



# *The referee abroad;*

## *Acclimatisation*

***The two main acclimatisation issues are heat and altitude***

### Heat

When you exercise, the action of the muscles generates heat, which raises the temperature of the body. The body must lose this extra heat to maintain the normal body temperature. The main way this is done is by sweating. Sweat evaporates from the surface of the body and lowers the temperature. If the heat loss is less than the heat generated by activity the body overheats and you will feel unwell and risk developing heat stroke.

You are most at risk in hot and humid conditions because high humidity reduces the evaporation of the sweat

Acclimatisation to a hotter environment takes about 2 weeks and requires some training around match intensity to get the greatest benefit. Ideally you should be exposed to the local temperature 24 hours a day – returning to an air-conditioned hotel reduces the effectiveness of any acclimatisation. Training in a heat chamber such as a sauna is of limited benefit and requires 3 hours a day to be effective – if you think you need this type of acclimatisation you should take advice on a suitable training regime before starting.

In hot, humid environments the following advice may be helpful.

- Make sure you are fully fit before you go – any illness or injury problems will be found out by the increased stress of exercising in heat.
- Consider if an acclimatisation programme is possible
- Once you arrive, alter your training sessions to cooler times of the day.
- Take and wear the right kit – loose, light coloured clothing of a mesh or open weave material
- Drink adequate amounts during training and the match. You must maintain an adequate fluid intake – remember alcohol and caffeine containing drinks add to dehydration. Aim to pass clear, dilute urine about every 2 hours during the day – increase your intake if the urine is dark and concentrated (urine is always concentrated first thing in the morning!)
- Drink 500ml of fluid about 30 minutes before exercise, aim to drink 100-200ml of fluid every 15 minutes during the game – make sure you have arranged this before the match starts and always use your own drinks bottle.
- If your training session is for less than an hour, plain water is fine. For exercise of more than one hour – such as a game - drink a dilute glucose and electrolyte solution.

- If, while exercising you feel unwell eg dizziness, headache, nausea or confusion, stop exercising and seek medical advice.

## Altitude

The problem for the referee at altitude is that there is less oxygen than at sea level. At around 2500m this has the effect of reducing your  $\dot{V}O_2$  max by about 5-15 % - effectively you will be 5-15% less fit. The increased workload placed on the heart and lungs results in an earlier onset of fatigue in exercise lasting longer than two minutes. Short duration, high intensity, anaerobic activity such as sprinting is not significantly effected.

Initially you will probably breathe faster and feel more out of breath for a given effort than you would expect. Your body will adapt to reduction in oxygen, but it can take weeks and varies between individuals. Some improvement will occur after a week, but 3-4 weeks are required for return to normal performance level. Not only will you have to work harder in training and matches, recovery at altitude typically takes longer

### **Before you go.**

The best preparation for performance at altitude is to be in peak condition before you go. Consider if you need to alter your training in the weeks before departure to maximise your aerobic capacity. Tapering your effort in the last week to ten days may be of benefit.

### **When to arrive.**

Unless you are able to train at altitude for at least two weeks before the match, you should arrive at altitude close to the match. Within the first 48 hours after arrival at altitude, your performance may still be close to that attained at sea level.

### **Calorie intake and fluid loss.**

Because basal metabolic rate increases at altitude, the demand for calories increases. Therefore, you should eat more when travelling to altitude. Think about refuelling with calories after every exercise session.

Fluid loss also increases at altitude, making dehydration an even greater concern than at sea level. Loss of body fluid decreases blood volume and increases the viscosity of the blood, which can compromise the flow of blood and oxygen to the contracting muscles. So, it is important that you increase fluid intake when travelling to altitude, especially fluids that help promote fluid retention, such as sports drinks.

# *Have a good trip!*

