

***SOUTH AFRICAN  
WRESTLING FEDERATION  
HSS COUNCIL***

# Exertional Heat Illness

Dr Wilhelm von Ludwig

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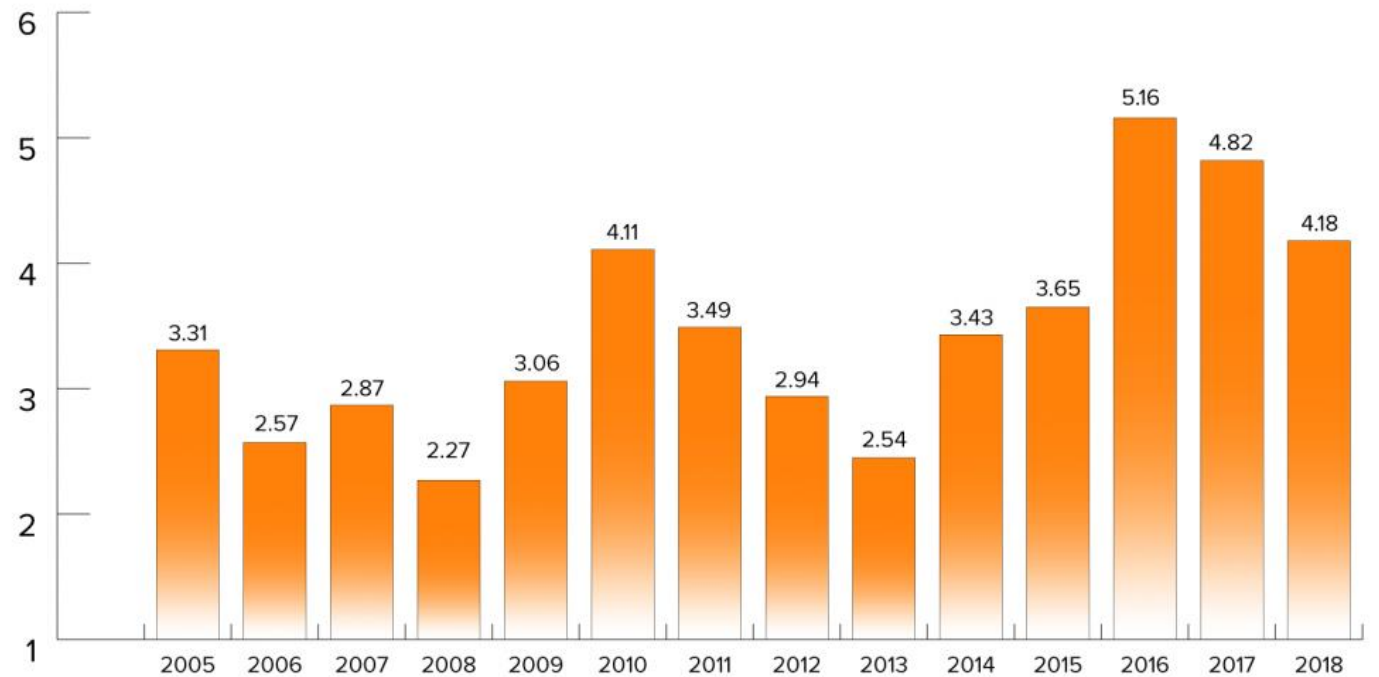
# Reason for concern...

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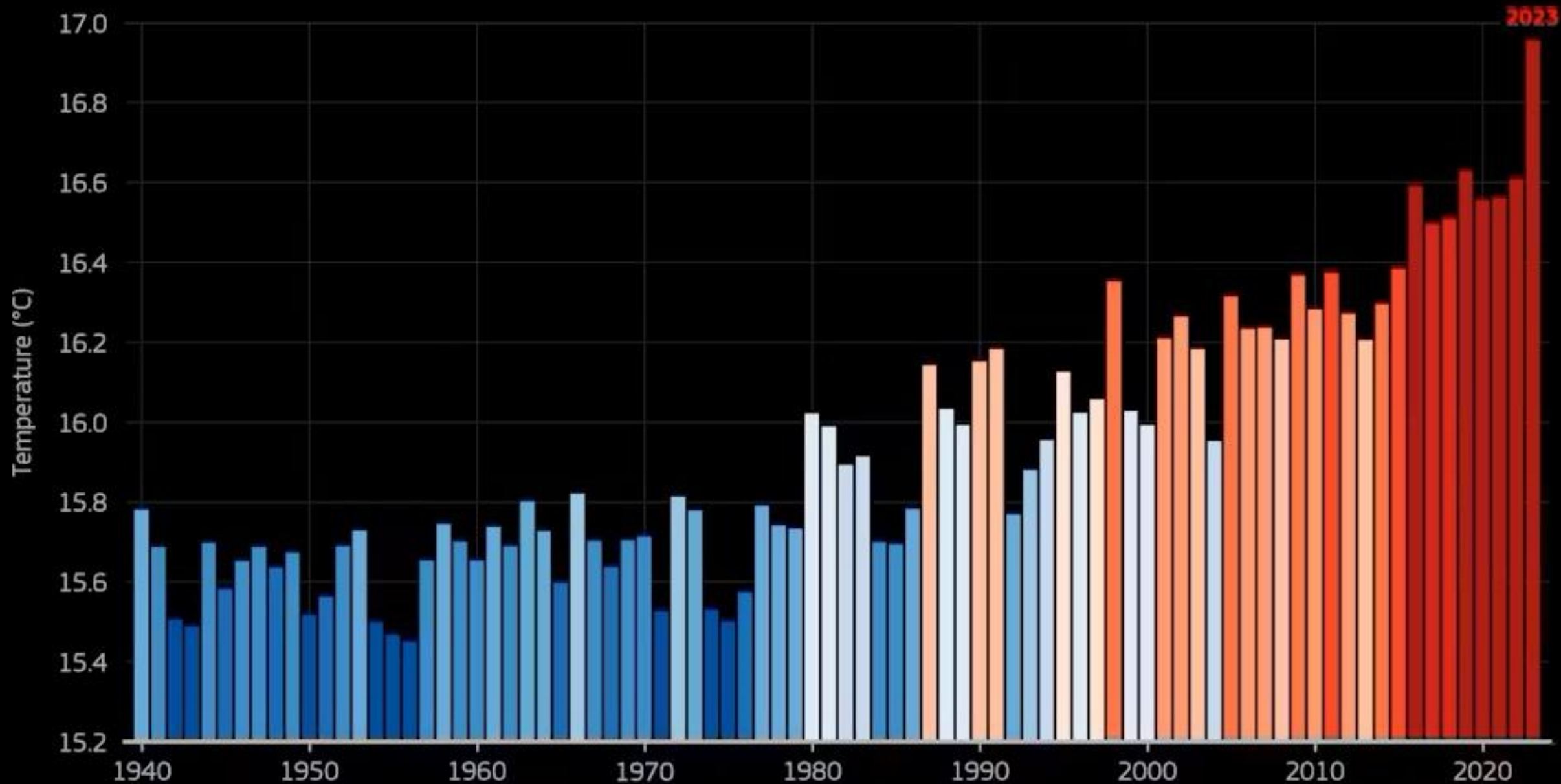
- One of the leading causes of young athlete death
- The most common non-trauma cause<sup>1</sup>
- Practice and competition
- Increasing incidence<sup>2</sup>

