



**SPORTS MEDICINE AUSTRALIA**

**EXTREME HEAT RISK AND  
RESPONSE GUIDELINES  
AND WEBTOOL (2025)**

# ACKNOWLEDGEMENTS

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## Disclaimer

The information in these guidelines is general. Reading or using these guidelines is not the same as getting medical advice from your doctor or health professional. All reasonable attempts have been made to ensure the information is accurate. However, SMA is not responsible for any loss, injury, claim or damage that may result from using or applying the information in these guidelines. This information should be considered and interpreted in the context of other risk management, insurance, governance and compliance frameworks and obligations relevant to sporting organisations. Familiarity with relevant International Sports Federation (ISF), National Sporting Organisation (NSO) and State Sporting Organisation (SSO) policies and requirements is essential to enable appropriate interpretation and application of the information in these guidelines.

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# EXTREME HEAT GUIDELINES

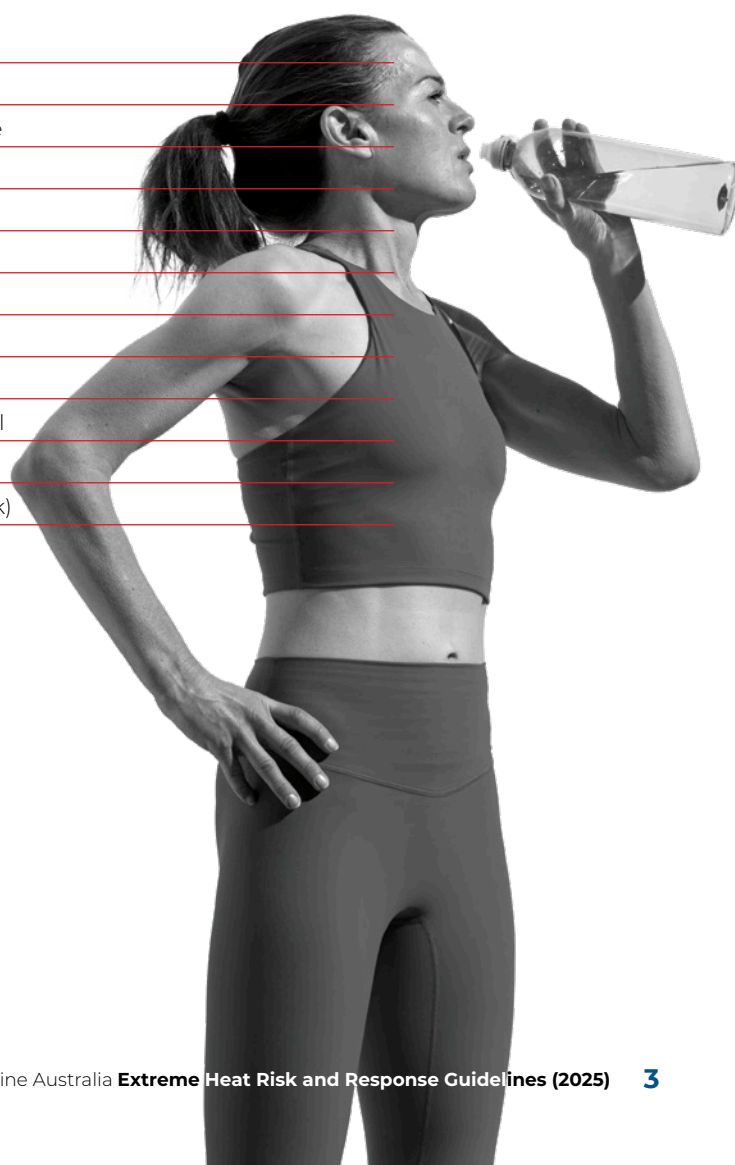
The updated 2025 SMA extreme heat risk and response guidelines builds upon the policy issued in 2021 providing important improvements, including a freely accessible heat stress risk assessment webtool.

## Background

The assessment of heat stress risk is based on a validated thermo-physiological heat balance model which determines the environmental conditions at which critical levels of heat stress risk to health are predicted to occur. These models account for the effects of air temperature, humidity, thermal radiation from the sun, air flow from wind, the intensity of the sporting activity and clothing requirements. Once a risk threshold is reached, a simple colour coding system recommends evidence-based actions that can be taken to reduce heat-health risk.

