Battlecry: Fields of Ashnoor
HEAT POLICY

BACKGROUND

The new Sports Medicine Australia Extreme Heat Policy utilises the latest published research evidence to inform a) a biophysical model for predicting heat stress risk; and b) recommended cooling strategies that can be used to optimally mitigate heat stress risk.

The new policy also adopts a continuous approach to defining heat stress risk thresholds in place of stepwise categories and covers gaps in the previous policy for conditions that often occur in many states and territories that are very hot (35-40C) but (dry (<10%RH), which yield relatively low dew point temperatures yet induce high levels of sweating and physiological strain, particularly during exercise. A broad differentiation between the thermal effects of activity levels and clothing/equipment worn across a range of popular sports in Australia is also provided.

The aim of this policy is to provide evidence-based guidance for protecting the health of those participating in sport and physical activity from the potentially ill effects of extreme heat in the summer, while ensuring that play is not unnecessarily interrupted.

As new research findings emerge, the policy will be updated accordingly. Intended users are sporting administrators, coaches and sports medical teams responsible for the safety and wellbeing of people engaging in sport and physical activity in hot weather, as well as individuals wishing to manage heat stress risk during planned training activities.

ASSESSMENT

Assessment of heat stress risk is based on a fundamental heat balance model that determines the combination of temperature (measured in the shade) and humidity at which critical levels of heat stress risk to health are predicted to occur.

These models are also adjusted for the effects of thermal radiation from the sun, and air flow from wind. Once a threshold is reached, a colour coding system recommends actions that can be taken to reduce heat-health risk.

The Sports Medicine Australia policy provides recommendations for a range of sports based on participation rates from the 2019 AusPlay survey.

All included sports are split into 5 “risk classification” groups according to the combined effects of exercise intensity and clothing/equipment worn. These classifications are summarised in the Table below:

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Sport Risk Classification				
1	2	3	4	5
Walking (leisurely)	Archery	Abseiling	Baseball	Field Hockey
	Bowls	Australian Football	Bushwalking	Mountain Biking
	Field Athletics	Basketball	Cricket	
	Fishing	Cycling	Equestrian	
	Golf	Canoeing	Horseback riding	
	Lifesaving Surf	Caving	Motor Cycling	
	Sailing	Kayaking	Rugby Union	
	Shooting (Pistol/Trap)	Netball	Rugby League	
	Walking (brisk)	Oztag	Softball	
		Rock Climbing		
		Rowing		
		Soccer		
		Tennis		
		Touch Football		
		Long Distance Running		
		Triathlon		
		Volleyball		

Each group has its own temperature/humidity graph that should be used to assess heat stress risk. See Figures 1 to 5.

To predict the heat risk associated with participation in a relevant sporting classification, the temperature and humidity for the location where competition or practice will be taking place needs to be acquired.

It is essential that the peak temperature during the time of play is used with the accompanying relative humidity at that specific time. If the peak relative humidity is used for a particular day, which usually occurs when temperature is lowest, heat stress risk will be over-estimated, and competition unnecessarily disrupted or cancelled.

To obtain a forecast of temperature and humidity for the **upcoming 72 hours:**

1. Visit: http://www.bom.gov.au/places/ and enter your location/post code.
2. Click on: “DETAILED 3-HOURLY FORECAST”
3. Select the specific day/date of enquiry
4. Identify the column with the nearest time to the planned competition/practice 5. Note the “Air Temperature (˚C)” value
6. AND IN THE SAME COLUMN, note the concurrent “Relative Humidity (%)” value found towards the bottom of the entry for that date

NOTE: Reported temperatures and humidity values will only be estimates. The most accurate conditions can be measured locally with devices such as the Environmental Measurement Unit (EMU) from The University of Sydney.

