Hot Weather Policy

Effective from 1 September 2017

Last Review on 13 April 2018

This policy is also accessible on the Equestrian Australia (EA) website: www.equestrian.org.au

A GUIDE FOR HORSES

Horses exercising and competing in hot environmental conditions can be affected by heat stress.

When environmental heat conditions are adverse, exercising horses require appropriate cooling measures to safeguard their welfare. The primary responsibility for the welfare of horses competing and exercising during hot weather lies with the rider of the horse. Riders must always take action to prevent, manage and treat heat stress in their horses.

Event organisers are responsible for providing adequate facilities and information that riders need to safeguard the welfare of horses. Access to ice and cooling water during competition is a compulsory requirement that arises under certain environmental conditions.

To assess the risk of heat stress in horses, the FEI uses the Wet Bulb Globe Temperature (WBGT) Index.

WGBT information is published on the Bureau of Meteorology (BOM) website under their Thermal Comfort Observations webpages http://www.bom.gov.au/info/thermal_stress/

WBGT information is published on the BOM website for each Australian State and Territory with regional indices.

Wet Bulb Globe Temperature Approximation:

Wet Bulb Globe Temperature (WBGT) from Temperature and Relative Humidity

Relative Humidity (%) \ Temperature (°C)	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
0	15	16	16	17	18	18	19	19	20	20	21	22	22	23	23	24	24	25	25	26	27	27	28	28	29	29	30	31	31	32	32
5	16	16	17	18	18	19	19	20	21	21	22	22	23	24	24	25	26	26	27	27	28	29	29	30	31	31	32	33	33	34	35
10	16	17	17	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27	28	29	30	30	31	32	32	33	34	35	36	36	37
15	17	17	18	19	19	20	21	21	22	23	23	24	25	26	26	27	28	29	29	30	31	32	33	33	34	35	36	37	38	39	
20	17	18	18	19	20	21	21	22	23	24	24	25	26	27	27	28	29	30	31	32	32	33	34	35	36	37	38	39			
25	18	18	19	20	20	21	22	23	24	24	25	26	27	28	28	29	30	31	32	33	34	35	36	37	38	39					
30	18	19	20	20	21	22	23	23	24	25	26	27	28	29	29	30	31	32	33	34	35	36	37	39							
35	18	19	20	21	22	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39								
40	19	20	21	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39									
45	19	20	21	22	23	24	25	26	27	27	28	29	30	32	33	34	35	36	37	38											
50	20	21	22	23	23	24	25	26	27	28	29	30	31	33	34	35	36	37	39												
55	20	21	22	23	24	25	26	27	28	29	30	31	32	34	35	36	37	38													
60	21	22	23	24	25	26	27	28	29	30	31	32	33	35	36	37	38														
65	21	22	23	24	25	26	27	28	29	31	32	33	34	36	37	38															
70	22	23	24	25	26	27	28	29	30	31	33	34	35	36	38	39															
75	22	23	24	25	26	27	29	30	31	32	33	35	36	37	39																
80	23	24	25	26	27	28	29	30	32	33	34	36	37	38																	
85	23	24	25	26	28	29	30	31	32	34	35	37	38	39																	
90	24	25	26	27	28	29	31	32	33	35	36	37	39																		
95	24	25	26	27	29	30	31	33	34	35	37	38																			
100	24	26	27	28	29	31	32	33	35	36	38	39																			

WBGT > 40

Note: This table is compiled from an approximate formula which only depends on temperature and humidity. The formula is valid for full sunshine and a light wind