## Heat-Related Hospitalizations in Florida

Rate of hospitalizations per 100,000 in Florida's most populous counties, covering about 70% of the population.



Source: Florida Department of Health



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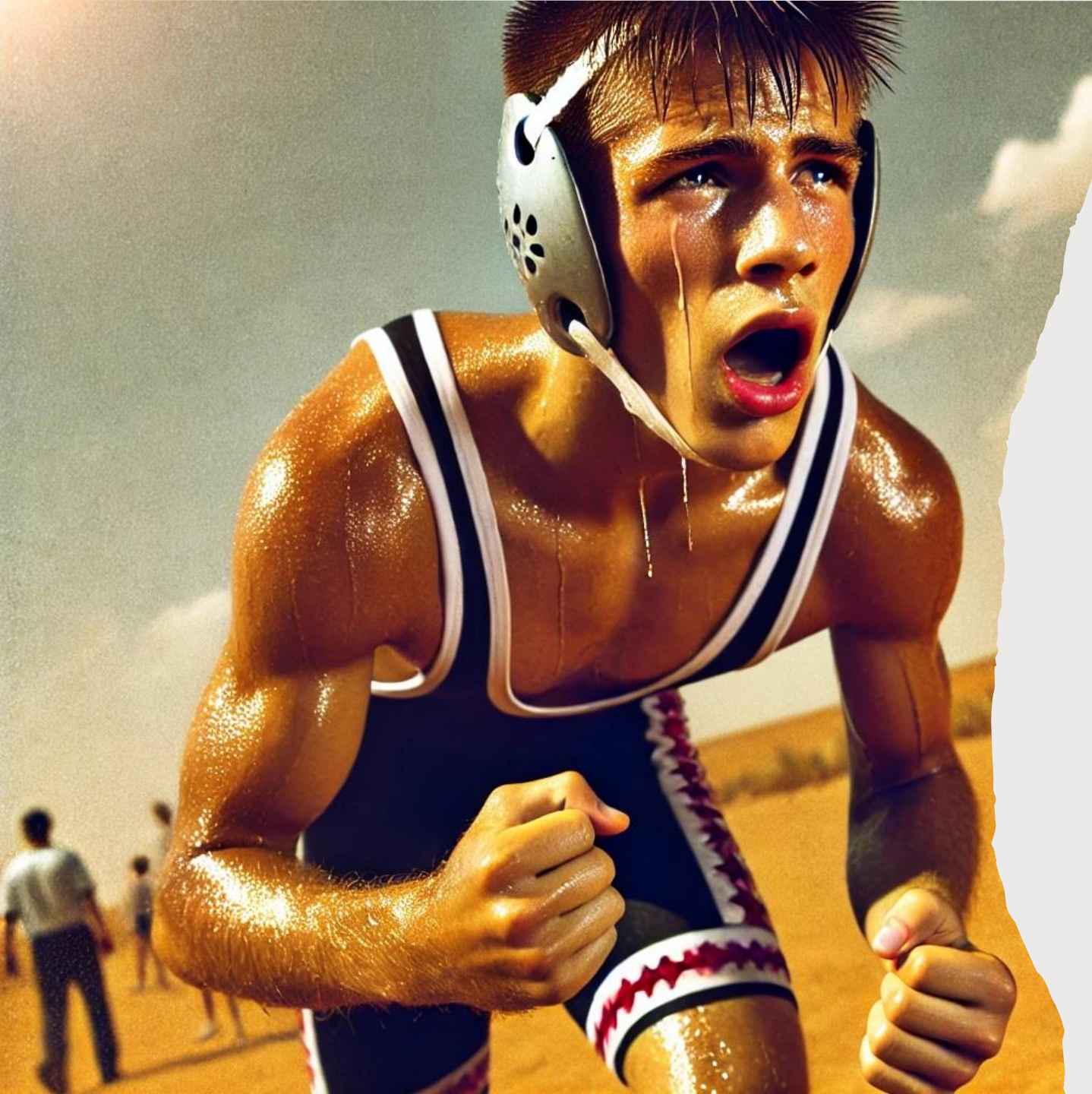




# Risk factors

- External load – clothing/equipment
- Poor physical fitness
- Dehydration
- Acute illness
- High motivation
- Lack of acclimatisation
- Obesity
- High humidity / ambient temp





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# Medication that increases risk

All typical or atypical antipsychotics

All tricyclic antidepressants

Atropine

Benztropine

Cyclobenzaprine

Diphenhydramine

Hydrochlorothiazide

Furosemide

Metaclopramide

Methylphenidate

Oxybutynin

Prochlorperazine

Promethazine

Scopolamine

Spirolactone

Stimulants (amphetamine, amphetamine derivatives, cocaine)