These guidelines provide recommendations for the most popular sports in Australia, based on participation rates from the 2023 AusPlay survey. The sports currently covered by these guidelines are listed in the table below:

Abseiling	Field hockey	Rowing
Archery	Fishing	Rugby league
Australian football	Golf	Rugby union
Baseball	Horseback riding	Sailing
Basketball	Kayaking	Shooting
Bowls	Long distance running	Soccer
Canoeing	Mountain biking	Softball
Cricket	Netball	Tennis
Cycling	Oztag	Touch football
Equestrian	Pickleball	Volleyball
Field Athletics	Rock climbing	Walking (brisk)



# USING THE SPORTS HEAT TOOL

Sport-specific heat-stress risk classifications are provided via a publicly available webtool which can be accessed by scanning the QR code or via the weblink: <https://sma-heat-policy.sydney.edu.au/>




1

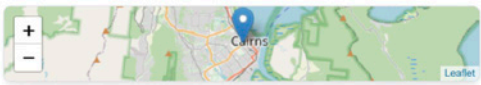
To use this webtool following the following steps

1. Using the drop-down menu, select the relevant sport (e.g. Australian Football)
2. Using the drop-down menu, select the postcode-level location at which the sporting event will take place (e.g. Camperdown, NSW, 2050)
3. Based on your location, weather data from the Bureau of Meteorology are automatically retrieved from the weather station nearest to the site of play
4. The current heat stress risk will be displayed via a simple four-point scale (Low, Moderate, High or Extreme) with key heat stress mitigation strategies summarised:

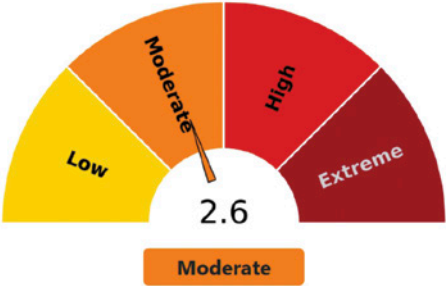
Sport:



Location:






**Current Sport Heat Score**



2.6  
Moderate

**Key recommendations:**

-  Stay hydrated
-  Wear light clothing
-  Rest Breaks

2

More detailed heat stress mitigation guidance can be accessed by clicking on the "Detailed suggestions" drop-down box, for example:

**Detailed suggestions:**

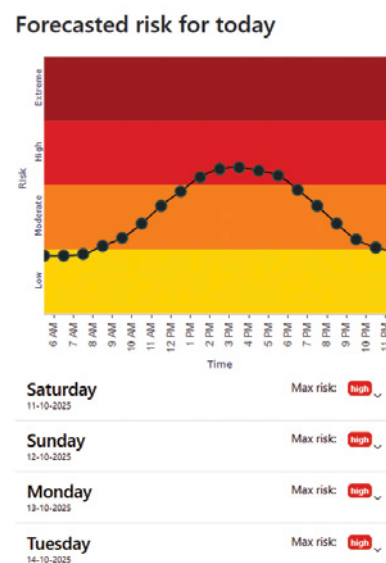
Maintaining hydration through regular fluid consumption and modifying clothing is still a simple, yet effective, way of keeping cool and preserving health and performance during the summer months.

You should:

- ensure pre-exercise hydration by consuming 6 ml of water per kilogram of body weight every 2-3 hours before exercise. for a 70kg individual, this equates to 420ml of fluid every 2-3 hours (a standard sports drink bottle contains 500ml).
- drink regularly throughout exercise. you should aim to drink enough to offset sweat losses, but it is important to avoid over-drinking because this can also have negative health effects. to familiarise yourself with how much you typically sweat, become accustomed to weighing yourself before and after practice or competition.
- where possible, select light-weight and breathable clothing with extra ventilation.
- remove unnecessary clothing/equipment and/or excess clothing layers.
- reduce the amount of skin that is covered by clothing – this will help increase your sweat evaporation, which will help you dissipate heat.

3

The forecasted heat stress risk for the rest of the day can be viewed via a simple graph, with the forecast available for next 7 days available selecting the appropriate drop-down box:



# REDUCING HEAT STRESS RISK

The specific heat stress mitigation strategy used depends on the type of sporting activity, however general recommendations that can be implemented across most sports are detailed below.

## EVIDENCE-BASED HEAT STRESS MITIGATION RECOMMENDATIONS

RISK CATEGORY

LOW

### **Recommendation:** Increase hydration & modify clothing

Detailed suggestions:

Maintaining hydration through regular fluid consumption and modifying clothing is still a simple, yet effective, way of keeping cool and preserving health and performance during the summer months.