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WBGT	Example °C:%RH	Recommendations for Competitions	Cooling Facilities/Methods
<28	30:45	No changes needed to the competition format or timing.	• Access to at least two wash bays with freely running water via hoses • Shaded areas/shelters Note: each horse may need to be hosed with two hoses for 20-40 minutes if heat stressed.
28 - 30	29:60	Some precautions to reduce heat load on horses will be necessary. • Use shaded areas for competition and warm up areas • Avoid non-grassed riding surfaces where possible • Reduce overall effort (shorter distance, less jumping efforts, etc) • Make competition PA announcements – repeat frequently	• Access to at least two wash bays with freely running water via hoses • Shaded areas/shelters Note: each horse may need to be hosed with two hoses for 20-40 minutes if heat stressed.
30 - 33	30:65	Additional precautions to those above to limit overheating of horses will be necessary. • The timing of events/competition should be considered. Competitions **should** be held in cooler parts of the day, that is, between 7.00am - 11.00am and/or after 4.00pm. • Higher level competitions should be run in the coolest part of the day. Schedule the most demanding competition/competition phases when it is cooler. The lower level competitions generally make lower demands on horses. • Avoid non-grassed riding surfaces where possible • Make competition PA announcements – repeat frequently	• Access to at least two wash bays with freely running water via hoses • Shaded areas/shelters • **Aggressive cooling measures are compulsory for CCI 2*/3* Eventing horses with the mandatory provision of ad lib ice for use in cooling these horses after cross country phase.** Note: each horse may need to be hosed with two hoses for 20-40 minutes if heat stressed.

WBGT	Example °C:%RH	Recommendations for Competitions	Cooling Facilities/Methods
>33	32:60	**These environmental conditions are very high risk and are probably not compatible with safe competition.** • Further veterinary consultation/advice will be required before continuing. Event organisers must consult with a veterinarian on the risks of heat stress. • The timing of events/competition must be considered. Competitions or the "high exertion phase" of the event must be held during cooler parts of the day, that is, between 7.00am - 11.00am and/or after 4.00pm • Higher level competitions should be run in the coolest part of the day. Schedule the most demanding competition/ competition phases when it is cooler. • The lower level competitions generally make lower demands on horses • Avoid non-grassed riding surfaces • Make competition PA announcements – repeat frequently	• Access to at least two wash bays with freely running water via hoses • Shaded areas/shelters • Mandatory provision of ad lib ice for use in cooling horses • **Aggressive cooling measures are compulsory for all horses** • Additional **recommended** requirements for eventing competitions: o A shaded area with misting fans o A veterinarian to monitor horses Note: each horse may need to be hosed with two hoses for 20-40 minutes if heat stressed.

Competition PA Heat Risk Announcements

- Explanations of the 6 Minute Threshold in any demanding exercise (not just cross-country exercise) as being pivotal in heat overload
- Encouraging riders to pre-cool their horses by hosing them to place lower demands on the horses' cooling systems while they work
- Encouraging abbreviated warm ups to lighten the load on horses' cooling systems
- Explanations of aggressive cooling until the horse's temperature returns to 38ºC
- Encouraging use of ice and a shaded area with misting fans to cool horses after exercise
- Encouraging hydration of every horse with cool clean water, salt and electrolytes
- Encourage riders to "house" resting horses in shaded areas and/or on grass surfaces

The Signs of Heat Stress

The signs of heat stress include:

- Rapid shallow breathing (panting)
- Flared nostrils
- Staggering, apparently uncontrollable gait
- Very high body temperature (the skin can be hot to touch)
- Agitated and distressed appearance
- Irrational behaviour such as lashing out with hind limbs
- Occasionally collapse

Heat stress can occasionally be seen during the cooler months, especially in Spring when the days can be quite warm but horses might still be carrying a winter coat.

Factors that may contribute to Heat Stress

The susceptibility of a horse to heat stress does not solely seem to be influenced by temperature. Certain factors can adversely affect an individual horse's ability to withstand competition in hot weather and include:

- Travelling long distances prior to competition
- An excitable temperament
- Heavy sweating
- Withholding drinking water

Cooling systems in horses

Evaporative cooling is the most important means of dissipation of body heat for the exercising horse and that the liberal application of cold water in shaded, well ventilated places will greatly assist horses in dissipating excessive body heat on hot days.

