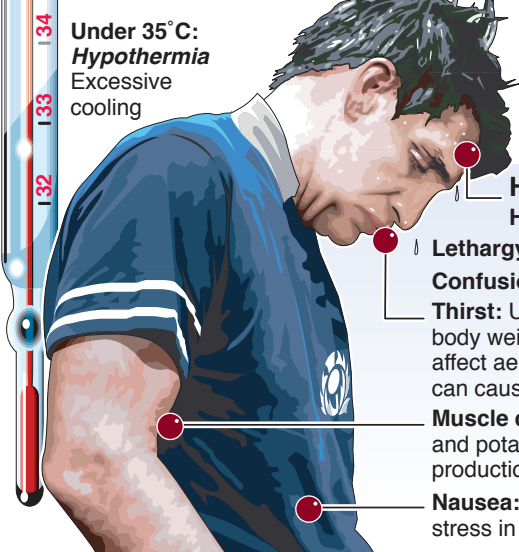


Rugby World Cup heat stress risk

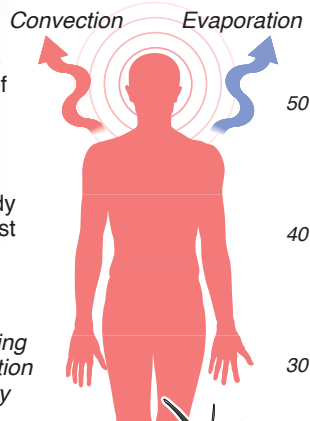
European players have been warned of the dangers of overheating in northern Australia's hot, humid climate. Evening games in Townsville will be played in temperatures around 25°C and 60% humidity, while the November record for Brisbane is a sweltering 39.1°C (102°F)

Body core temperature

Above 40°C: Life-threatening **heatstroke**
40°C: Hyperthermia
 Heat stress
38-40°C: When air temperature is higher than that of body, core heat can only be lost by sweating
37°C: Normal body temperature at rest
Exercise causes metabolic rate to rise by up to 25 times, increasing core heat generation by up to 1°C every five minutes



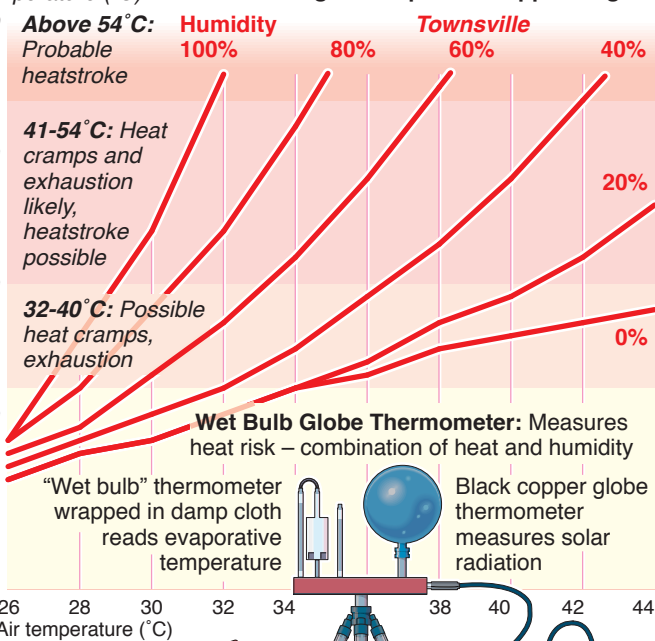
Cooling mechanisms



Air temperature

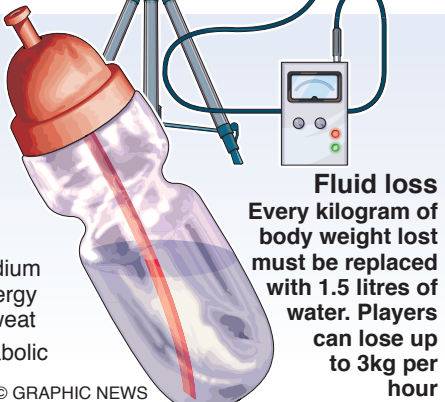
Apparent temperature (°C)
 60
Above 54°C: Probable heatstroke
41-54°C: Heat cramps and exhaustion likely, heatstroke possible
32-40°C: Possible heat cramps, exhaustion
 30
 26 28 30 32 34 36 38 40 42 44
 Air temperature (°C)

Humidity stops sweat from evaporating, preventing effective body heat loss and making air temperature appear higher



Heat stress

- Headaches:** Dehydration
- Lethargy:** Slow reactions
- Confusion:** Impaired judgement
- Thirst:** Unnoticed until 2% of body weight lost – sufficient to affect aerobic capacity. 5% loss can cause serious injury
- Muscle cramps:** Electrolytes sodium and potassium – essential for energy production in muscles – lost in sweat
- Nausea:** Toxin build-up and metabolic stress in liver and intestines



Fluid loss
 Every kilogram of body weight lost must be replaced with 1.5 litres of water. Players can lose up to 3kg per hour