Session 6

FEI™ SPORTS FORUM

OPTIMISING PERFORMANCE IN A CHALLENGING CLIMATE

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March 2018

Preparation For And Management Of Horses And Athletes During Equestrian Events Held In Thermally Challenging Environments

1) The Equine Athlete: Background, Risk, Prevention & Management

- *Dr David Marlin Scientist and Advisor to the FEI*

2) Veterinary Management of Heat Related Illness

- *Dr Martha Misheff Equine veterinarian and member of the FEI Veterinary Committee*

3) Managing the Human Athlete

- *Dr Peter Whitehead Human doctor and Chair of the FEI Medical Committee*

The equine athlete & the climate – Dr David Marlin

- **What are the effects of adverse climatic conditions on horses?**
- **How do we assess the risk?**
- **What measures can we take to reduce risk?**
  - ***Organisers***
  - ***Officials***
  - ***Team Management***
  - ***Athletes***
- **How can we manage horses better at competitions?**

Why do we need to be concerned about climate?

Climate affects competition conditions

COLD

- Hard ground
- Increased risk of slipping
- Effects on breathing

WET

- Soft ground
- Increased risk of slipping
- Harder work
- Horses tire earlier

HOT or HOT/HUMID

- Harder work
- Dehydration
- Heat stroke
- Horses tire earlier

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In this session we are focussing on management in HOT and or HOT/HUMID Climates

Background to research into heat & horses

How do we assess climate risk?