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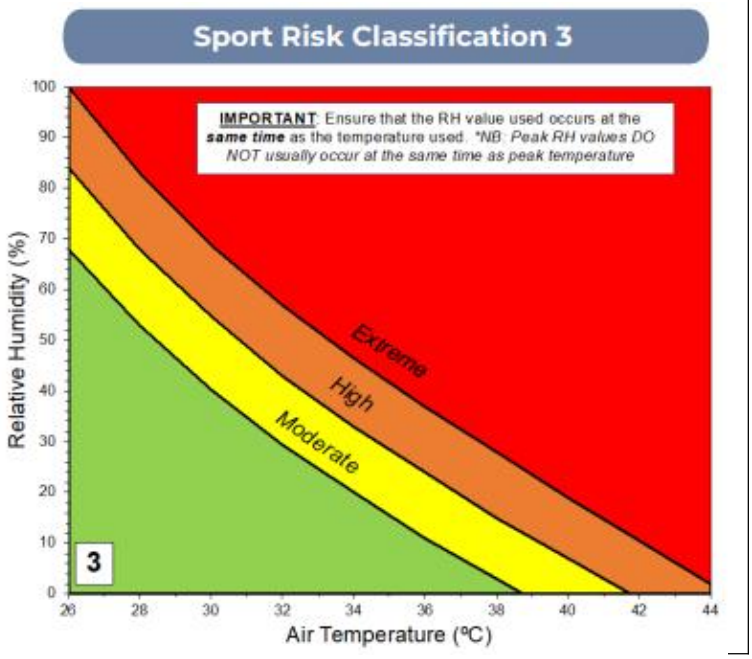
MITIGATING HEAT STRESS

GREEN- HYDRATE and MODIFY CLOTHING (RISK- LOW) Heat stress risk is low, 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. The clothing/equipment can influence how quickly the body heat-up during exercise. Ie chain maile, metal armour, restrictive clothing	**YELLOW- REST BREAKS (RISK MODERATE)** When the heat stress risk is moderate, 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. For every 45 mins on field, 15 minutes rest break. During all breaks in play or practice, everyone should seek shade.
ORANGE- ACTIVE COOLING **Heat stress risk is HIGH. Additional Rest breaks, 30 minutes on field, 15 minutes rest.** Drinking cold fluids and/or ice slushies before exercise commences. Note that cold water and ice slushy ingestion during exercise is less effective for cooling • Submerging your arms/feet in cold water • Water dousing, misting system/ fan.	**RED- EXTREME. GAME Suspended/ CANCELLED- GROUND CLOSED.** Exercise/play should be suspended. If play has commenced, then all activities should be stopped as soon as possible. All players should seek shade or cool refuge in an air-conditioned space if available • Active cooling strategies should be applied. Predicted weather pattern BOM, prior to game commencement- game cancelled, ground closed.

Sports Medicine Australia recommends that events or activities requiring moderate to high intensity exercise that are conducted in conditions that exceed 28 degrees should be postponed or cancelled to beat the heat.

Moderate intensity excsie in conditions that exceed 33 degrees should be postponed on canceled to beat the heat.



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FURTHER STEPS TO MINIMISE HEAT STRESS

The following steps can be taken to minimize the risk of heat illness: -

- Maintain physical fitness levels.
- Adjusting game intensity to conditions
- Reducing clothing and resting in shade
- Assisting evaporative cooling with fans; wetting the skin, applying ice packs to groin and armpits.
- Drinking cool water or sports drinks.
- Withdrawing players who feel unusually fatigued or who appear distressed from the activity.
- Evening and Night exercise training can reduce the risk of encountering stressful conditions.
- Clothing for exercise in warm conditions should allow easy evaporation of sweat from the skin; such clothing should be light coloured, light weight, and loose fitting, and provide protection against the sun.
- Modifying warm-up in hot conditions
- To minimize dehydration, a participant needs to drink about two cups of water in the 2 hours preceding exercise activity. During exercise lasting 60 minutes or longer, 2-3 cups (500-750 mL) of cool water or sports drinks per hour are sufficient. Dehydration is rarely the sole cause of heat illness but maintaining an adequate water intake assists temperature control.
- Carbohydrates and electrolytes in sports drinks help to maintain performance.
- Heat Waves, Unusually Hot Weather and Travelling Extra caution must be taken during unseasonal heat waves or unusually hot or humid weather, or if travelling from a cool district to a hot or humid district. In such circumstances participants lack acclimatisation and are at increased risk of heat illness if they exercise at cool climate intensity.
- Other Considerations Age and medical conditions can result in heat illness:
  A participant who has recently experienced a high temperature, infection, diarrhoea, or vomiting should NOT take part in strenuous activity.
- Participants over 65 or who suffer from a variety of medical conditions, are taking medication or who are pregnant may experience difficulties exercising in the heat. Examples include asthma, diabetes, heart conditions, epilepsy, overweight and obesity.
- Children and Heat Illness: Children sweat less and get less evaporative cooling than adults. In warm and humid weather children have greater

difficulty getting rid of heat – they look flushed and feel hotter and more stressed than adults. Overweight children are particularly disadvantaged exercising in warm weather.

