufficient carbohydrate and calorie intake or are they chronically dehydrated? Has the swimmer had a recent viral-type illness, a sore throat or glandular fever that might suggest a post-viral fatigue syndrome? Are there other external pressures such as school exams or are they playing other sports all day?

Often there is a combination of factors that leads to this syndrome. There are nevertheless, many other medical conditions that may impair performance and an experienced sports doctor, may wish to perform laboratory tests, to best assess these. Established 'over training' requires an approach looking at the 'whole' athlete. Periods of rest from 6-12 weeks, Very light aerobic exercise, communications and reassurance will generally result in a favourable long-term outcome.

Asthma

Asthma is a condition characterised by difficulty in breathing, wheezing and coughing. It results from intermittent episodes of narrowing and swelling of the airways of the lungs. This can be a frightening experience and occasionally requires immediate medical attention. An 'irritant' can often induce attacks. The stimulus can differ from person to person and these can include dust, pollen, cold air, and viral infections and even exercise. In this case it is known as 'exercise-induced asthma' and is thought to be due to cooling and drying of the airways due to heavy breathing. It can also be precipitated by chloramines found in swimming pools cleaned with chlorine. Between attacks the functioning of the lungs may be completely normal.

Given sufficient stimulation, everyone's airways will behave in the same way by going into spasm. Swimming has always been considered a good sport for asthmatics to compete in as the warm moist air rarely provokes attacks. Some of our best swimmers such as Adrian Moorhouse are asthmatic. Treatment is typically by symptom relief and prevention in the form of inhalers, which deliver the drugs directly to the airways. For the greatest benefit the inhaler must be first used correctly.

The 'blue' inhaler (Salbutamol [Ventolin], Terbutaline [Bricanyl]) works by counteracting the muscle spasm within the airway walls and is therefore used as symptom relief. The 'brown' inhaler (Beclomethasone [Becotide], Budesonide [Pulmicort]) is a steroidal anti-inflammatory and hence reduces swelling and inflammation within the walls. This therefore acts as prevention. For it to work properly the airways should be opened by the 'blue' inhaler before using the 'brown' inhaler. The 'red' inhaler (Sodium cromoglycate [Intal]) is useful when there is a strong allergic component. For doping purposes, both these main treatments are allowed but become banned substances when taken in other forms e.g. tablets, or when used without a clinical indication. This is why the ASA need to register all those swimmers who do really need to take inhalers.

For sport, the 'blue' inhaler can be used to prevent attacks if you suspect that training will cause one. This should be used around 15 minutes before training e.g. on arrival at the pool, and then last 2 -3 hours so there should not normally be any need of repeated use of the inhaler during the swimming session. The best use of inhalers will allow full sporting participation without the need to introduce banned substances for its control.

Anaemia

Athletes by nature of their fitness develop differences in their blood compared with non-athletic populations. Their blood counts (i.e. haemoglobin levels) are typically reduced due to a dilutional effect caused by endurance training. This is sometimes referred to as a 'sports anaemia' or 'athletic anaemia', but is not a true anaemia, simply a normal physiological response.

Iron is an essential component of haemoglobin that allows it to carry oxygen. With insufficient iron in the diet, iron-deficiency anaemia may develop. Male swimmers rarely run into problems with iron unless they have stomach ulcer problems. Female swimmers require increased dietary iron to make up for the blood lost in their monthly periods. When they start their periods, they can be heavy, painful and irregular. This sudden change, particularly if associated with a poor diet, may cause low iron levels and hence reduced haemoglobin levels. This will have a significant impact on their endurance capacity, as they are unable to deliver oxygen to the muscles. It may thus present as an over training syndrome. Within any group, there is a range of values and so unless the count is very abnormal it may not be detected without specific tests. Females should aim to have at least 15mg/day of iron in their diets. This should be obtained ideally through a diet with sufficient red meat and green vegetables although some may wish or need to supplement with mineral tablets.

Swimmer's Ear

Swimmer's ear is an inflammation of the outer ear canal - 'otitis externa'. It can be caused by irritation or infection with bacteria or fungi. It results in discomfort, itching, ear discharge and rarely hearing loss. Retained water within the ear canal seems to predispose to the problem and it is worsened by removal of earwax and/or abrasions to the canal caused during cleaning. In established infections, antibiotic ear drops will be required initially but the use of drying ear drops (containing acetic acid and alcohol, available from the chemists) will help keep the ear dry and prevent the problem from reoccurring.

Female Athletic triad - Disordered Eating, Amenorrhoea and Osteoporosis

Weight-bearing exercise is an essential requirement to develop and maintain good bone health. Osteoporosis or 'Brittle Bone' disease is a condition characterised by a decrease in bone mineral density but more usually associated with fractures in elderly women. Certain groups of elite athletes, commonly long-distance runners, have developed osteoporosis resulting in stress fractures. These athletes have low body fat compositions and diets very poor in energy (given the training they perform), which along with the physical and psychological stresses of an elite training programme, leads to a disruption of their normal sex hormone balance and reduced or absent menstrual periods (amenorrhoea). The combination of these 3 features - disordered eating, amenorrhoea and osteoporosis, is known as the *Female Athlete Triad*. Research has suggested that swimming, a non-weight-bearing activity, does not improve bone mineral density. It has been suggested that female swimmers who have poor diets or excessively reduce body fat and train very hard may also be at risk of developing osteoporosis. Absent or reduced frequency of periods is a very important feature both in the female athlete triad and the over training syndrome. Swimmers who notice such a change in their period should not ignore it but discuss it early with their (sports) doctor and/or their coach. When ultimately the quantity of training reduces and carbohydrate and protein intake increases, periods should return to normal but at the moment, it remains unclear what is a 'safe' reduction in period frequency or whether there will be long-term damage to bone health.



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