Air temperature & Humidity only tell part of the story

Effect of climate on horses

Temperature

Effect of climate on horses

Temperature

Humidity

Effect of climate on horses

Temperature

Humidity

Solar Radiation

Effect of climate on horses

Temperature

Humidity

Solar Radiation

Effect of climate on horses

Temperature

Wind

Humidity

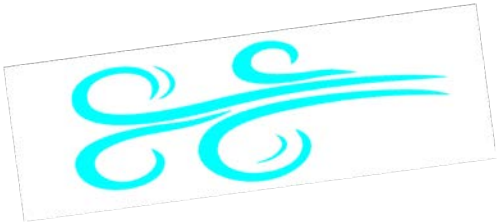
Solar Radiation

Effect of climate on horses

+

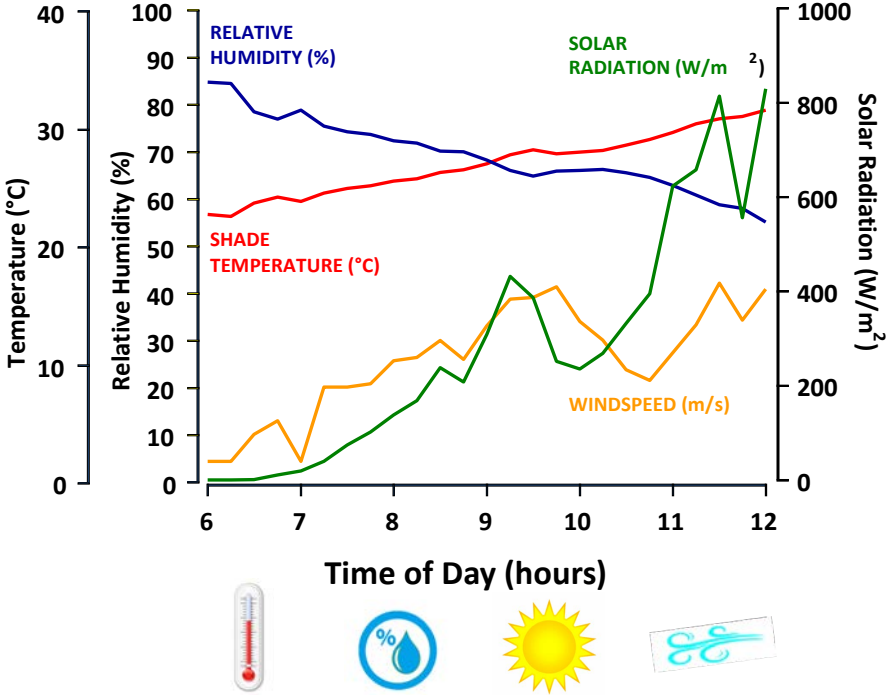
+

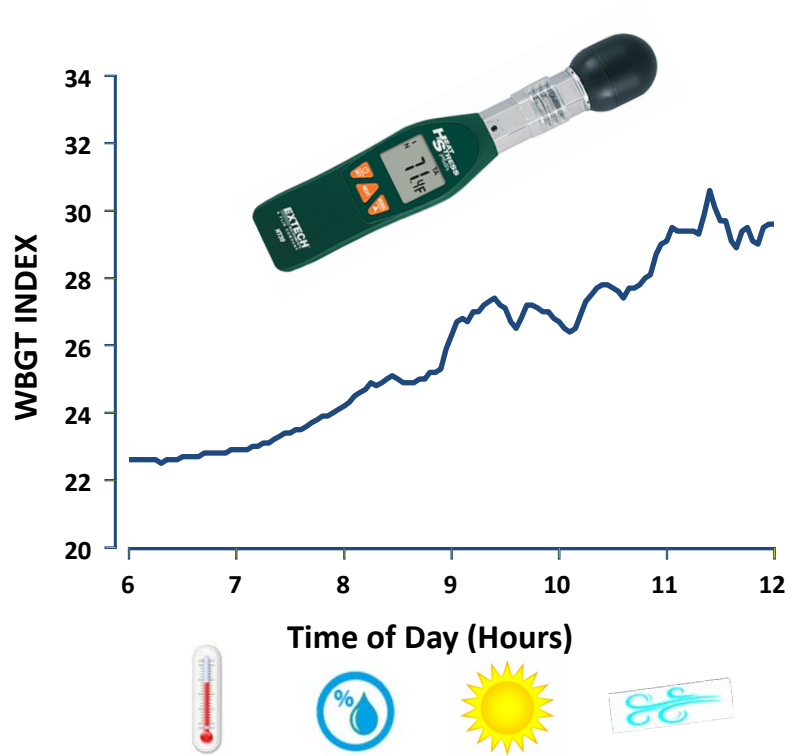
= HEATING UP



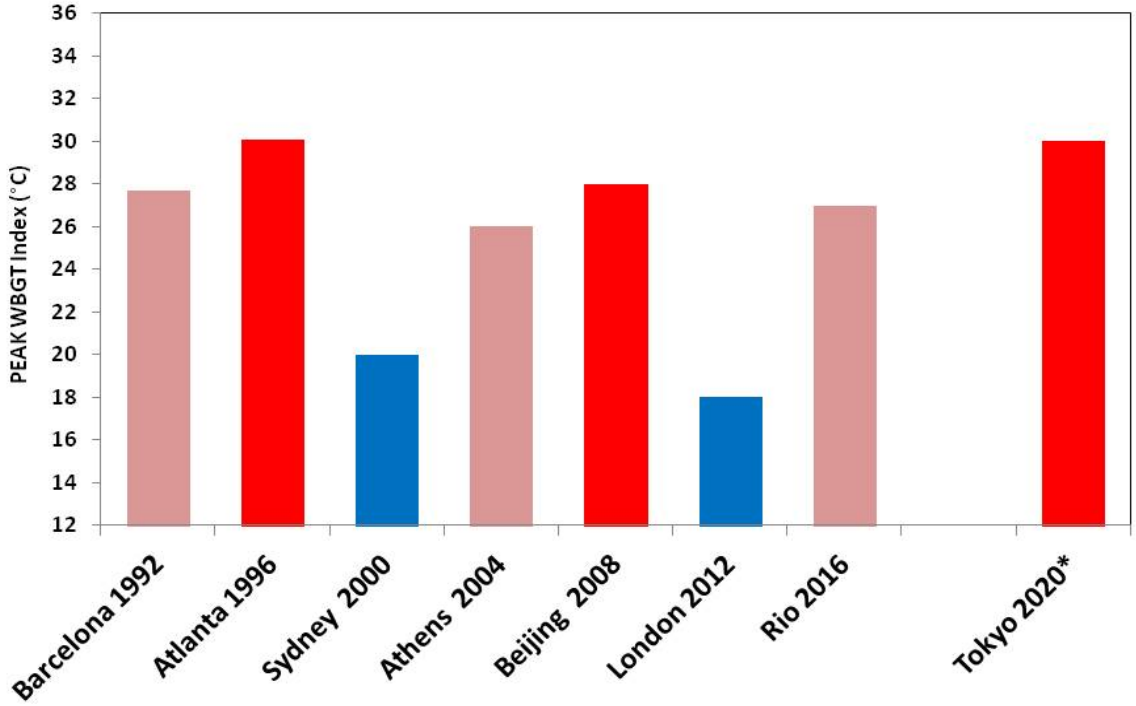
= COOLING DOWN

The Wet Bulb Globe Temperature Index (WBGT) takes ALL climate variables into account





