



Heat Stress Management Plan

Date: 8 August 2023

LIVE BETTER THROUGH SPORT



Objective

- ❑ The severe hot weather plan is developed to protect the sporting fraternity from heat related injuries.
- ❑ Aims to help the sporting fraternity to better prepare, plan and respond during severe hot weather and prevent / reduce heat injuries by raising public awareness and highlighting key actions to be taken.
- ❑ This plan shall apply to all sport facilities and events / programmes / physical activities.



At Risk Groups

- ☐ Infants and young children whose body systems have not been fully developed.
- ☐ Older adults whose body systems are ageing and have decreased heart functions and body reserves.
- ☐ People with disabilities or overweight.
- ☐ People who overexert during exercise.
- ☐ Individuals with pre-existing medical conditions.
- ☐ Pregnant women.



Heat Stress Health Advisory for General Population*
Advice on activities and measures to prevent heat-related health conditions

**LOW HEAT STRESS
(WBGT<31°C)**

- CONTINUE with normal activities
- Hydrate normally
- Wear appropriate attire[%]
- Be aware of signs and symptoms[^] of heat-related illness

**MODERATE HEAT STRESS
(31≤WBGT<33°C)**

- REDUCE outdoor[#] activities
- Take regular breaks [indoors/under shade] for prolonged outdoor activity
- Drink more fluids
- Wear appropriate attire[%]
- Be aware of signs and symptoms[^] of heat-related illness

**HIGH HEAT STRESS
(WBGT≥33°C)**

- MINIMISE outdoor[#] activities, stay under shade where possible
- Take more frequent and/or longer breaks [indoor/ under shade] for prolonged outdoor activity
- Drink more fluids
- Cool yourself actively during breaks (e.g. sponging, pouring water over arms and legs)
- Wear appropriate attire[%]
- Be aware of sign and symptoms[^] of heat related illness

1) Sports facility owners, event and program organizers to review their risk assessment plan, in particular weather condition, participants' profile, intensity of activity and additional mitigating measures.

2) Prior to activity, administer the Get Active Questionnaire (GAQ) and communicate to participants on hydration regime, recognition of heat injury symptoms, proper attire, etc. Reference #1.

3) During activity, remind participants on hydration and hydration points (e.g. water coolers provided in public sports facilities).

1) Sports facility owners, event and program organizers to review their risk assessment plan, in particular weather condition, participants' profile, intensity of activity and additional mitigating measures.

2) Schedule events / activities for the cooler part of the day.

3) Consider reducing intensity and duration of activity.

4) Prior to activity, administer the Get Active Questionnaire (GAQ) and communicate to participants on hydration regime, recognition of heat injury symptoms, proper attire, etc. Reference #1.

5) Conduct safety briefing on activity day, with emphasis on heat injury prevention and measures.

6) Nominate a person to monitor weather conditions and take necessary action should there be any risk.

1) Sports facility owners, event and program organizers to review their risk assessment plan, in particular weather condition, participants' profile, intensity of activity and additional mitigating measures.

2) Cancel or postpone endurance events and competitions / stop all outdoor work activities.

3) Public communication.

4) If participants are already at venue, whilst waiting for transport, participants are advised to rest under shelter and hydrate.

5) Monitor participants for the onset of heat injury symptoms as they have been exposed to abnormally high temperatures.

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<p>LOW HEAT STRESS (WBGT<31°C)</p> <ul style="list-style-type: none"> CONTINUE with normal activities Hydrate normally Wear appropriate attire[%] Be aware of signs and symptoms[^] of heat-related illness 	<p>MODERATE HEAT STRESS (31≤WBGT<33°C)</p> <ul style="list-style-type: none"> REDUCE outdoor[#] activities Take regular breaks [indoors/under shade] for prolonged outdoor activity Drink more fluids Wear appropriate attire[%] Be aware of signs and symptoms[^] of heat-related illness 	<p>HIGH HEAT STRESS (WBGT≥33°C)</p> <ul style="list-style-type: none"> MINIMISE outdoor[#] activities, stay under shade where possible Take more frequent and/or longer breaks [indoor/ under shade] for prolonged outdoor activity Drink more fluids Cool yourself actively during breaks (e.g. sponging, pouring water over arms and legs) Wear appropriate attire[%] Be aware of sign and symptoms[^] of heat related illness
	<p>7) Constantly check on participants well-being, especially those appearing unwell advise them to rest and refrain from carrying on with activity. Remind participants on adequate hydration methods and sun protection, e.g. easy access to water / drinks points, application of sun block, etc.</p> <p>8) Where possible, identify shelters / air-conditioning facilities / shady areas, etc. for event officials, staff, volunteers, participants, etc., and ensure drinking water supplies are sufficiently replenish.</p> <p>9) Schedule frequent intervals / breaks for rest, drinks, cooling down.</p> <p>10) Provide adequate medical coverage at events including ice and cooling measures for heat injury management and medical plan for evacuation to nearest hospital.</p>	
<p>Avoid exercising or engaging in physical activities under direct sun, during the hottest part of the day, typically between 11am to 3pm.</p>		