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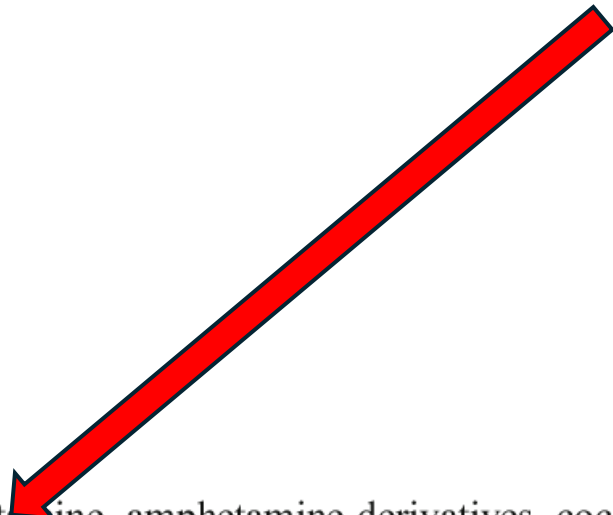
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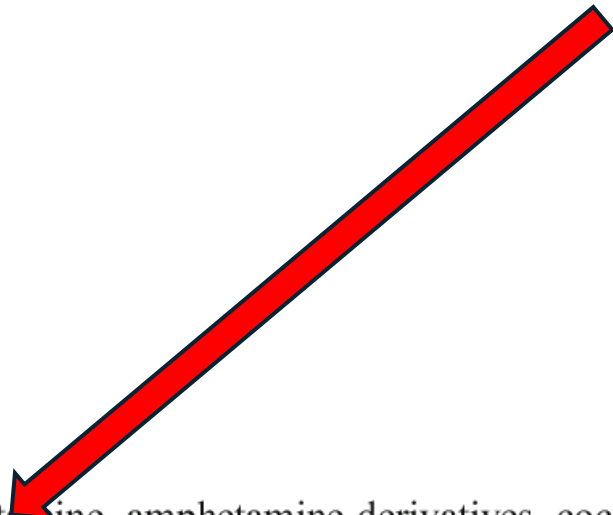
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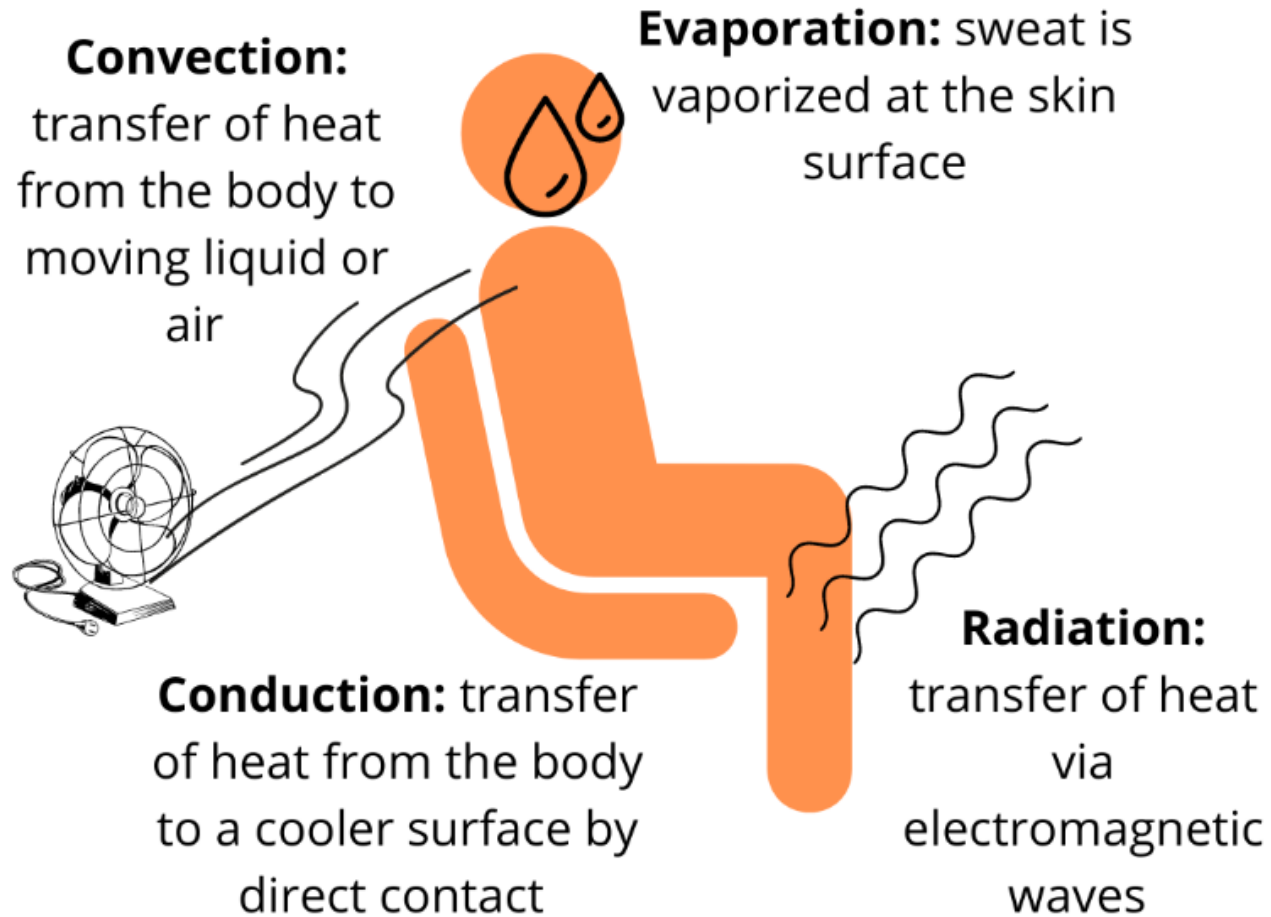
Scopolamine

