Medical and Sport Science Guidance on Training and Playing in Heat

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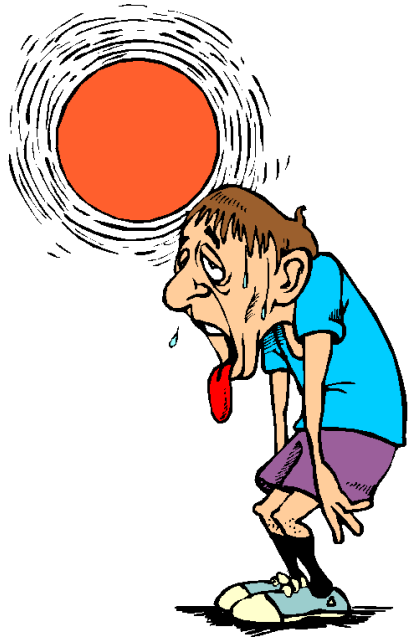
The safety and wellbeing of players and officials is the upmost priority.
This guidance has been created by the Head of Medical for England Touch Association and is based on the best available evidence and advice from World Rugby, American College of Sports medicine, Sports Medicine Australia, Tokyo 2020 Organising Committee and the IOC consensus

Heat-related Illness (Hyperthermia)

Heat related illness is a medical condition occurring as a result of prolonged heat exposure and heat production by the body during exercise, resulting in a rise in core temperature.



HEAT RELATED ILLNESS

Core body temperature is maintained between 36.1° to 37.8°C. Extreme weather conditions, especially heat, can trigger physiological responses that can impact health and performance of athletes.

In extreme heat, athletes and officials are at risk of suffering from heat related disorders such as;

Heat Cramps

Heat Exhaustion

Heat Stroke

To prevent or mitigate these risks, guidelines to continuing or ceasing play are necessary.

HEAT RELATED DISORDERS

Heat cramps - mildest form of heat injury and consist of painful muscle cramps or spasms that occur during or after intense exercise and sweating in high heat.

Heat exhaustion is more severe than heat cramps and is caused by loss of water and salt during excessive sweating. This occurs when the body is unable to sufficiently cool itself, during activity in extreme heat. This can progress to heat stroke if left untreated.

Heat stroke the most severe form of heat illness. This is a potentially fatal condition and must be treated immediately

SIZZLING SUMMER SPORTS

Relative Humidity Over

60%

Reduces the Ability to Cool by Sweating

Exercise Produces

15-20X

More Heat than the Body at Rest

Heat Illness Risk Increases After

3%

of Body Weight from Fluid Loss

Source: National Federation of State High School Associations Sports Medicine Handbook

CLIMATE CENTRAL

Heat Related Illness

- Exercising in heat, places unusual demands on the body
- Heat production during exercise is 15-20x greater than at rest – sufficient to raise core temperature 1° C every 5mins without thermoregulatory adjustments
- Cooling mechanisms include:
  - Conduction (ice packs, cool water)
  - Convection (wind, movement)
  - Evaporation (dissipation of sweat)
  - Radiation (shade)

Increase in ambient temperature (>20°C) relies more on evaporation of sweat

Risk Factors

- < 4years of age, > 65 years of age
- Obesity
- Lack of fitness
- Dehydration
- Lack of acclimatisation
- Prior history of heat illness
- Sleep deprivation
- Medication (antihistamines, antidepressants, antihypertensive, diuretics)
- Stimulants
- Alcohol consumption
- Upper respiratory illness, acute gastroenteritis within 1 week of exercise

