

Events held on hot days

Event organisers often ask under which conditions events should be cancelled or restricted to the cooler hours of the day. Most Eventing organisers are familiar with the Wet Bulb Globe Temperature (WBGT) that has been used at Olympic Games and major events, particularly since the test event for the 1996 Olympic Games in Atlanta. The Australian Bureau of Meteorology (BOM) worked with SOCOG in the lead-up to the Sydney 2000 Olympic Games to provide data for the Equestrian competitions.

Temperature and Humidity

We all know that it is easier for us and for horses to be in and 'work' in conditions of low humidity. Even at higher temperature and particularly when there is a breeze, we feel more comfortable than we do in lower temperatures with high humidity. This is basically because the body is cooled down by the evaporation of surface water (sweat). Evaporation is slowed down as humidity rises and air circulation reduces, and the body will find it harder and harder to stay at acceptable temperatures. An overheating body will suffer heat stress and, without intervention, ultimately death.

Measure of Heat Load

The WBGT combines a number of measures (temperature, humidity, wind, solar radiation) to come up with an index of the prevailing heat load. Another measure is the *Apparent Temperature* (AT). BOM provides a fuller description [on its web](#).

Instruments for the measurement of the WBGT are expensive and require frequent calibration. As a practical alternative, BOM has come out with a simplified chart that approximates the 'real' WBGT for sunny conditions with light winds.

BOM notes: *The approximation used by the Bureau of Meteorology does not take into account variations in the intensity of solar radiation or of wind speed, and **assumes a moderately high radiation level in light wind conditions**. Use of this approximation may lead to incorrect estimates of thermal stress, particularly in cloudy and windy conditions. Under these conditions the approximation is likely to lead to an overestimate of the stress. The approximation will also overestimate nighttime and early morning conditions when the sun is low or below the horizon.*

BOM also refers to the [FEI guidelines for Three-Day Events](#) .

BOM publishes the approximate **actual** WBGT ('sunny' and 'shade') and AT ('shade') together with all of its other readings from its weather stations on a page called [Thermal Comfort Observations](#). This particular page lists readings in NSW but similar pages are available for the other States.

Sport Medicine Australia publishes a [heat policy](#) on its web that makes interesting reading.

How to use this information

The actual impact on humans and horses of the prevailing heat load varies depending on many factors including acclimatisation, fitness and 'fatness', measures taken to re-hydrate and to cool down. The risk of damage and injury to humans and horse is also influenced by the use of facilities available at show grounds (shade/indoor, large quantities of water to cool down horse, etc.).

Most importantly, organisers need to keep in mind that the knowledge of how best to manage horses before and after competition may vary greatly between horse owners and riders/drivers. Some may not realise the effect of the prevailing heat load on their horse and may fail to take appropriate cooling measures.

In the interest of the welfare of the horse, when the WBGT reaches or is expected to reach 32 or even more extreme values, particularly in clear and calm conditions, organisers should assess their venue/event situation and consider temporarily suspending, stopping or cancelling the events. In any case once WBGT values are over 25, they should remind riders to frequently re-hydrate and cool down their horses.

Equestrian Australia is in the process of developing a policy.

Franz Venhaus, 25 January 2010

The following reference table is based on Bureau of Meteorology web information:

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

About the approximation to the WBGT used by the Bureau of Meteorology

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