WBGT at previous Olympic Games & predicted for Tokyo 2020



Risk is related to climate, intensity & duration

LOWER RISK

Climate

HIGHEST RISK

Exercise Intensity

Duration

ALL horses are potentially at risk

Jumping, Dressage, Vaulting, Reining

- Large horses
- Working for long periods
-

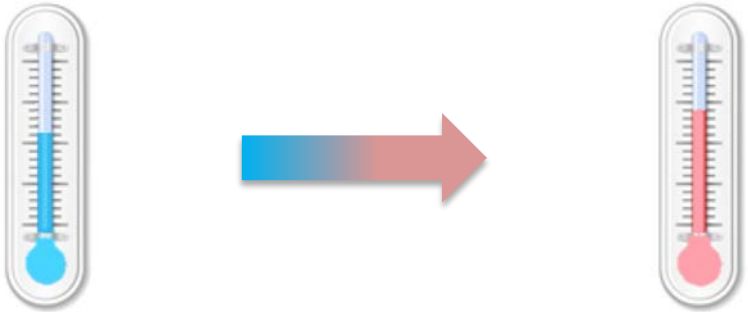
Eventing, Driving

- Intense exercise
- Moderate duration

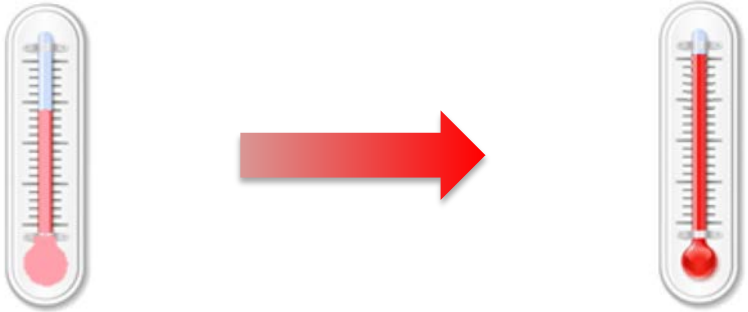
Endurance

- Moderate intensity
- Long duration

Assessing the risk



Travelling from 5°C to 20°C



Travelling from 15°C to 30°C

Measures to reduce risk

Competition Scheduling

AVOIDANCE - Scheduling

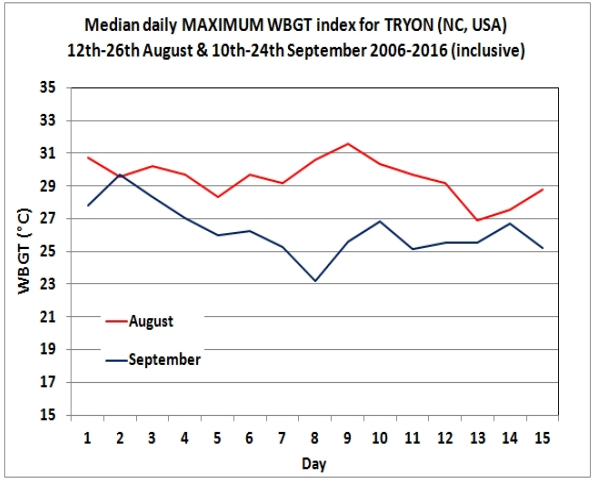
TRYON 2018

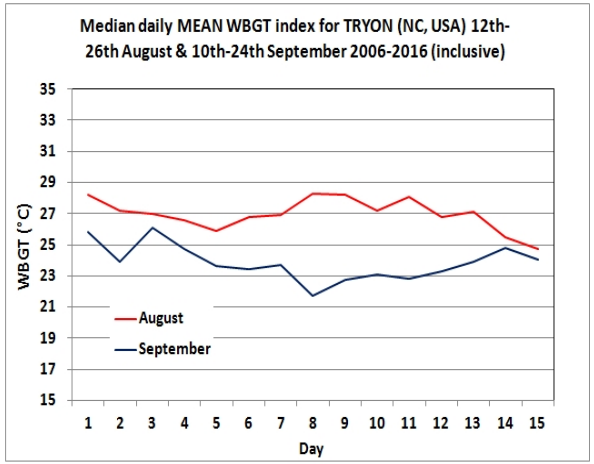
FEI WORLD EQUESTRIAN GAMES™

AVOIDANCE - Scheduling

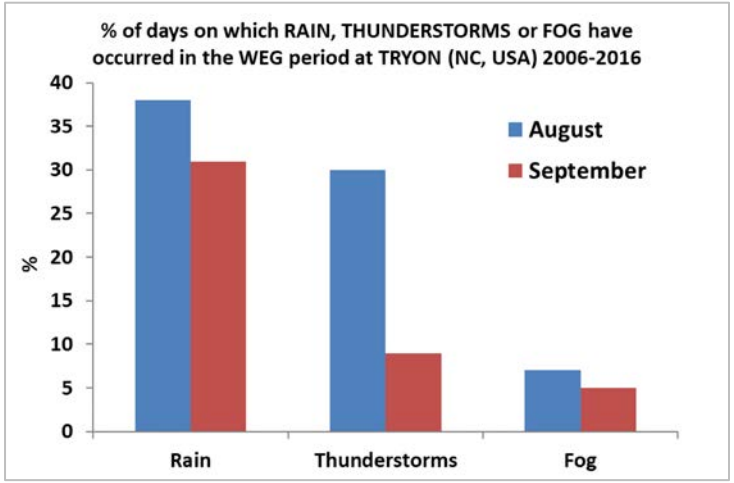
TRYON 2018

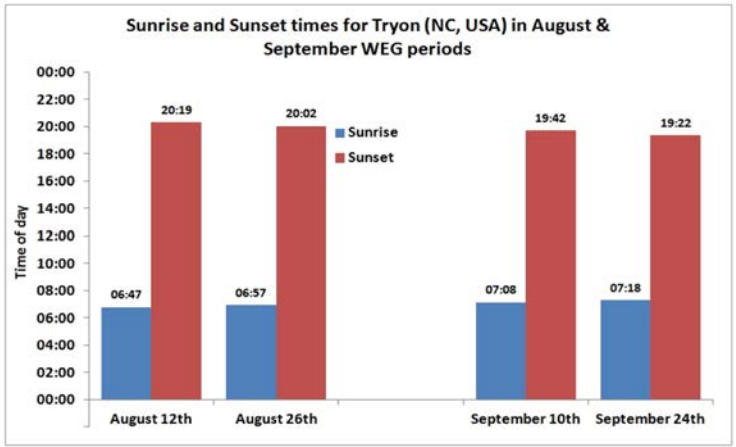
FEI WORLD EQUESTRIAN GAMES™





AVOIDANCE - Scheduling





Modification of competition e.g. Eventing XC

WBGT Reading	Recommendations
Less than 28	No changes to the FEI recommended format for the Three-Day Event Competitions should be necessary.
28-30	Some precautions to reduce heat load on Horses will be necessary.
30-32	Additional precautions to those above to limit overheating of Horses will be necessary.
32-33	These are hazardous climatic conditions for Horses to compete in and will require further modifications to the Competition.
Above 33	These environmental conditions are probably not compatible with safe Competition. Further veterinary advice will be required before continuing.