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# Methods of Heat Loss





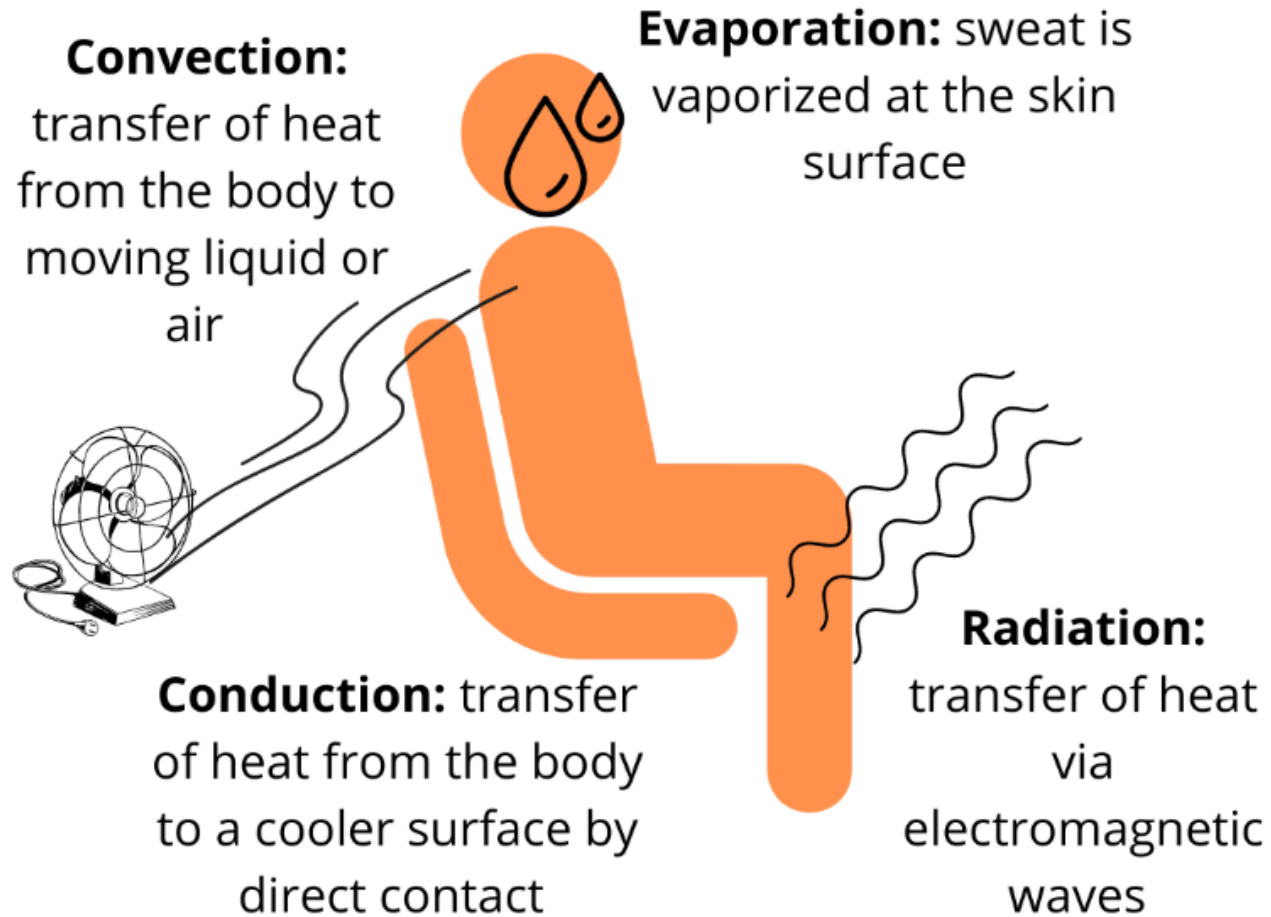
# CONDUCTION (COLD SURFACE)

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- Ice bath
- Cold shower



# Methods of Heat Loss



# CONVECTION (AIRFLOW)

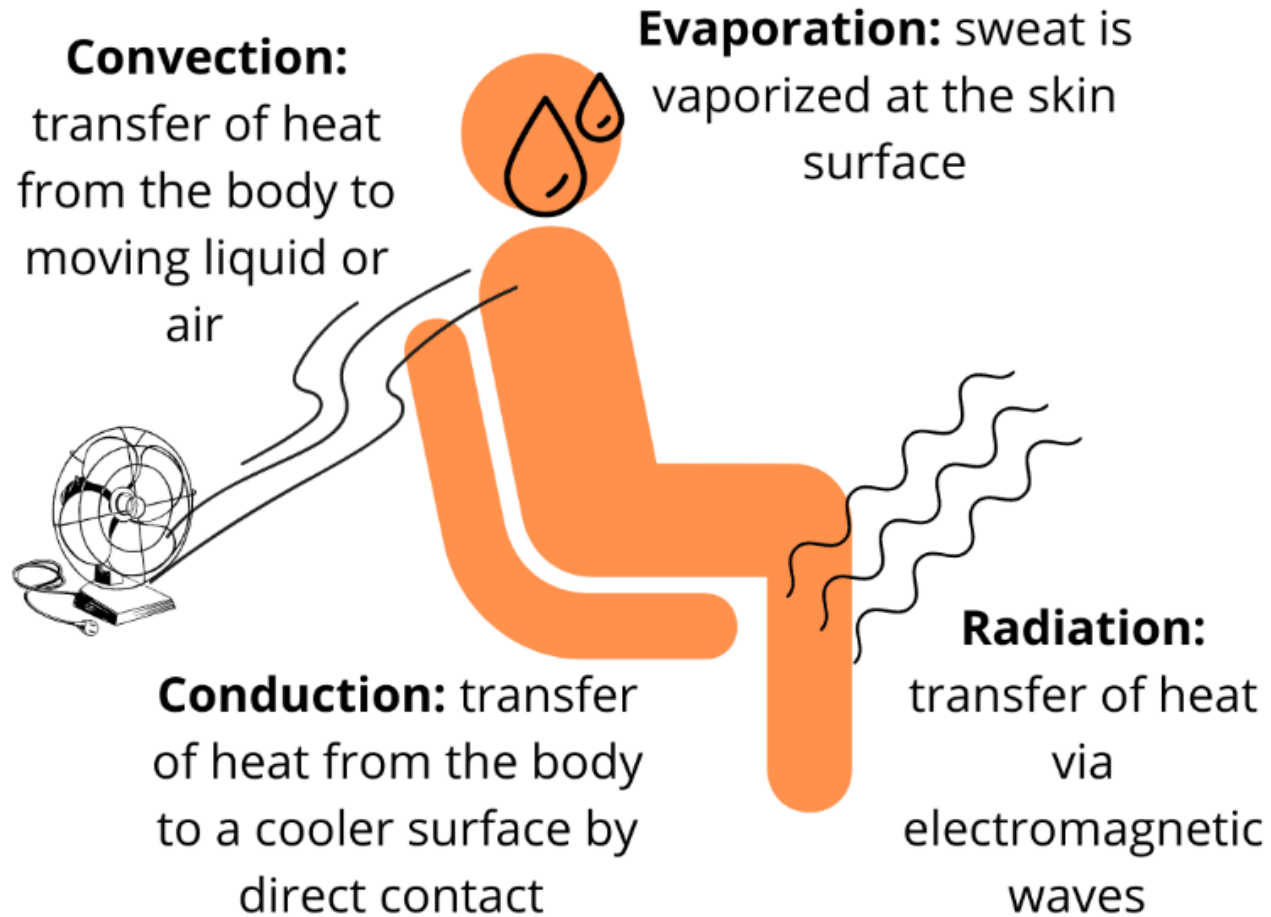
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- Closed windows
- Small spaces – like a car
- No fans / airconditioning