- Evaporation & convection – 60% of cooling - horses shed excess heat through sweating and having air moving over them. Horses standing in the sun without shade or wind flow (breeze) in temperatures above 33ºC start to accumulate heat.
- Radiation & conduction – 25% of cooling - once the air temperature is over 3ºC, a horse even at rest needs to shed heat – the size and mass of a horse's body makes this harder than for smaller animals, or even a lighter framed horse.
- Respiratory loss -15% of cooling – for horses during exercise

Key Principles

Any organiser of an event to be held in hot weather must understand the following key principles:

1. **Humidity and heat – a dangerous mix causing heat overload**
   Combinations of high heat and humidity impact severely on a horse's main cooling mechanism – sweating and evaporation. A heat stressed horse can have multiple organ failure – it may collapse and die. Heat stress after exercise is most likely to be seen on days when both the ambient temperature and relative humidity are high and wind speeds are low or absent (conditions of high environmental thermal load).

Unless cooling facilities equivalent to FEI standard are in place at an event, the FEI strongly recommends that riding activities be suspended when the WBGT Index reaches or exceeds 32-33ºC.

2. **The 6 Minute Threshold - heat overload for horses working in the heat**
   Where the WBGT Index is high, horses which have just performed are at risk of suffering a dangerous temperature hike. When the WBGT Index is high, 6.0 - 6.5 minutes of continuous hard work – the '6 Minute Threshold' is pivotal in causing heat stress. Dressage horses do work extremely hard in both the warm up and in their tests. For Showjumpers the effort is generally under 6 minutes, however for Dressage and Cross Country, horses are at risk in heat, because the effort will exceed the 6 Minute Threshold. **Aggressive cooling (see Appendix A) should be used after a performance for a horse when the WBGT is high.**

3. **Wind flow (breeze) dramatically reduces heat overload (heat stress)**
   Wind flow significantly increases evaporation. The primary cooling mechanism for both horses and humans is evaporation of sweat. On hot days, events should be scheduled early or late, when better wind flow is likely and outside of peak temperature periods

   Horses *standing* in the sun without shade or wind flow in temperatures above 33ºC, start to accumulate heat. Horses *working* in the sun without wind flow at or above 33ºC are at risk.

4. **Surface area to body mass (SA:BM)**
   As body mass increases, relative surface area decreases. An 80kg rider will have a SA:BM = 1:40, but a 500kg horse has a SA:BM = 1:100. Surface area to body mass ratio impacts negatively on a horse's ability to shed heat through evaporation. Greater muscling in some (Dressage) horses lowers their SA:BM ratios and makes them less effective than other equine athletes at shedding heat.

5. **Arena and Surfaces**
   Shaded and grassy surfaces do not attract and retain as much heat as other surfaces that are soil based or exposed to full sunlight. Horses restrained next to

vehicles/floats/trucks parked on black asphalt, road base or sand are more susceptible to heat stress on hot days.

6. Event Planning

Event organisers **MUST** conduct a risk management assessment if competitions/ training days are to be held during hot conditions. Decisions and actions that may be considered include:

- Alteration of time of day or time of year at which an event is run
- Reduction in overall effort (shorter distance, less jumping efforts etc.)
- Education of riders, grooms and officials
- Provision of shade
- Provision of adequate means of cooling horses including ice, fans, hoses, water baths etc.
- Provision of veterinary services for heat stressed horses

Appendix A - Aggressive cooling measures

Aggressive cooling should be used where a horse's temperature is elevated after any demanding exercise such as Dressage, Jumping, Endurance or Cross Country and when the WBGT Index is high.

Cooling includes use of high volumes of cold/ice water application, ice boots, repeatedly applying bucketful's of iced/cold water, and repeatedly hosing and immediately scraping water as it warms on the horse's body. Key areas to apply cooling/iced water to are the jugular veins (underside of neck), the femoral arteries (between hind legs) and the heat sink (lower abdomen).

Aggressive cooling measures should continue until water is no longer heating up on the horse or until the horse's temperature is back to a healthy 38ºC.