FEI Eventing Memorandum, 8th Edition, April 2015; Updated December 2017

Measures to reduce risk

Horse Preparation

Horse Preparation

- **PRE-TRAVEL**
- **TRAVEL**
- **MANAGEMENT AT & DURING COMPETITION**

Horse Preparation

PRE-TRAVEL

- **Acclimatisation**
- **Nutrition**
- **Cooling**

Horse Preparation

PRE-TRAVEL

- **Acclimatisation**
  - **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 or hotter and more humid climate in advance of competition**

Horse Preparation

PRE-TRAVEL

- **Acclimatisation**
  - **How often do I have to exercise my horse and for how many days?**
  - **Does acclimatisation fully restore a horses' capacity for exercise in the heat?**
  - **What can I expect to see when I start heat acclimatisation?**
  - **Does heat acclimatisation work for all horses?**

Horse Preparation

PRE-TRAVEL

- **Nutrition**
  - **Horses sweat more in warmer climates**
  - **Increased electrolytes loss in sweat and dehydration increase the risk of fatigue, muscle problems, respiratory problems and colic**
  - **Horses may require electrolyte supplementation**

  - **Changes in diet during TRAVEL are a major RISK FACTOR for COLIC!**

Horse Preparation

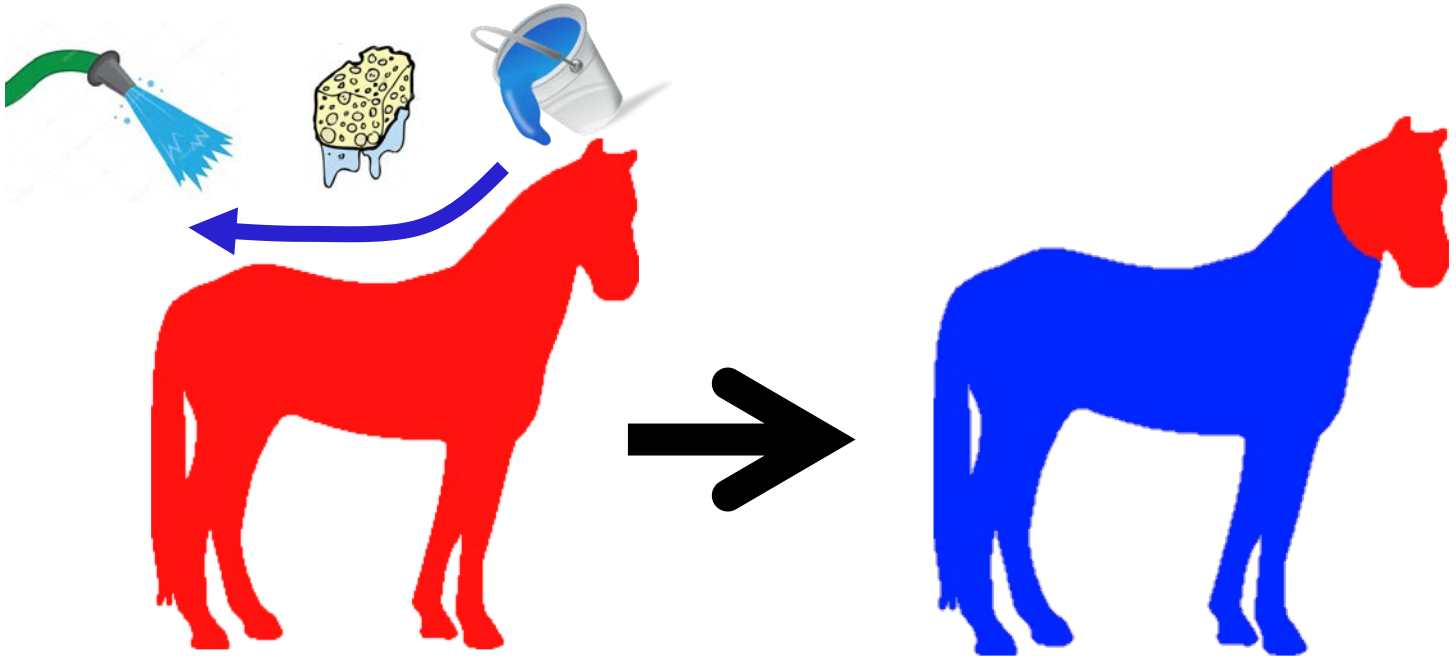
PRE-TRAVEL – COOLING FAMILIARISATION & TRAINING

"Aggressive cooling is almost certainly the single major factor in reducing heat related illness in horses in thermally stressful conditions. Aggressive cooling of hot horses does not cause muscle damage and can greatly reduce the risk of collapse and injury or the development of heat-related illness"

How do I know how hot my horse is?