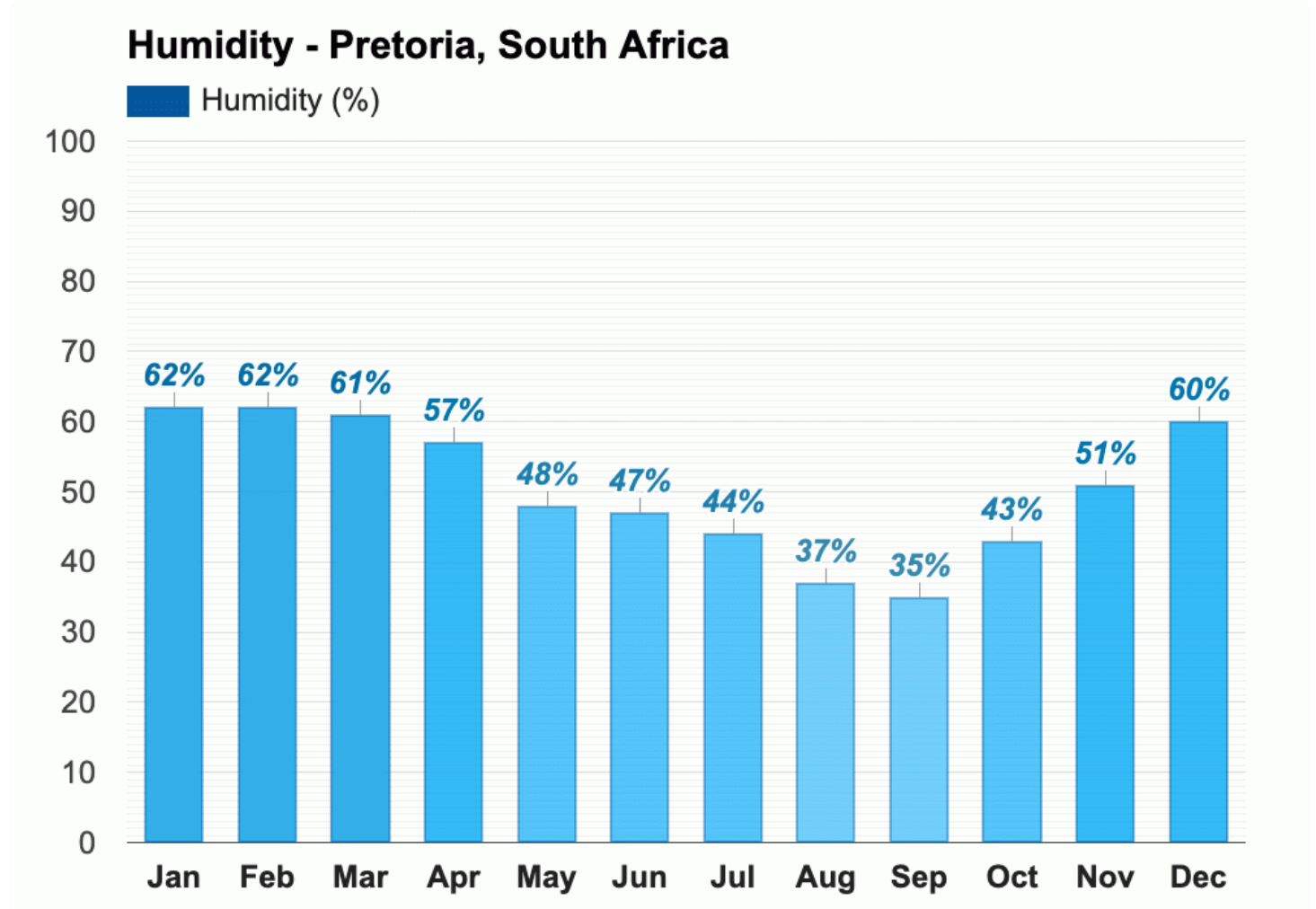
# Methods of Heat Loss



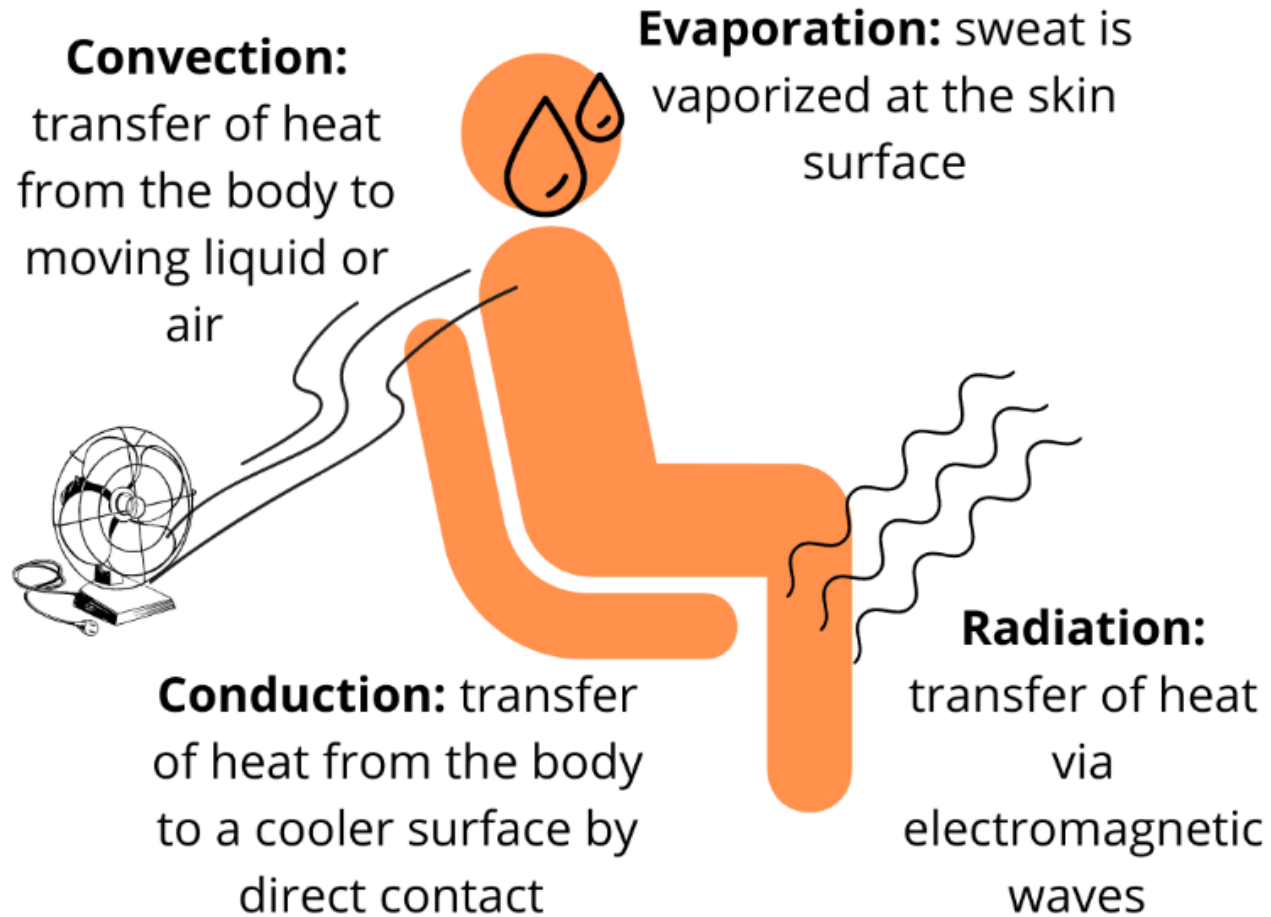
# EVAPORATION (SWEATING)