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

Signs and Symptoms	**Heat Exhaustion/ Syncope**	**Exertional Heat Stroke**
Symptoms (what the person might feel)	Headache Dizziness Weakness Nausea Vomiting	Brain symptoms including: Confusion Agitation Symptoms can develop rapidly EHS is a medical emergency
Signs (what you might see)	Fainting Heart rate Blood pressure Core temperature usually < 40°C - Absence of brain symptoms	Brain symptoms including: Confusion o Unsteadiness Aggressive or irrational behaviour Altered level of consciousness, seizures, coma Heart rate, breathing rate, blood pressure - Core temperature usually > 40°C
Immediate management	Move to shade and cool Remove as much clothing as possible Remove protective equipment (e.g. helmet, pads) Apply lots of water to skin Oral Fluids Lie on back with legs	ABC (airways, breathing, circulation) Aggressively cool the body with ice and water Call ambulance Continue cooling while transfer to hospital * Cool first, transport second *

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	elevated Watch for worsening	

ADDITIONAL CAUSES OF HEAT STRESS AND HEAT RELATED ILLNESS

Extreme heat can affect anybody. Those most at risk are older people, young children and people with a medical condition.

Heat stress occurs when our body is unable to cool itself enough to maintain a healthy temperature. Normally, the body cools itself by sweating, but sometimes sweating isn't enough and the body temperature keeps rising.

Heat-related illness can range from mild conditions such as a rash or cramps to very serious conditions such as heatstroke, which can kill.

Overexertion in hot weather, sun or bushfire exposure, exercising, working in hot, poorly ventilated or confined areas can increase your risk of heat stress. Heat can also induce symptoms of an existing medical condition.

Anyone can suffer from heat-related illness, but those most at risk are:

CAUSES OF HEAT STRESS AND HEAT-RELATED ILLNESS

Anyone can suffer from heat related illness, but there are many factors which can cause heat stress and heat-related illness, the main causes for Battlecry members are:

Dehydration
Sun exposure
Exercise
Medications

Other causes are:

1. **Hot and crowded conditions** – people attending large events (concerts, dance parties or sporting events) in hot or crowded conditions may also experience heat stress that can result in illness.

2. **Bushfires** – exposure to radiant heat from bushfires can cause rapid dehydration and heat-related illness

3. **Lack of airflow** – working in hot, poorly ventilated or confined areas.

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Medications and Heat Stress

A lot of **medications** can cause side effects like heat stress. Some medications have this listed on the medication box or bottle or on the consumer medication information leaflet. Always consult your medical practitioner and/or you pharmacist.

General Medications associated with Heat Stress	
Antihistamines **For example: Claratine, Zertec**	The two drugs that have the most worrisome ramifications for people are antihistamines and beta blockers. Many antihistamines are available without prescription, so effects may be unknown to the person taking them, having had little or no consultation or warning about possible symptoms. Antihistamines dry up the mucus membranes to ease symptoms such as a runny nose. In the process, they make it harder for the body to cool itself. Some users find that oral antihistamines reduce their ability to sweat or difficult for you to cool down. In extreme cases overheating can lead to cramps, exhaustion, and even heat stroke.
Beta Blockers	Beta blockers are commonly prescribed for the treatment of high blood pressure, control of arrhythmias (rapid heartbeat), or to steady tremors. Part of their danger lies in the fact that many of the things beta blockers "block" are also mechanisms the body uses to cool itself. Heat stress normally would increase your heart rate, but beta blockers reduce your heart rate from going faster. The faster your heart rate goes, then the more you're going to have the blood going around your skin so that you get that convection going off and getting rid of the heat that way. Beta Blockers reduce this action. Beta blockers also reduce dilation of blood vessels, which would inhibit the body's ability to radiate heat. At the same time, beta blockers can suppress some symptoms of heat stress or delay the appearance of such symptoms, which in turn would keep the worker unaware of his or her worsening condition.
Heart Medications	Medications like beta-blockers and calcium channel blockers which can be taken to slow your heart beat and reduce blood pressure can slow the flow of blood to the skin. When this happens, the body has a harder time ridding the skin of heat.