- Horse feels very hot to touch
- Excessive sweating – horse covered in sweat and/or dripping from the body
- Ataxia (unsteadiness) – especially when stopping after exercise
- Blowing very hard (deep and laboured breathing)
- Panting (fast and shallow breathing)
- A high rectal temperature – above 40°C (104°F)
- Prominent blood vessels in the skin
- Horse may show little reaction to people/environment
- Horse may appear distressed

Cooling – Best Practice



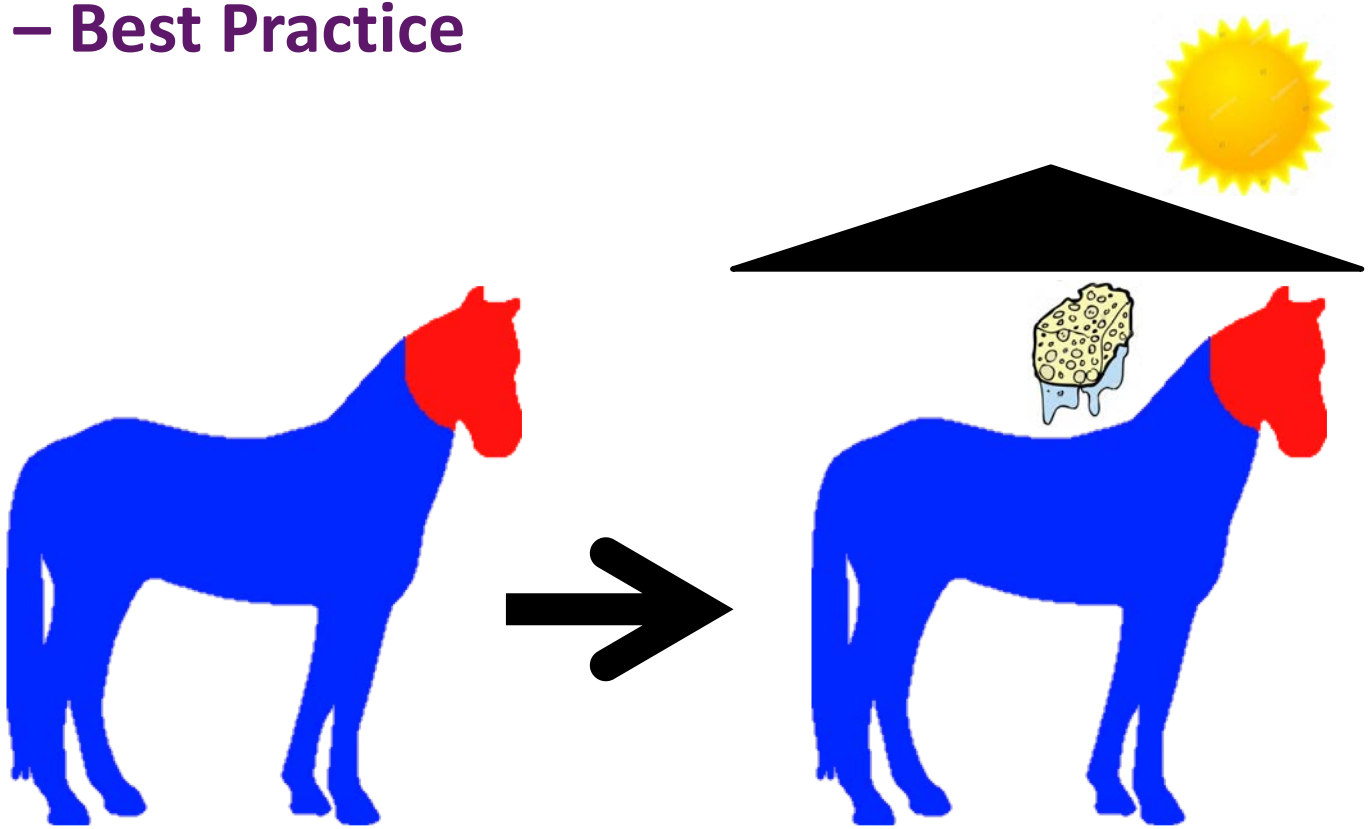
Cover as much of the horse as possible in water starting at the head and working backwards
Work on both sides of the horse – one person each side is ideal
Cool for 30 seconds, Walk for 30 seconds, Repeat