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- Dehydration
- Humidity >75%
- Fever



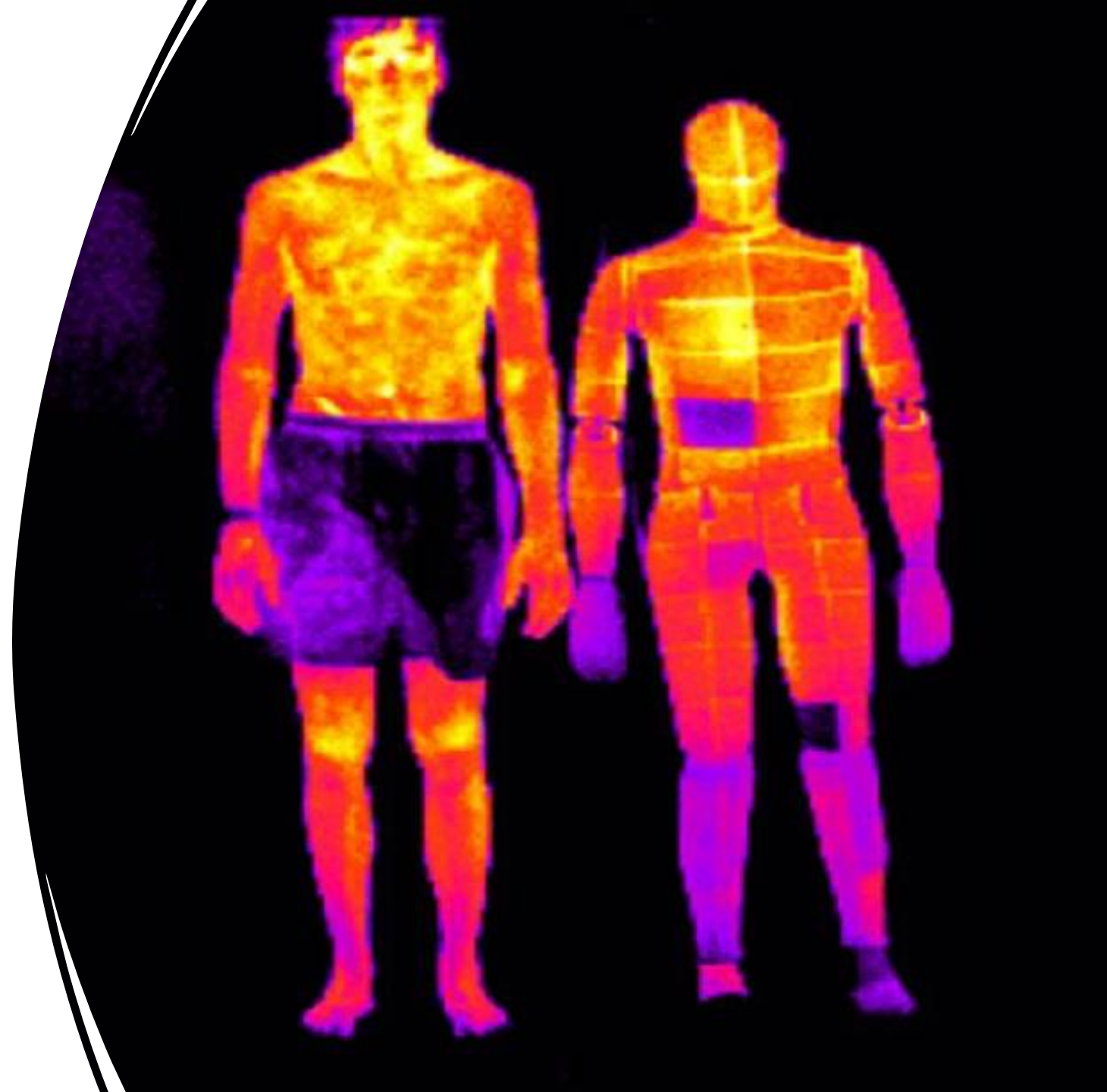
# Methods of Heat Loss





# RADIATION

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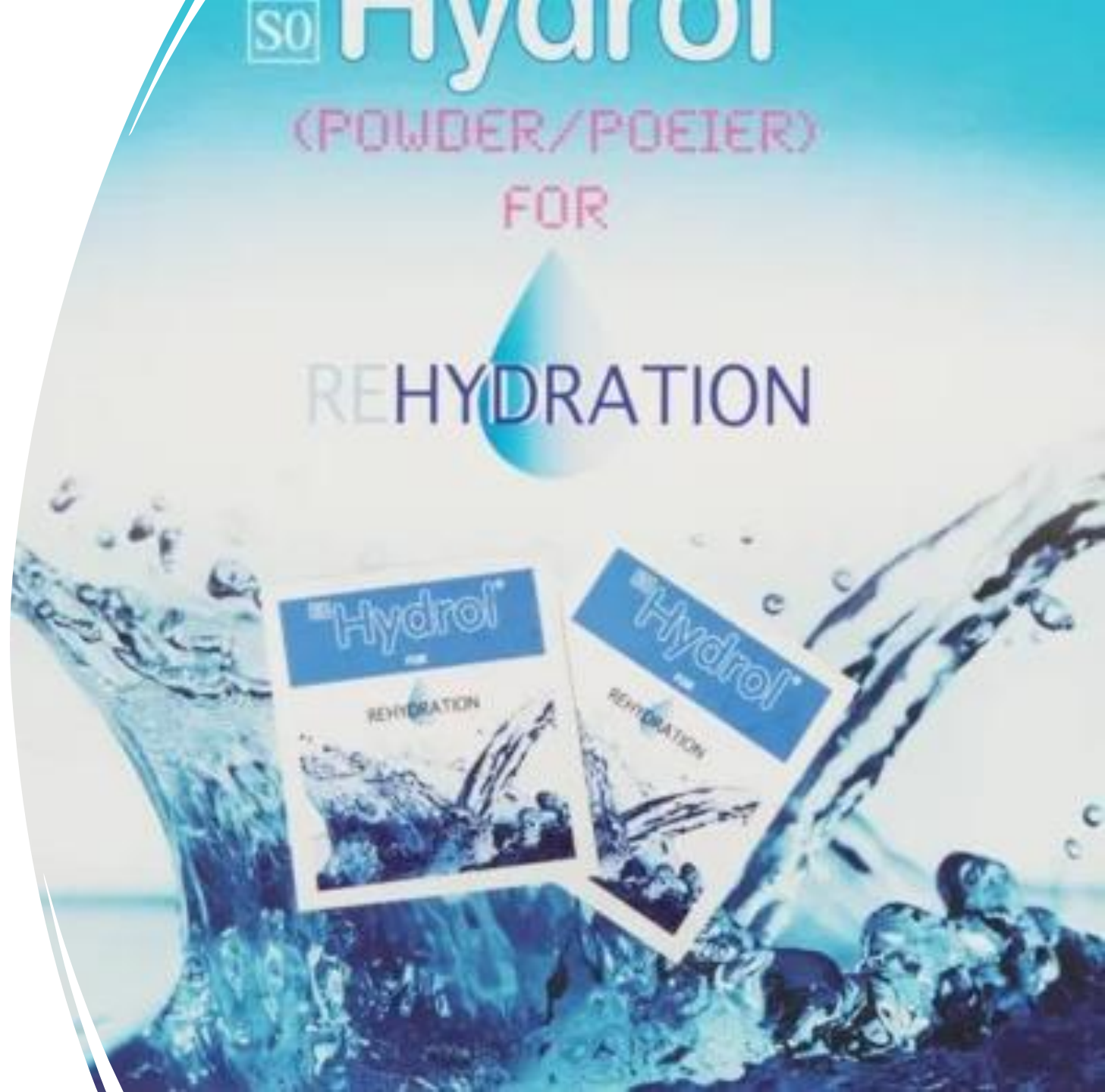
# TYPES OF INJURIES

- Heat Cramps
- Heat Syncope
- Heat Exhaustion
- Heat Injury
- Exertional Heat Stroke

# HEAT CRAMPS

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- Any cramps
- Any temperature
- Prevention
  - ½ Teaspoon of salt
  - 6 Teaspoons of sugar
  - 1L of water





# HEAT COLLAPSE

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- Any temperature
- Collapse after the match
- Collapse after sitting