	Diuretic drugs also cause the kidneys to remove excess fluids and sodium through urination, which can lead to dehydration. In itself, dehydration brings many problems and complications a worker should take care to avoid. But an additional problem associated with dehydration, regardless of drug type, is drug potency. When dehydration occurs, your blood volume contracts and any medicines you are taking become more concentrated, so you are going to potentially enhance their effects. If the blood pressure medicine becomes concentrated, you could have more of an effect and risk having too low of a blood pressure.”
Anticholinergics	Anticholinergics are a broad group of medicines that act on the neurotransmitter, acetylcholine. They are also called antispasmodics. Anticholinergics are used in the treatment of some gastrointestinal and bladder conditions. They may also be used in the treatment of some cardiac, respiratory or movement disorders. These medications can decrease the body’s ability to sweat and cool itself. Because the body is not cooling off as well as it should, risk of heat stroke is higher.
Antidepressants	Tricyclic antidepressants may cause problems in hot weather because they can prevent the area in your brain that regulates the heat response sensor from knowing you’re overheating, they can also decrease sweating, which leads to a decrease in heat loss.
Antipsychotics	Antipsychotic medications affect a part of the brain that controls how the body manages heat to maintain a healthy body temperature. They can inhibit the body’s ability to regulate its temperature and can make heat stroke more likely.
Stimulants	Ephedrine, amphetamines and cocaine are stimulants that can increase metabolism and internal body temperature, as well as constrict blood vessels. They can make it harder for the body to release heat from the skin as well.

Photosensitivity

Although not directly related to heat stress, another important factor to consider when taking certain medications is potential adverse reactions after exposure to the sun. These reactions fall into two general types: *phototoxic* and *photoallergic*.

Phototoxic reactions give the appearance of sunburn and typically clear up once the drug is discontinued and gone from the body.

Antibiotics fall under this category. One example is tetracycline, which is commonly prescribed to treat several types of infections, including those in the respiratory tract, urinary tract, and skin. In addition to its photosensitivity properties, the antibiotic has a side effects of diarrhea, which increases a worker's chances of dehydration. Included in the phototoxic group are antihistamines, cancer chemotherapy drugs, diuretics, diabetic drugs, and psychiatric drugs.
With photoallergic reactions, ultraviolet exposure can change the structure of a drug, causing an immune system's allergic response and inflammation of the skin in the sun-exposed areas, usually resembling eczema. Even after the drug has cleared the body, these symptoms can return with future sun exposure. Included in this group are sunscreen, painkillers, fragrances, and cancer chemotherapy drugs.

Photosensitive Medications	
Antibiotics	Antibiotics can cause photosensitivity and phototoxic reactions, meaning that they’re going to worsen your sunburn. Avoid sun exposure.
Acne treatments	Phototoxic effects can appear like a really bad sunburn. The risk is more pronounced for prescription retinoids (such as Retin-A and Tazorac), which are significantly stronger than the products you’ll find at pharmacies etc. Acne and anti-aging products with retinol can cause dryness, peeling, and sun sensitivity as well. Products with salicylic acid and benzoyl peroxide can also increase your vulnerability.
Non- steroidal anti-inflammatory drugs (NSAIDs)	“The main non-steroidals that cause phototoxicity are probably not ones that we commonly use, caution should be used, especially if you're on other medications.
Vitamins and Herbs	A lot of over-the-counter herbal medications can have phototoxic effects for example, St. John’s Wort is a big

	inducer of photosensitivity and in particular has a number of drug interactions.

FLUIDS AND FOOD FOR EXERCISE AND THE REDUCTION OF HEAT STRESS

Good nutrition and hydration are essential to help you perform at your best when exercising at LARP. For anyone who will be exercising it is important to plan what you eat and drink before, during and after exercise. This is especially important for anyone involved in activities where optimal nutrition and hydration can make a significant difference to your performance.