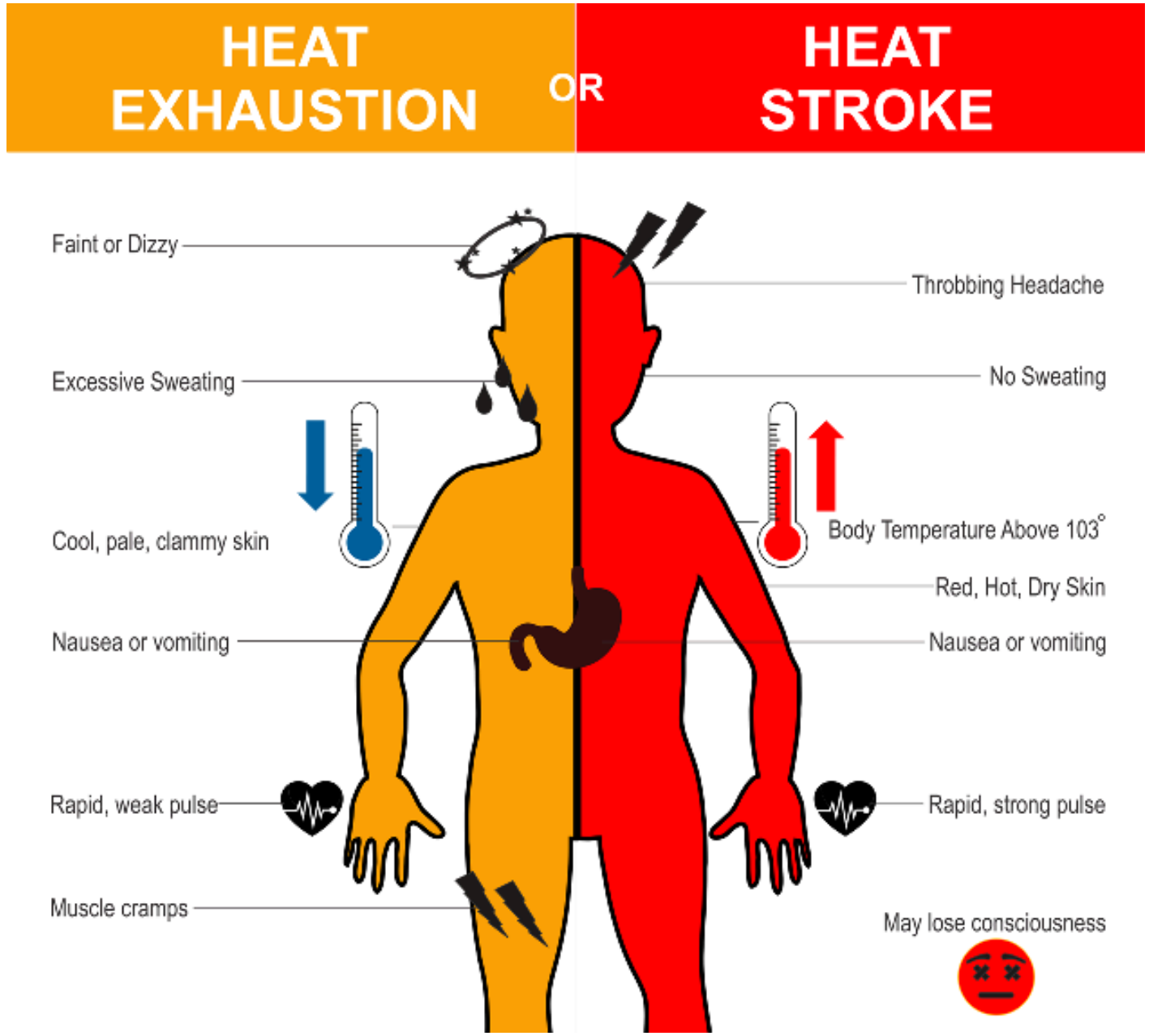
Extrinsic Risk Factors

- Vigorous activity in hot-humid environment
- High temperature/humidity/sun exposure
- Heavy clothing, helmets
- **INADEQUATE REST BREAKS**
- INAPPROPRIATE WORK/REST RATIOS BASED ON EXERCISE INTENSITY, clothing fitness heat, acclimatisation
- Lack of education or awareness among coaches, athletes
- NO ACCESS TO SHADE
- Delay in recognition of early signs of heat illness

