Improving Human Performance in Hot Weather

Dr Peter Whitehead
"The process in which an individual organism adjusts to a change in the environment (such as change in temperature, humidity ....)"

"acclimation serves to enhance the performance of the organism"
Adaptation and Acclimatisation

**Winter coat**
Icelandic Horse
Adaptation over generations to aid acclimatization to cold winters

**Summer coat**
Sport Horse
Adaptation reducing summer coat to aid acclimatisation

**Hot weather**
Summer marathon
Acclimatisation and appropriate clothing

**Cold weather**
Antarctic marathon
Acclimatisation and appropriate clothing
Acclimatisation – physiology

Takes 7 – 14 days depending upon aerobic fitness level

Reduces:
- Heart rate
- Core temperature
- Electrolyte loss
- Perceived exertion
Acclimatisation – physiology

Increases:
• Sweating with earlier onset
• Heart function, stroke volume
• Plasma volume
• Overall ability to perform in heat
Cumulative Stress encountering hot climate

Results from failure to recover from previous day(s) exertion

• Typically days 1 – 5

• Primary cause – reduced sweat evaporation due to mild hypohydration

• Lesson – Less likely if fit and prepared for heat stress before travel
Who needs to acclimatise/adapt behaviour and dress?

• Athletes
• Grooms
• Coaches
• Venue staff
• Officials
• Spectators
Common to all

- Health before travel
- Clothing – lightweight, long-sleeved, hats
- Hydration – if thirsty, you are dehydrated
- Shade – do not stand in the sun
- Sunscreen – any exposed skin

Do not ignore early signs of heat stress
Athletes

- Improved fitness prior to travel aids acclimatization
- Graduated training first few days (avoid “I think I did a bit too much yesterday”)
- Clothing to protect against the sun, promote cooling
- Cooling before and after exercise, air conditioning, shade, cold towels
Athletes

• Maintain hydration, water/isotonic drinks, volumes

• Do not miss meals – fluid and salts replaced during meals

• Good sleep in air conditioned rooms aids recovery from heat stress
Grooms

• Work in the shade, do not stand in the sun watching your rider
• Drink water/sports drinks regularly
• Regular meals
• Protect your sleep, practice with ear plugs and eye masks if sharing a room
Coaches, Stewards, Staff

Liable to long periods outside

- Appropriate clothing
- Use shade
- Carry drinks with you
- Look for early signs of heat stroke – in yourself and others
Spectators

Preparation essential

• General Health – consult GP if on medication
• Clothing, hats, sunscreen
• Drink frequently – pick up drinks on entry to site
• Be aware of symptoms of heat stress
Heat Stress

- Sweating profusely
- Nausea
- Confusion
- Dizziness
- Fainting
- Cramps
- Headaches

Do not Ignore these Signs or Symptoms – seek advice
HUMAN ATHLETE HEALTH & SAFETY

Welcome to the FEI Medical Committee's information pages, dedicated to key health and safety matters for human athletes in equestrian sport. The mission of the FEI Medical Committee of the FEI is to ensure the health and safety of Athletes and all matters related to human anti-doping testing.

Knowledge contributes to safety. With these pages the Medical Committee hopes to raise awareness and bring clarity on issues which concern everyone involved in equestrian sport at any competition level. In particular, we strongly recommend that everyone involved in our sport take the time to read the information on Concussion published in these pages, and familiarise themselves with the Concussion Recognition Tool (CRT), keeping in mind that where concussion is an suspected sport adults must be sought.

These pages will be updated from time to time with new topics and for additional information for the existing ones where relevant. If you have queries please feel free to send us an email.

Best regards,
The FEI Medical Committee
Thank you