Cooling – Best Practice

Use iced water if available

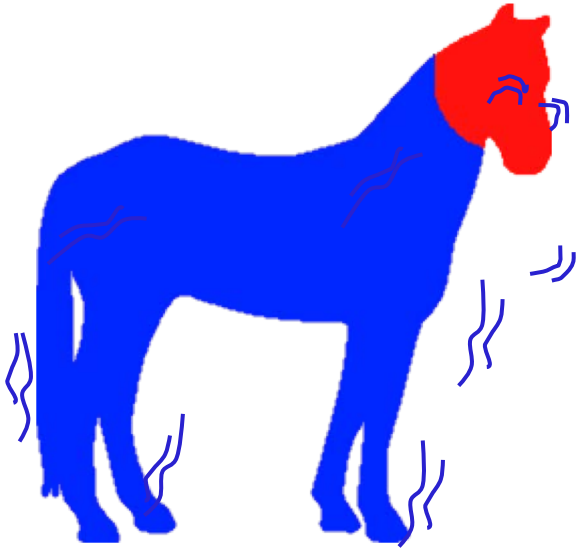
Cold water DOES NOT cause tying-up or any other muscle problem

Cooling – Best Practice



If possible, move to a shaded area to continue cooling

Cooling – Best Practice

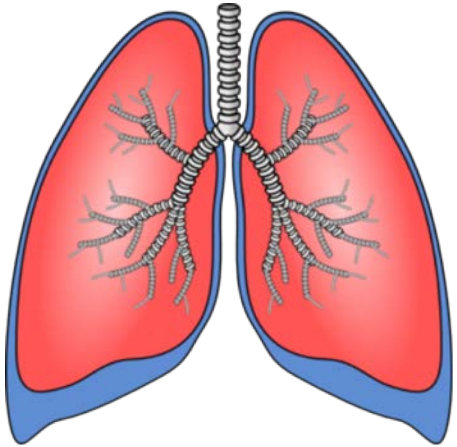


Its possible that at some stage during aggressive cooling your horse may shiver
….This is not a problem!
Assess temperature and breathing. If hot, continue cooling.
If cool/warm, walk for longer

Cooling – Best Practice

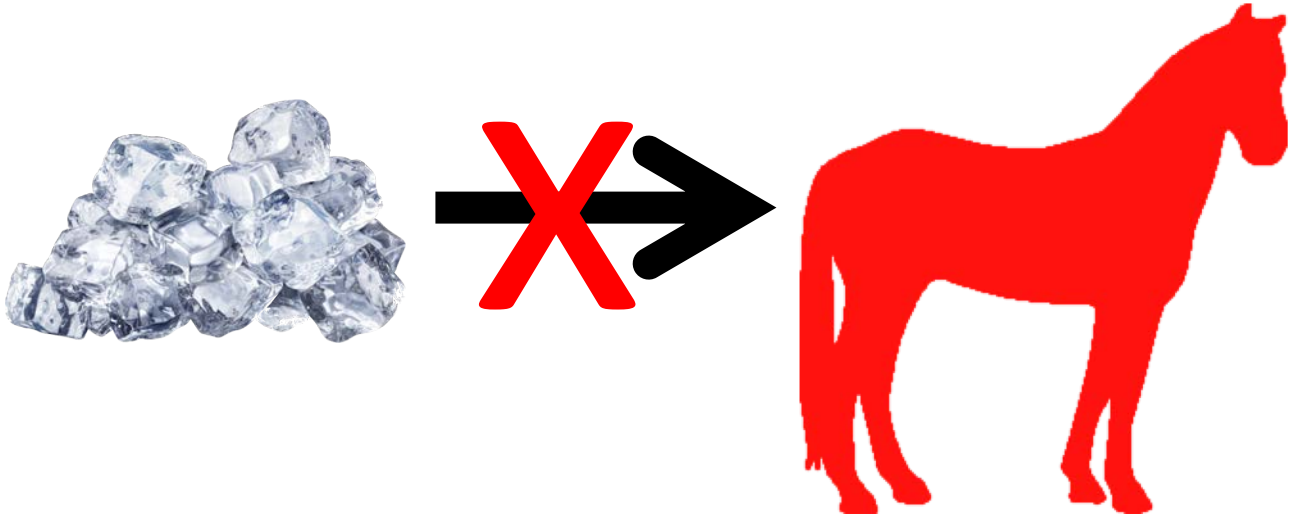
It may take 10-15 minutes and 30 buckets of water to cool an overheated horse!