You should:

- Ensure pre-exercise hydration by consuming 6 ml of water per kilogram of body weight every 2-3 hours before exercise. for a 70kg individual, this equates to 420ml of fluid every 2-3 hours (a standard sports drink bottle contains 500ml).

- Drink regularly throughout exercise. You should aim to drink enough to offset sweat losses, but it is important to avoid over-drinking because this can also have negative health effects. to familiarise yourself with how much you typically sweat and become accustomed to weighing yourself before and after practice or competition.
- Where possible, select lightweight and breathable clothing with extra ventilation. Remove unnecessary clothing/equipment and/or excess clothing layers. Reduce the amount of skin that is covered by clothing – this will help increase your sweat evaporation, which will help you dissipate heat.

RISK CATEGORY

MODERATE

### **Recommendation:** Increase frequency and/duration of rest breaks

Detailed suggestions:

Increasing the frequency and/or duration of your rest breaks during exercise or sporting activities is an effective way of reducing your risk for heat illness even if minimal resources are available.

You should:

- During training sessions, provide a minimum of 15 minutes of rest for every 45 minutes of practice.
- Extend scheduled rest breaks that naturally occur during match-play of a particular sport (e.g. half-time) by ~10 minutes. this is effective for sports such as soccer/football and rugby and can be implemented across other sports such as field hockey.
- Implement additional rest breaks that are not normally scheduled to occur. for example, 3 to 5-min “quarter-time” breaks can be introduced mid-way through each half of a football or rugby match, or an extended 10-min drinks break can be introduced every hour of a cricket match or after the second set of a tennis match.
- For sports with continuous play without any scheduled breaks, courses, or play duration can be shortened.
- During all breaks in play or practice, everyone should seek shade – if natural shade is not available, portable sun shelters should be provided, and water freely available.

# REDUCING HEAT STRESS RISK

The specific heat stress mitigation strategy used depends on the type of sporting activity, however general recommendations that can be implemented across most sports are detailed below.

## EVIDENCE-BASED HEAT STRESS MITIGATION RECOMMENDATIONS

RISK CATEGORY

HIGH

**Recommendation:** Apply active cooling strategies

Detailed suggestions:

Active cooling strategies should be applied during scheduled and additional rest breaks, or before and during activity if play is continuous. Below are strategies that have been shown to effectively reduce body temperature. The suitability and feasibility of each strategy will depend on the type of sport or exercise you are performing.

You should:

- Drink cold fluids and/or ice slushies before exercise commences. Note that cold water and ice slushy ingestion during exercise is less effective for cooling.
- Submerge your arms/feet in cold water.
- Water dousing – wetting your skin with cool water using a sponge or a spray bottle helps increase evaporation, which is the most effective cooling mechanism in the heat.
- Ice packs/towels – placing an ice pack or damp towel filled with crushed ice around your neck.
- Electric (misting) fans – outdoor fans can help keep your body cool, especially when combined with a water misting system.

RISK CATEGORY

EXTREME

**Recommendation:** Consider suspending play

Detailed suggestions:

The suspension of exercise/play should be considered. If play has commenced, then all activities should be stopped as soon as possible.

You should:

- All players should seek shade or cool refuge in an air-conditioned space if available.
- Active cooling strategies should be applied.

# PREPARING FOR EXERCISE IN THE HEAT

**Plan ahead** to ensure you are able take the most appropriate precaution to stay safe when exercising in the heat.

## *On the day*

Optimally preparing for exercise in the heat will reduce the subsequent risk of heat related illness. If hot weather is forecasted, during the preceding 24 hours you should:

- Avoid extended strenuous exercise that will substantially pre-elevate core temperature
- Ensure you are well hydrated – drink water regularly the day before and drink 500 ml of water 1-2 hours before play begins
- If caffeine-habituated (e.g. you typically drink multiple cups of coffee a day), you should avoid high caffeine doses in the hours leading up to play as lower levels of skin blood flow result in higher core temperatures
- Immediately before exercise, you can pre-cool the body by drinking cold water or an ice slushy, immersing the lower half of your body in cold water, or wearing an ice vest

**NOTE:** Taking anti-pyretic medication such as acetaminophen (i.e. paracetamol) does NOT lower the body temperature response to exercise, and is therefore NOT recommended to reduce heat stress risk

