

Session 6 – OPTIMISING PERFORMANCE IN A CHALLENGING CLIMATE

MANAGEMENT OF HORSES IN HOT WEATHER

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BACKGROUND

Hot or hot and humid environmental conditions are a serious risk to health and performance unless properly managed. Research into the effects of heat and humidity on horses during competition has been ongoing since the Atlanta Olympic Games. The following is a summary of the most important points.

The effects of heat and humidity are dependent on:

- Workload
- Amount of time in the heat
- Hydration
- Resting or working?
- In sun or shade
- Individual tolerance of heat

How hot it feels depends on:

- The shade temperature
- The amount of moisture in the air (often measured as % relative humidity)
- The strength of the sun
- Ground surface (e.g. grass is cooler than tarmac)
- The wind speed

How do we measure heat?

The WBGT (Wet Bulb Globe Temperature) index is a single “temperature” that takes into account the effects of air temperature, humidity, sun, heat reflected from the ground and wind all at the same time. This is more accurate than simply looking at temperature or humidity alone. WBGT values above 25 begin to feel uncomfortable and may affect health and performance. A peak WBGT index of 30 was recorded at the Atlanta 1996 Olympic Games and 28 at the Beijing 2008 Games in Hong Kong, but these peaks are manageable providing horses are acclimatised to working in hot and humid conditions, are fully fit, and the correct cooling facilities are available and correctly used. (More detailed information is available in the *Preparation for and management during equestrian events held in thermally challenging environments* FEI document.)

PREPARATION

Acclimatisation - adapting equine and human athletes to heat by:

- Training harder and longer than normal at home to reach a higher body temperature
- Scheduling training sessions at home for the hottest part of the day
- Training at home on a treadmill in a heated room
- Training at home using rugs
- Travelling to a hotter and more humid climate to train in advance of competition

How often do I have to exercise my horse and for how many days?

The more you work your horse in the heat the quicker and greater the acclimatisation effect will be. One session per week for 3 weeks will have no effect. Exercise every other day for 2 weeks would have a good effect.

Does acclimatisation fully restore a horse's capacity for exercise in the heat?

No. Even when acclimatised, your horse will not be able to do the same amount of work in the heat as he can in cooler weather, but acclimatisation reduces the risk of heat related illness or injury.

Human athletes

The effect of heat or heat and humidity on human athletes can lead to fatigue, loss of strength and balance, reduced reaction times and poor decision making with significant health and welfare implications for both human and equine athletes, not to mention reduced performance.

Feed

Any changes to your horse's diet should ideally be made at least 4-6 weeks before traveling.

Increased sweating leads to loss of electrolytes, and increased electrolyte supplementation is recommended. Forage (hay or haylage) and fresh clean water should be available at all times. The risk of colic can be reduced by feeding small amounts of concentrate feeds frequently (e.g. 3 or more meals a day).

COOLING

If horses have not experienced being aggressively cooled before then it is advisable to try and introduce this to them at home prior to competition. Make sure horses are used to fans, being sprayed with water from hoses and having people working on both sides.

Best Cooling Techniques (in order of effectiveness)

- **Application of cold water-** Applying large volumes of cold water all over the horses' body is the most effective way of cooling a horse. There is no advantage to concentrating on applying cold water to specific areas such as large blood vessels on the neck or between the legs. Cold water, even applied over the large muscles, does not cause tying-up or muscle damage.
- Take advantage of fans or misting fans
- Move to shade

Aggressive cooling is the most important factor in reducing heat stroke in horses, and greatly reduces the risk of collapse and potential injury.

Things that don't work

- **Ice packs** - Placing ice packs over large blood vessels, such as those between the hind legs or over the jugular is not effective
- **Ice or cold water in the rectum-** is invasive treatment, is not permitted, is dangerous, and also ineffective
- **Wet Towels** - Placing wet towels over the horse actually slows down heat loss.

PRACTICAL TIPS FOR DAILY MANAGEMENT

- **Water** - should not be restricted at any time and can safely be allowed before and immediately after exercise
- **Recovery from transport** - On arrival after long distance transport, horses are at an increased risk of colic and respiratory disease ("shipping-fever"). They should be allowed to rest and recover for at least 3 days with regular hand walking (and grazing if available to encourage head lowering which helps clear the airways) before any significant training in the heat is undertaken.
- **Daily monitoring** - Observing behaviour, feed intake, water intake, droppings (frequency and consistency) and basic clinical parameters (body weight, rectal temperature, heart rate and respiratory rate) are the best ways to identify and treat as early as possible any problems that might occur.

- **Weighing the horse** - It is advisable to establish the horse's normal weight as a baseline prior to leaving home, and then weigh it on a daily basis after arrival at the venue. Horses can lose 1-2 kilos of bodyweight per hour of transport and can also lose weight after fast or intensive training sessions in hot or hot and humid climates. Weighing the horse is often the most practical method of assessing water loss/dehydration. Horses should be weighed at the same time each day and ideally before exercise or in the evening as weight can vary by up to 20kg throughout the day with lowest weight in the morning and highest weight in the evening. Weighing scales are provided onsite at Olympic/Paralympic Games and FEI World Equestrian™ Games.
- **Sunburn** - In climates with strong solar radiation, light coloured horses are at risk of sunburn, and may need sunscreen.
- **Flysheets** - White flysheets will be cooler than darker colours for horses when outside because they reflect heat from the sun

COMPETITION MANAGEMENT

- **Warm-up** - In hot climates horses' warm-up more rapidly but also tire more quickly. Breaks should be introduced during warm-up to allow cooling. Example: If the normal required warm-up time is 60 minutes, warm-up 20 min; cool horse; warm-up 20 min; cool horse; warm-up 20 min; cool horse; compete. This will result in decreased risk of heat related illness and better performance.
- **Water** - Horses should not have water restricted when training and competing in hot climates. Allow horses to drink during breaks in training. Water should not be restricted before or following competition. Immediately following exercise horses have an increased desire to drink and early rehydration can reduce the risk of heat related illness.

DEALING WITH HEAT EXHAUSTION OR HEAT STROKE

How do I know how hot my horse is?

- Excessive sweating – horse completely covered in sweat and or sweat running from the body
- Horse feels very hot to touch
- Blowing very hard (deep and laboured breathing)
- Prominent blood vessels in the skin
- A high rectal temperature – above 40°C

Call the vet if your horse shows signs of poor recovery:

- Unsteadiness (“wobbly”) – especially when stopping after exercise
- Panting (fast and shallow breathing) 10-15 minutes after cooling has begun
- Persistently elevated heart rate
- Dry gums or gums of a colour other than the normal light pink
- Horse shows little reaction to people or environment
- Horse appears agitated, distressed or becomes uncontrollable

In an emergency situation, try to move the horse toward a shaded area and keep applying large amounts of cold water. Avoid moving the horse in tight turns or circles. If the horse goes down, do not try to force him to get up. Continue applying cold water all over until help arrives.