When to stop cooling



1) When your horse is no longer hot to touch
2) When your horse has stopped BLOWING or PANTING

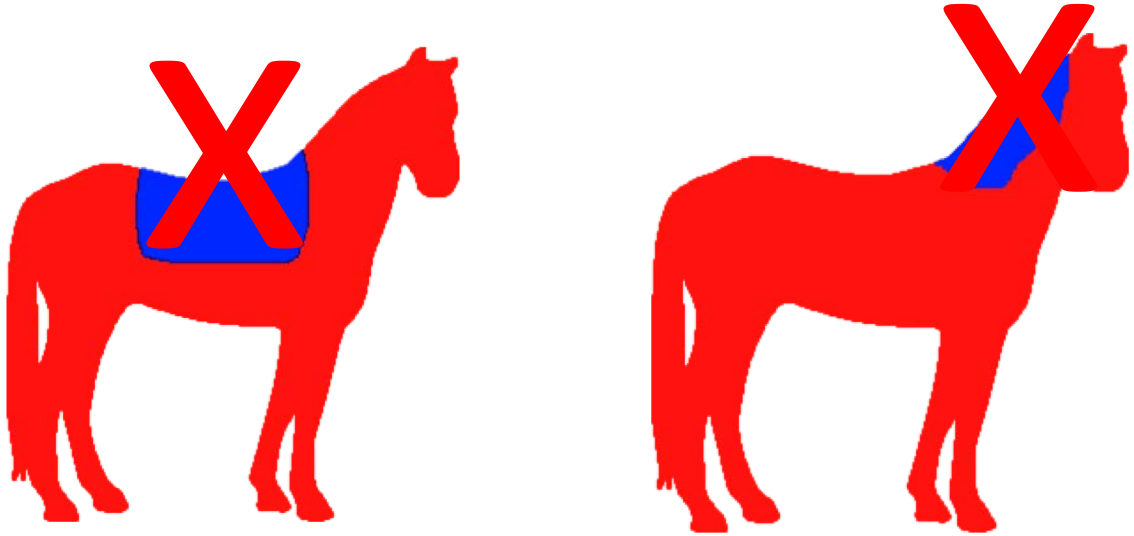
Things not to do to an overheated horse



ICE placed in the rectum is NOT an effective way to cool overheated horses

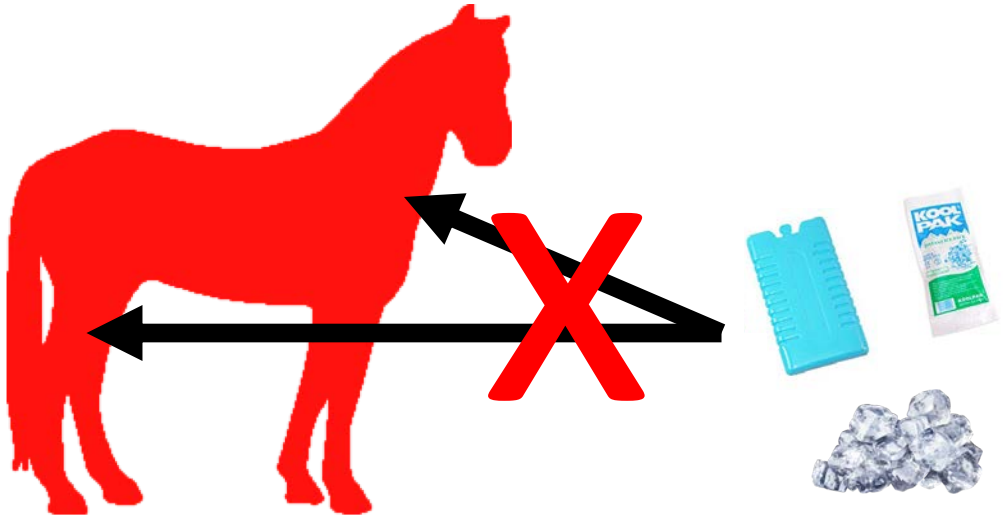
ICE in the rectum means the horses temperature cannot be taken with a thermometer

Things not to do to an overheated horse



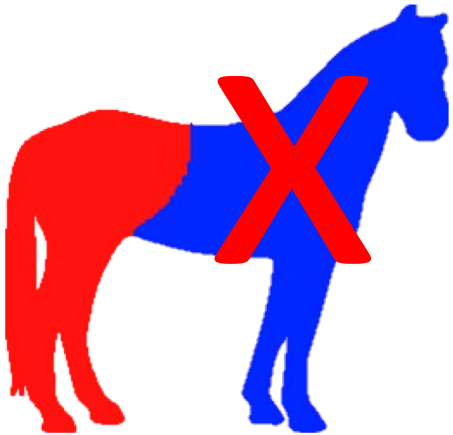
Wet towels placed over the back or neck or quarters are NOT EFFECTIVE at cooling overheated horses
There will be some removal of heat when the towel is first placed on and evaporation may cool further
This is very inefficient compared with cold water all over

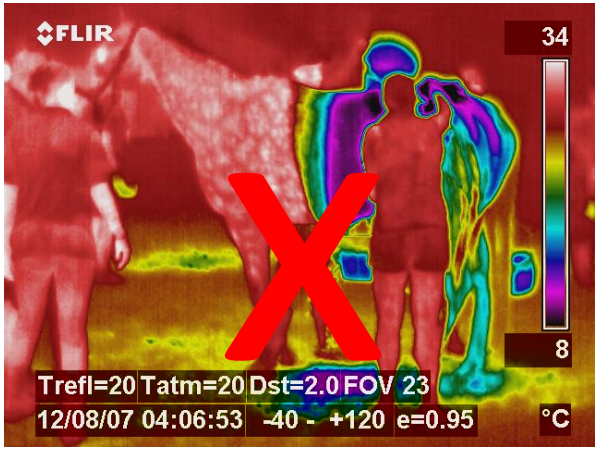
Things not to do to an overheated horse



Focus on applying cold to large blood vessels
This is HIGHLY INEFFECTIVE as a cooling technique