HYDRATE BEFORE, DURING AND AFTER THE GAME

Maintaining your body in a fully hydrated state is essential for both your health and performance when exercising. If you are dehydrated you will have a reduced blood volume and less fluid available to form sweat.

Dehydration will reduce your capacity to deliver oxygen to your muscles and your ability to prevent your body from overheating, both of which will adversely affect your exercise performance.

It is vital to be fully hydrated when you start exercising, and to maintain a regular intake of fluids while exercising to prevent dehydration.

FOOD BEFORE EXERCISE

In most circumstances, most of us will have enough stored fat and carbohydrate to fuel our next exercise session without needing to make special arrangements.

However, if you are undertaking a more prolonged or vigorous bout of exercise, you may wish to maximise your glycogen stores before you exercise, and you can do this by eating a meal between one and 4 hours beforehand.

This allows enough time for the meal to be digested. Ideally, you should eat a small amount of food that is low in fibre for easy digestion.

FOOD AND FLUID DURING EXERCISE

Fluid loss can impair performance and can affect your body’s ability to control its own temperature. If you are exercising for less than 60 minutes, you should drink approximately 200 mL of fluid every 15-20 minutes.

Water is appropriate in this situation. In longer duration activities where there is a risk of glycogen depletion, such as more than 60 minutes of vigorous

exercise, a sports drink containing glucose and electrolytes can be most effective. And for activities lasting several hours, sports drinks can be supplemented with energy bars.

POST-EXERCISE FOOD AND FLUID

After exercise it is important to restore your body's fuel and fluid stores to normal levels. For most people this is easily achieved by following a healthy diet that includes plenty of fruit and vegetables, and plenty of non-alcoholic, non-caffeinated fluids.

Replacing fluid stores largely depends on how much fluid was lost during exercise. This can be calculated by comparing your pre- and post-exercise bodyweight. A simpler method is to check your urine.

You need to drink sufficient fluid until you are passing clear, dilute urine. The amount of fluid that you'll need to drink will depend upon how much you've sweated and the temperature of the environment. So on hot days after a vigorous bout of exercise, you may need to drink several litres.

To replenish your glycogen stores after exercising vigorously, you need to eat 1-1.5 grams of carbohydrate per kilogram of bodyweight within the first couple of hours after exercise.

Ideally, this should be in the form of high GI foods, such as sports drinks, muffins or white bread. Over the 24 hours after exercise, a total of 7 to 10 grams of carbohydrate per kilogram of bodyweight should be ingested to maximise the glycogen stores again, thereby preparing you for your next bout of exercise.

PLAN AHEAD:

Wear appropriate layers, heavy, thick and non-breathable layers reduce the ability to dissipate sweat. This includes chainmail and headwear.

Exercise at your capacity, working beyond your capacity increases your workload on your body which speeds up dehydration and exhaustion

Don't drink alcohol or caffeinated drinks prior to LARP.

Bring water, fluid replacements and snacks

Take frequent breaks, sometimes you may need to STOP, REST and RECOVER.

Note of caution

People with diabetes, metabolic disorders, those on special diets or anyone with concerns should consult their medical health professional for advice on how to modify food and fluid intake in accordance with exercise.

REFERENCES, LINKS and OTHER RESOURCES

Sports Medicine Australia. Exteme Heat Policy. https://sma.org.au/wp-content/uploads/2021/02/SMA-Extreme-Heat-Policy-2021-Final.pdf

Heat Policy in Football, NSW https://sma.org.au/wp-content/uploads/2021/02/SMA-Extreme-Heat-Policy-2021-Final.pdf

Nutrition and Hydration for exercise. https://www.mydr.com.au/sports-fitness/nutrition-and-hydration-for-exercise

The national prescriber information service and the CMI service provide free consumer information pertaining to your prescribed medicines. https://www.nps.org.au/ https://www.tga.gov.au/consumer-medicines-information-cmi

The Consumer Medicines Information (CMI) is a leaflet that contains information on the safe and effective use of a prescription or specified over-the-counter medicine .https://healthywa.wa.gov.au/Articles/F_I/Heat-stress https://www.betterhealth.vic.gov.au/health/healthyliving/heat-stress-and-heat-related-illness https://ohsonline.com/Articles/2009/06/01/Keep-An-Eye-on-Medications.aspxhttps://www.health.com/family/heat-sun-sensitivity-medication