Appendix B - Anhidrosis in horses (also called 'drycoatedness, or 'the puffs')

Anhidrosis, or the inability to sweat to dissipate heat after exercise, is a condition that develops in horses stabled and trained under hot, humid conditions. It is commonly described as 'dry coat' or 'non-sweating' disease.

An earlier form of the disease, referred to as 'the puffs' develops in 50 – 60% of horses under tropical conditions during peak daytime temperatures in the summer months. Horses that lose the ability to sweat efficiently are unable to maintain their body temperature within normal resting limits, and start to pant to blow off heat. During humid weather when the Relative Humidity (RH) exceeds 85%, the efficiency of sweat evaporation from the skin decreases by 5% for every 2% increases in relative humidity, which greatly increases the risk of heat stress.

Horses in hard training programs, particularly those on high grain diets are more prone to develop the condition. However, all ages, breeds, pregnant mares and idle non-working pleasure horses at pasture can be affected. The condition usually begins in spring or summer, particularly during early unseasonable humid conditions where horses have less time to adapt or acclimatise to the seasonal change.

Some people think when a horse's coat is dry or has only patchy sweat when worked on a hot day that this indicates that the horse is handling the heat. In fact a dry coat is a cause for great concern – the horse could be losing the ability to sweat (anhydrosis) - indicating a faulty or a completely broken cooling system, that is, the horse may suffer heat stroke and collapse.

Appendix C – The FEI standard cooling facilities

To enable aggressive cooling to be carried out, when the WBGT exceeds 32-33ºC, the following should be available at an event:

- Multiple hoses and wash bays for cooling/hosing
- Large bins (ideally wheelie bins) full of water and bags of ice - for aggressive cooling
- Free ice: ad lib (as much and as often as desired)

- An abundance of bags of ice for ice boots or for riders to add to water to cool horses after exercise
- A shaded area with misting fans
- An equine veterinarian

A GUIDE FOR ATHLETES (Riders/Drivers)

Before Competition:

- Most acclimatisation adaptation occurs within the first 10 to 14 days. We recommend a period not less than seven days should be allowed for acclimatisation.
- Personal fitness improves the ability to acclimatise.
- A medical examination should be undertaken to identify the presence or likelihood of any health problem well ahead of the departure date.
- It is known that dehydration will impair performance and may prove dangerous. Consequently, riders in consultation with their team doctor and Chef d'Equipe, are advised to establish their anticipated individual fluid requirements, both in and out of Competition. Such fluids must be readily available, appropriate and enjoyable.
- It should be noted that thirst is not a good indicator of hydration status and that it is best monitored by accurate weighing before and after exercise. The carrying of personal water bottles is recommended as is developing the ability to drink both before and during exercise whenever possible.
- It is cautioned that participation whilst suffering from an illness, particularly causing a fever or dehydration, may be very dangerous and should not be attempted.
- The suitability of allowable medications for treatment should be ascertained as some drugs may adversely affect heat regulation.
- Dehydration may be caused by alcohol and caffeine drinks such as coffee and cola. Their use should be a matter of discretion.
- Direct exposure to the sun should be limited and use made of shade, broad-brimmed hats, sun glasses and sunscreen. Where possible, clothing should be light-colored, lightweight and of a material capable of absorbing moisture.
- The early symptoms of heat-related illness can include cramps, fatigue, weakness, headache and nausea. Concentration and judgment become impaired.

In Competition:

- Protective Head-Gear/Helmets: The most effective currently available protective head-gear/helmets, offering ventilation and moisture absorption, should be worn. When it is considered safe to do so, helmets may be removed after the rider has dismounted.
- Body Protectors: Body protectors, if worn, should not impede movement and be of such a design as to reduce the retention of body heat to a minimum.
- Mistakes and falls occur because of hot, tired horses. The same applies to the rider. To cool the rider, remove his/her hat, sit him/her in the shade, wash his/her face with cold water (noting that although this may make him/her feel better, it is not very effective in reducing body temperature) and encourage him/her to drink an isotonic drink (isotonic = same concentration as body fluids). Where possible, the rider should wear light coloured clothing.
- Where possible, training, events and competitions should be scheduled to minimise exposure to UV and heat.