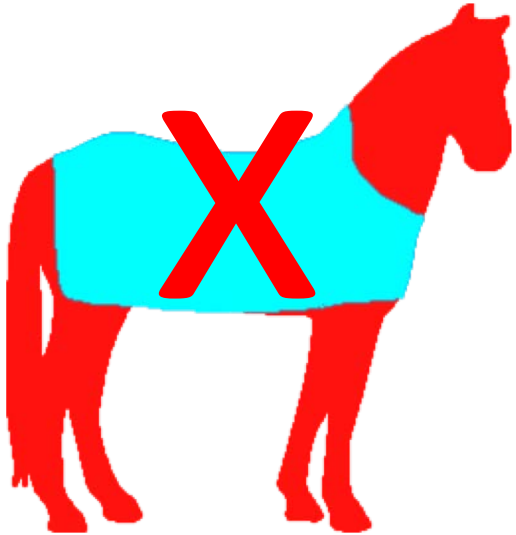
Things not to do to an overheated horse





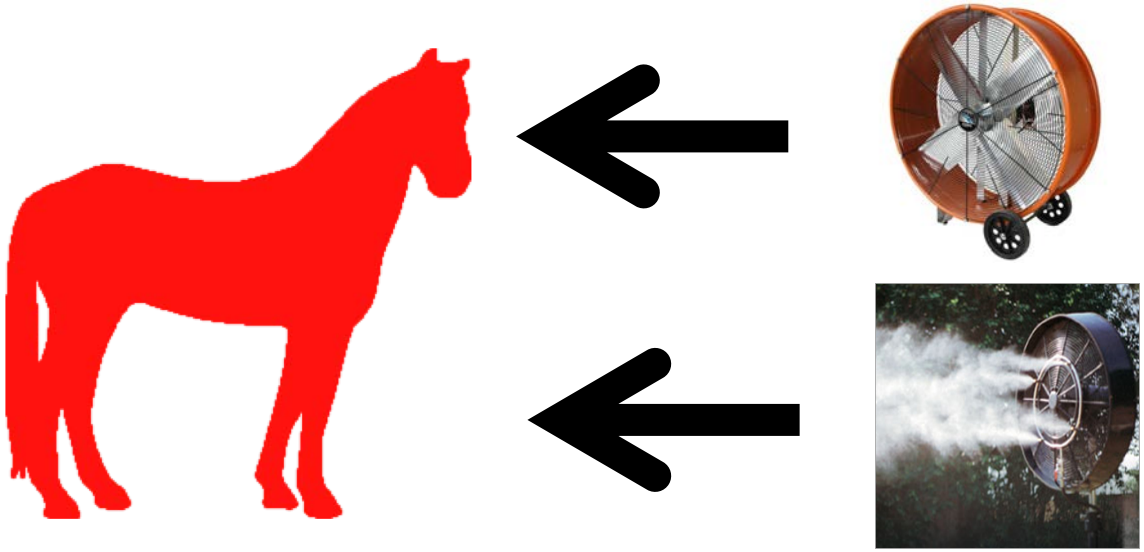
Focus on cooling specific areas such as the head and neck or quarters
The quickest way to cool is by applying water EQUALLY ALL OVER

Things not to do to an overheated horse



Do not rely on evaporative cooling methods such as rugs
These are less efficient than cooling by cold water application
This applies to rugs that use water or alcohol
These are fine to use AFTER the horse has been cooled aggressively

Things not to do to an overheated horse



Do not rely on fans – whether normal or misting
These provide comfort but are less effective than water cooling
These are fine to use AFTER the horse has been cooled aggressively

Horse Preparation

TRAVEL

- **Nutrition - Avoid changes in diet as much as possible!**
- **Feed & Water to reduce stress**
- **Reduce hard feed/concentrate and feed small amounts frequently**
- **Orientation**
- **Air quality**
- **Arrival – head down**
- **Respiratory monitoring – “Shipping Fever”**

Horse Preparation

TRAVEL

- **Allow time to recover**
  - ***One day of recovery with limited exercise for each 8 hours (1 day) of road travel or ½ day recovery for each hour of flight, up to 5 days***
- **Monitor feed and quantity of water intake and clinical signs**
  - **Bodyweight**
  - **Rectal temperature**
  - **Heart rate**
  - **Urination**
  - **Defecation**

Horse Preparation

MANAGEMENT AT & DURING COMPETITION

- Water – do not restrict
- Recovery from transport
- Daily monitoring
- Acclimatisation
- Sunburn
- White or light flysheets and rugs
- Anhidrosis

Horse Preparation

MANAGEMENT AT & DURING COMPETITION

- **Warm-up**
  - Reduce duration OR break-up and cool
- **Water**
  - In Training
  - Before Competition
  - During Competition
  - After Competition

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Thank you