Types of heat related illness

A collection of illnesses that range from benign to potentially fatal

- Heat rash
- Heat syncope (fainting)
- Heat cramps
- Heat exhaustion
- Heat stroke


HEAT EXHAUSTION
OR
HEAT STROKE
Faint or Dizzy
Excessive Sweating
Cool, pale, clammy skin
Nausea or vomiting
Rapid, weak pulse
Muscle cramps
Throbbing Headache
No Sweating
Body Temperature Above 103°
Red, Hot, Dry Skin
Nausea or vomiting
Rapid, strong pulse
May lose consciousness

GUIDANCE

It is recommended by the ACSM that the Wet Bulb Globe Temperature (WBGT) should measure the conditions on the day of play. Whilst other governing bodies consider heat index however, this is calculated for shady areas.
The WGBT is the composite temperature considering several parameters:

- Air temperature
- Humidity
- Sun exposure
- Wind speed

	WBGT	HEAT INDEX
Measured in the sun	✓	✗
Measured in the shade	✗	✓
Uses temperature	✓	✓
Uses relative humidity	✓	✓
Uses wind	✓	✗
Uses cloud cover	✓	✗
Uses sun angle	✓	✗

W-b-temp

RISK	WBGT	RECOMMENDATION
LOW	<18°	Risk still exists but is low – regular hydration should be encouraged
MODERATE	18°-24°	Active cooling strategies, seek shade
HIGH	24°-28°	Forced breaks and game modification, continue with cooling strategies
EXTREME	>28°	Cancellation/Cease play

WHEN TO TAKE ACTION

LOW RISK WBGT <18°

Maintaining hydration and ensuring regular fluid intake is necessary.

Recommendations for fluid (water per day) suggest:
Body weight (kg) x 0.033 = Water (litres). The chart below is a good indicator of hydration levels.

With increased physical activity and exertion there is inevitably fluid loss.

Athletes and officials should consistently ensure they replace fluid lost in games.

MODERATE RISK WBGT 18°-24°

Enabling athletes and officials the ability to find shade and have active cooling strategies is necessary.

Drinking cold fluids/slushies before activity – more effective than during
Provision of ice to keep drinks cold, players and officials to wet their hats Use of ice towels
Spray bottles for wetting face

Individual tolerance to head varies widely and discomfort is a personal indication. Some individuals are at higher risk than others and provision for them to take breaks or modify activity may be needed.

- Body size
- Unconditioned individuals – poor fitness
- Previous heat related illness
- Medical conditions

HIGH RISK WBGT 24°-28°

Game modification should allow for sufficient breaks to ensure athletes and officials can seeks shade/continue with cooling strategies.

- Extend scheduled rest breaks – even 5 minutes rest can cause a reduction in core temperature
- Provide breaks in play more often (10min quarters)
- Portable sun-shade should be provided to allow shade
- Individuals at risk should not play or officiate

Prevention – Heat Related Illness

- Take regular breaks (ensure the break is for at least 10-15 mins) – in shade (every hour)
- Hydration – athletes should monitor their thirst, but also urine colour – see next slide
- Apply sunscreen every 2 hours
- Using wet towels – drinking cool/slushy drinks
- Shower and apply clean dry clothes (maybe after lunch)

Transparent

You're overhydrated.
Hold off on the water for a bit.

Lemonade

This is optimal hydration.
Keep doin' what you're doin'.

Light Beer

You're still hydrated and doin' great.

Amber

No need to fret, but time to drink some water.
You could be mildly dehydrated.

Burnt Orange

You're definitely dehydrated.
Drink lots of water and electrolytes.

Packing list

- Refillable water bottles – insulated to keep drinks cold
- Electrolyte tablets
- Towels – to dry sweat and to dampen
- Gazebo
- Cooler – ice box - esky

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