Reference #1: Heat Disorders Prevention Guide (2013); UV Protection Guide Book: SEAG (2015); Heat Disorders Prevention & UV Protection Guide (2016); Sports Safety Committee Report March 2019 (Chapter 7:Heat Injuries in Sports); SS681:2022 Code of Practice for Sport Safety (Clause 9:Heat Injuries)

*This does not apply to people who have recently recovered from illness or have intercurrent illness, who should rest and avoid strenuous outdoor activities. Recent travelers from cooler climates also exercise greater precaution

[#]Outdoor activities refer to activities under direct sun exposure

[%]Lightweight, loose-fitting, heat permeable and light-colored clothing with absorbent material to keep cool and minimize barriers to evaporation.

[^]Examples of signs and symptoms of heat-related illness include headache, nausea, dizziness, irritability, confusion or altered mental state, thirst, heavy sweating.

The three levels of heat stress convey the corresponding risk of the general population experiencing heat-related illnesses (e.g. heat exhaustion, cramp, stroke) during prolonged outdoor activities.

Groups more vulnerable to heat stress should exercise greater caution, including the elderly, children and infants, people who are ill or recently recovered, or have chronic conditions, pregnant women, and recent travellers from cooler climates.

Groups such as athletes (SportSG), outdoor workers (MOM), uniformed personnel (SAF, Home Team) should refer to their respective sectoral guidelines that are tailored to their requirements. Students should follow their school's instructions.

Symptoms of Heat Injury

- ❑ Early recognition of symptoms of exertional heat stroke and rapid first responder intervention can reduce morbidity and mortality.
- ❑ Symptoms of heat injury include, but not limited to:
 - Inability to continue physical activity due to extreme fatigue.
 - Hot and flushing (redness) of skin.
 - Severe muscle cramps.
 - Nausea and / or vomiting.
 - Headache, giddiness, and / or fainting spells during sudden change in position.
 - Change in mental status – confusion, agitation, disorientation, seizures or loss of consciousness.
 - A comatose, non-arousable state.



Preventive Measures: Risk Assessment

- ❑ A risk assessment shall be conducted to eliminate or reduce risks to as low as reasonably practicable for any physical activities.
- ❑ Below are some non-exhaustive factors to consider:

Personal Risk	Environmental Risk	Types of Exercise
<ul style="list-style-type: none">▪ Persons who are unwell and / or on medication.▪ Persons with existing medical conditions.▪ Persons who have just recovered from an illness.▪ Persons fitness level.▪ Inexperience persons.▪ Acclimatisation to hotter environment.▪ Alcohol consumption.▪ Insufficient rest.▪ Inadequate nutrition.▪ Dehydration.▪ Previous heat injury episodes.	<ul style="list-style-type: none">▪ Temperature.▪ Humidity.▪ Level of ventilation / air movement.▪ Direct heat source.	<ul style="list-style-type: none">▪ Levels of intensity and duration.▪ Persons attire.

References on risk management:

<https://safe.menlosecurity.com/https://www.sportsingapore.gov.sg/sports-education/sports-safety/safety-resources-useful-links/>

<https://safe.menlosecurity.com/https://www.udemy.com/course/sports-safety-risk-management/>

Other Preventive Measures

- ☐ Wear appropriate clothing.
- ☐ Schedule outdoor activities carefully.
- ☐ Pace oneself.
- ☐ Apply sunscreen.
- ☐ Take a cool shower or bath or move to an air-conditioned place to cool off.
- ☐ Avoid hot and heavy meals.
- ☐ Stay hydrated. Replace salt and minerals.
- ☐ Stay informed on heat alerts and safety tips.
- ☐ Adopt a buddy system when exercising.
- ☐ Monitor closely adults at risk, infants and young children for heat exhaustion or heat stroke.

Checklist of Intrinsic Risk Factors for Exertional Heat Stroke

Are you at risk for Exertional Heat Stroke (EHS)?	
1. Are you physically ready for training and competition?	Athletes need to match their exercise intensity with their fitness level. Novice athletes with poor physical fitness tend to outpace themselves during competition. An overload in exercise intensity is a key factor contributing to EHS.
2. Have you acclimatised to the climate?	In Singapore's context, it is important for visiting athletes to have adequate acclimatisation to the heat and local climate.
3. Have you been ill recently?	Heat stroke risk can be increased by disturbances to the immune system e.g. from a recent bout of illness or sub-clinical infection.
4. Are you taking any medications?	Athletes on medication for chronic medical conditions need to consult their prescribing physician on the risks of undertaking strenuous physical activity. Stimulants, antihistamines, diuretics and other common medications can impair the body's ability to mount an effective thermoregulatory response during exercise in the heat. Athletes taking medication for recent illness should be advised against participation in view of the dual risks medication and recent illness pose.
5. Do you tend to push your body hard?	An athlete's high level of motivation is one of the most consistent hallmarks of exertional heat stroke. Signals which urge the body to slow down are blocked out when athletes knowingly pushing the limits to reach the highest levels of performance.
6. Are you at risk for heat injury?	<p><u>High Body Mass:</u> High body-mass athletes expend metabolic energy at higher absolute rates than their lean counterparts, placing high body-mass athletes at higher risk of heat injury.</p> <p><u>Children and Youth:</u> It is well established that classical heat stroke typically affects the very young and the very old. Children and youth may be unable to assess and mitigate risks of training and competing in the heat.</p>