- Cancellation of training, events or competition occurs (as outlined in the EA Hot Weather Policy) when high-risk conditions are forecast.

Where it is not possible to avoid peak UV and heat periods, the following interim steps should be taken to minimise the risk of overexposure to UV and heat illness:

- Warm-up activities are limited in duration and intensity.
- The duration of the activity is reduced.
- Activities start earlier in the morning or later in the evening.
- Rest breaks and opportunities to seek shade and rehydrate are increased.
- Officials rotate out of the sun more frequently than usual.
- Officials, coaches and senior members act as role models by wearing sun-protective clothing and hats, applying sunscreen and seeking shade wherever possible.

Sun protection times

- The sun protection times from the Bureau of Meteorology forecast the time of day UV levels are due to reach 3 or higher. At these levels, sun protection is recommended for all skin types. UV levels regularly reach 3 or higher from mid-August to the end of April.
- A combination of sun protection measures are needed during the daily local sun protection times.
- To assist with the implementation of this policy, club officials, coaches and participants are encouraged to access the daily local sun protection times at sunsmart.com.au, on the free SunSmart app or SunSmart widget (on the club website) and in the weather section of the newspaper.

Additional Recommended Sun Protection Measures

1. Clothing

- It is recommended that tops are made from UPF (UV protection factor) 50+ materials and have long sleeves and a collar.
- Members are reminded to apply SPF30 (or higher) broad-spectrum, water-resistant sunscreen to all exposed skin.

2. Sunscreen

It is recommended that SPF30 (or higher) broad-spectrum, water- resistant sunscreen is promoted and/or provided to participants.

- Participants are encouraged to apply sunscreen 20 minutes before riding and to reapply every two hours or immediately after sweating or activity.
- Sunscreen should be stored below 30°C and replaced once it is past the use-by date.
- Participants are encouraged to apply a generous amount of sunscreen (the equivalent of one teaspoon per limb).
- It is recommended that the first aid kit at events include a supply of SPF30 (or higher) broad-spectrum, water-resistant sunscreen.

3. Hats

- Wide-brimmed or bucket hats are recommended when not riding
- Caps and visors do not provide adequate sun protection to the face, ears and neck and are not recommended for extended sun protection but may be used, in combination with sunscreen on parts of skin not covered, as an interim measure when not riding.

4. Shade

- When not actively riding or between events, participants should be able to rest in shaded areas.
- Where there is insufficient natural or built shade, temporary shade structures should be provided or participants are notified to bring their own temporary shade (e.g. tents or umbrellas).
- Shade from buildings, trees and other structures are to be used where possible (e.g. for gear check spectator areas etc.).
- Presentation ceremony areas are to be protected by shade where possible.
- Participants and officials rotate to cooler, shaded areas where possible.

5. Sunglasses

- Participants are advised to wear sunglasses that meet the Australian standard (ASNZS 1067:2016).

Relevant documents and links

- SunSmart: sunsmart.com.au
- SunSmart widget: sunsmart.com.au/uv-sun-protection/uv/uv-widget
- SunSmart app: sunsmart.com.au/app
- Heat and UV Guide: sunsmart.com.au/downloads/communities/sports-clubs/uv-exposure-heat-illness-guide.pdf
- Shade audit: sunsmart.com.au/shade-audit/
- Australian Government Therapeutics Goods Administration (TGA) – Australian regulatory guidelines for sunscreens: 4. Labelling and advertising – directions for use of the product
- ARPANSA Radiation Protection Standard for Occupational Exposure to Ultraviolet Radiation (2006)
- Safe Work Australia: Guidance Note – Sun protection for outdoor workers (2016)

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