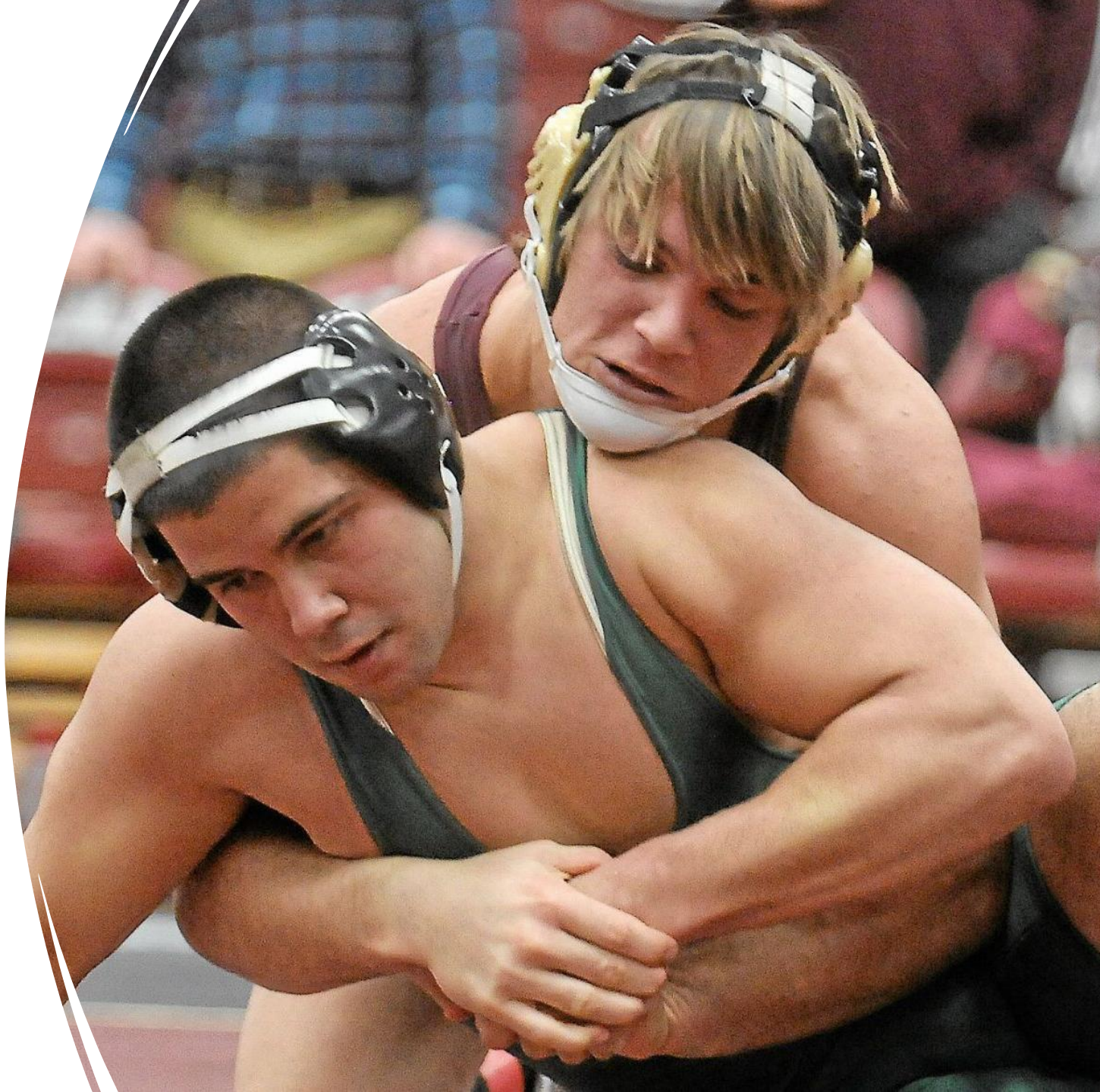




# HEAT EXHAUSTION

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- Obvious difficulty to continue
- Core body temp 38.3-40 degrees celcius
- No dysfunction of central nervous system (seizure, conciousness, delirium)





# HEAT INJURY

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- Like heat exhaustion
- Core temperature above 40 degrees
- Organ damage (muscles, kidneys, liver)
- No neurological involvement



# EXERTIONAL HEAT STROKE

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- **EMERGENCY!**
- Core temperature above 40 degrees
- Neurological dysfunction (disorientation, headache, irrational, irritable, emotional labile, confusion)
- Needs admission

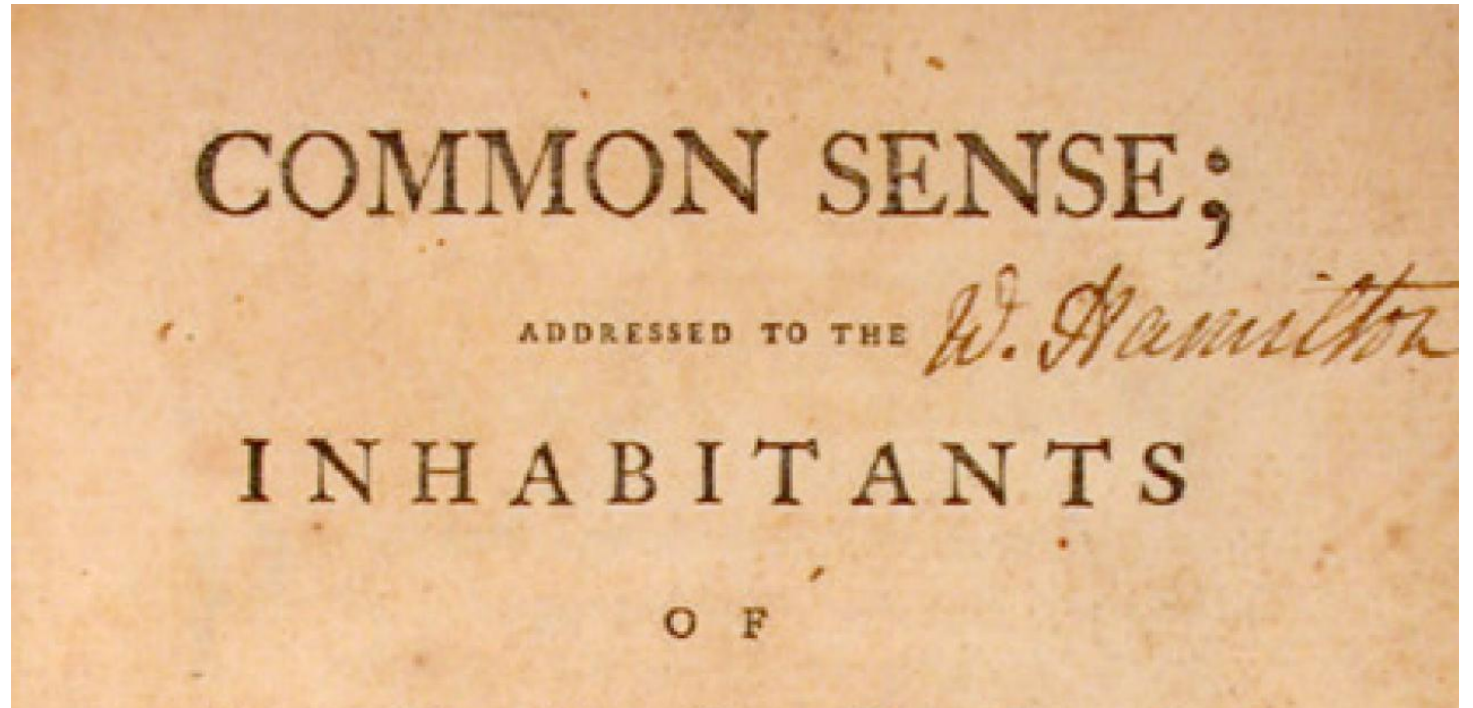




# TREATMENT

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- EMERGENCY SERVICES
- COOLING
  - Hydration (with electrolytes)
  - Airflow (fans / airconditioning)
  - Showers
  - Ice bath





# QUESTIONS?



# References

1. Maron BJ, Doerer JJ, Haas TS, Tierney DM, Mueller FO. Sudden deaths in young competitive athletes: analysis of 1866 deaths in the United States, 1980–2006. *Circulation*. 2009;119(8):1085-1092. doi:10.1161/CIRCULATIONAHA.108.804617
2. Centers for Disease Control and Prevention. Heat Illness Among High School Athletes — United States, 2005–2009. *MMWR Morb Mortal Wkly Rep*. 2010;59(32):1009-1013.
3. Casa, D. J., DeMartini, J. K., & Bergeron, M. F. (2024). Exertional heat illness in adolescents and adults: Epidemiology, thermoregulation, risk factors, and diagnosis. *UpToDate*. Retrieved January 20, 2025, from <https://www.uptodate.com/contents/exertional-heat-illness-in-adolescents-and-adults-epidemiology-thermoregulation-risk-factors-and-diagnosis>