Source: Extracted from the Sport Safety Committee Report 2019

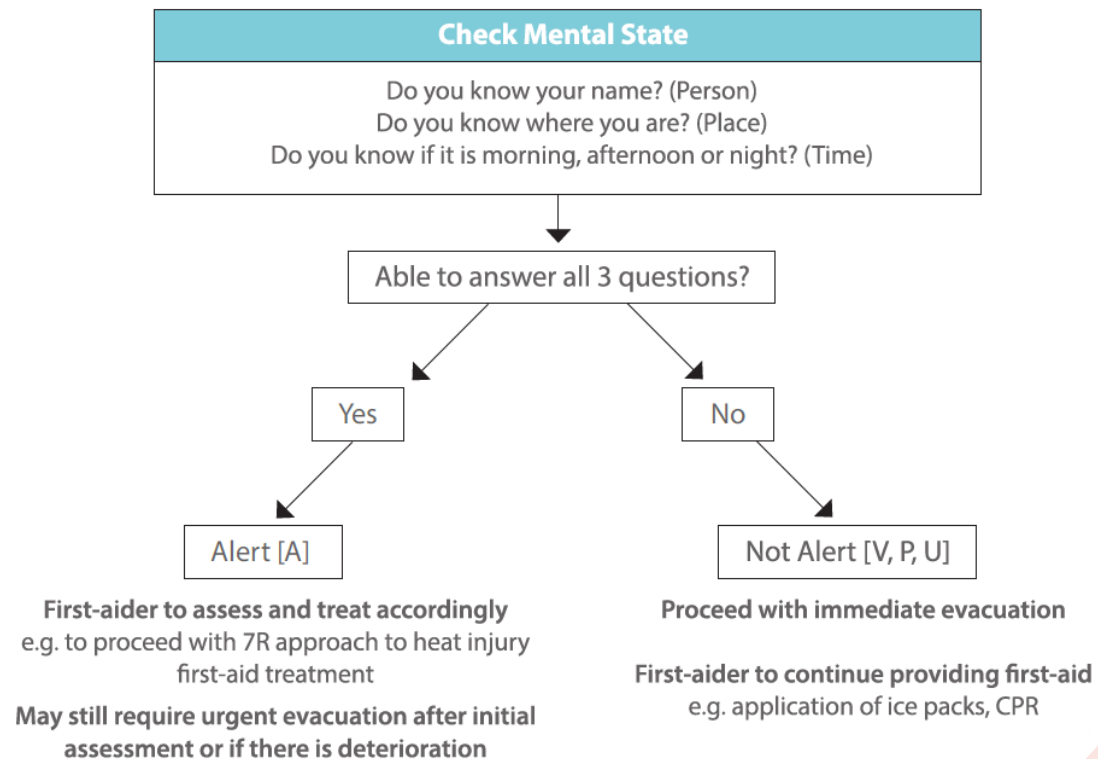
Work / Physical Activity Proposed Guidelines

Heat Stress Level	WBGT	Work / Physical Activities: Rest Ratio
Low	$<31^{\circ}\text{C}$	45-60 mins: 15 mins
Moderate	$31 \leq \text{WBGT} < 33^{\circ}\text{C}$	30 mins : 15 mins
High	$\geq 33^{\circ}\text{C}$	15-30 mins: 30 mins

First Aid Treatment: To Determine Victim's Level of Consciousness

Alert (A)	Victim is fully awake with spontaneous eyes opening. Appears aware of and responsive to the environment. Follows commands, eyes track people and objects.
Verbal response (V)	Eyes do not open spontaneously but victim responds appropriately when spoken to e.g. limbs/eyes movement, grunt or moan.
Response to Pain (P)	Victim does not respond to verbal stimuli but moves or groans in response to painful stimuli e.g. pinching skin, ear lobe or nail bed.
Unresponsive (U)	Victim does not respond to any stimuli.

First Aid Treatment: Proposed Emergency Response



On-Site First Aid Treatment

Recognise symptoms	Recognise symptoms of heat stress and report early.
Rest Victim	Get victim to sit or lie down in a cool shaded area with good ventilation.
Remove clothing	Loosen or remove excess clothing appropriate (while preserving the modesty).
Reduce temperature	Reduce body temperature as fast as possible by applying ice packs, wet towels, or cool water. Other measures include fanning the victim to promote evaporative cooling, use of cooling blankets and using cold water immersion.
Rehydrate	Rehydrate by providing fluids if victim is conscious.
Resuscitate	If the victim is unconscious, call for help immediately and commence resuscitation.
Rush to hospital	Call for an ambulance and convey victim to hospital.

Thank You