## *In the days/weeks before*

Acclimatising to hot weather is a well-established longer-term method for reducing the risk of heat-related illness during exercise. Physiological adaptations include a reduction in core temperature, an expanded blood plasma volume that lowers heart rate, an increase in maximum sweat rate, a cooler thermal sensation, and a reduction level of perceived exertion. To optimally acclimatise to the heat, you should:

- Frequently (i.e. daily) expose yourself to the type of conditions that you will be playing in (e.g. hot/humid, very hot/dry) for 45-90 minutes per day for a minimum of 5, and preferably up to 14, consecutive days.
- Exercise in these conditions at the same perceived effort – as you begin to adapt the absolute level that you are working at will increase
- If protective equipment is usually worn, none should be worn for the first 3-4 days, and then the equipment levels should be gradually increased each subsequent day

**NOTE:** Because extended and frequent exposure to exercise-heat stress is required to attain complete adaptation, additional thermal protection from heat acclimatisation should not be assumed if exercise intensities and exposure frequency is low



# RECOGNISING SIGNS AND SYMPTOMS OF HEAT-RELATED ILLNESS

Whenever exercise or sport is being carried out in the heat, irrespective of the heat stress risk level, recognising the signs and symptoms of heat-related illness is essential for ensuring the safety and wellbeing of all participants.

Heat-related illnesses represent a spectrum of disorders, ranging from mild symptoms to a life-threatening illness. The health impacts of heat-related illness can be a direct result of an increase in core temperature or the result of the strain on the heart associated with defending the rise in body temperature. The symptoms and signs of heat related illness and the immediate management procedures are summarised in the Table.

## Who is especially at risk of heat-related illness?

While even the fittest athlete can fall victim to heat-related illness, certain people are especially vulnerable:

- Aged over 65 years, especially if unfit. Note that age effects on thermoregulation may become progressively worse with age, so risk is generally greater with more advanced age

- Heart or kidney disorders/disease presents a greater risk of cardiovascular or renal failure during or following exercise in the heat
- Recently sick with a fever
- Taking prescription medications that impair sweating
- A reduced ability to behaviourally respond to heat, e.g. due to mental health challenges or substance abuse
- Very high body fat
- Recently (in the past week) arrived from a cold climate

**NOTE:** It is currently unclear if heat stress risk is truly elevated in children. Similarly, some reports indicate that pregnant women exposed to extreme heat may be at elevated risk negative birth outcomes, but no evidence links this with exercise, which is known to provide extensive benefits to mother and baby. Thermoregulatory capacity during pregnancy is also not compromised.

	HEAT EXHAUSTION/SYNCOPE	EXERTIONAL HEAT STROKE (EHS)
Symptoms (What the person might feel)	<ul style="list-style-type: none"> <li>– Headache</li> <li>– Dizziness</li> <li>– Weakness</li> <li>– Nausea</li> <li>– Vomiting</li> </ul>	<ul style="list-style-type: none"> <li>– Brain symptoms including confusion and agitation</li> <li>– Symptoms can develop rapidly</li> <li>– EHS is a medical emergency</li> </ul>
Signs (What you might see)	<ul style="list-style-type: none"> <li>– Fainting</li> <li>– Increased heart rate</li> <li>– Decreased blood pressure</li> <li>– Core temperature usually below 40°C</li> <li>– Absence of brain symptoms</li> </ul>	<ul style="list-style-type: none"> <li>– Brain symptoms including:                             <ul style="list-style-type: none"> <li>• Confusion</li> <li>• Unsteadiness</li> <li>• Aggressive or irrational behaviour</li> <li>• Altered level of consciousness, seizures, coma</li> </ul> </li> <li>– increase heart rate, increase breathing rate, decreased blood pressure</li> <li>– Core temperature usually above 40°C</li> </ul>
Immediate Management	<ul style="list-style-type: none"> <li>– Move to shade and cool</li> <li>– Remove as much clothing as possible</li> <li>– Remove protective equipment (eg. helmets, pads)</li> <li>– Apply lots of water to skin</li> <li>– Oral fluids</li> <li>– Lie on back with legs elevated</li> <li>– Watch for worsening</li> </ul>	<ul style="list-style-type: none"> <li>– ABC (airway, breathing and circulation)</li> <li>– Aggressively cool the body with ice and water (eg. ice or cold water bath)</li> <li>– Call an ambulance</li> <li>– Continue cooling while transfer to hospital – “Cool first, transfer second”</li> </ul>

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