Chilling the Game: Mastering cooling strategies for wheelchair rugby

A player's classification, impairment type and physical attributes all contribute to the predisposition of heightened thermal strain in wheelchair rugby. These following cooling methods are available alongside optimal timings.

BEFORE ARRIVING

- Wear an ice vest to offset core temperature in hot and humid conditions such as during transport to the competition venue.
- Improve thermal perceptions using head/neck cooling.
- Consume ice slurry relative to body mass to offset core temperature and reduce forehead skin temperature related to improved thermal perceptions. ★

WARM UP

- Apply water spray covering all exposed skin in combination with fans in periods of inactivity.
- Ice vests can be worn for those who may require additional cooling. However, local cooling of muscles may negate benefits of warm-up. Ice vests may also increase discomfort ahead of a game.

Application timings must be considered in association with substitutions, breaks in play, and re-warmup to avoid detriments in performance and gastrointestinal issues.

COOL DOWN

- Apply water spray covering all exposed skin in combination with fans in inactive periods or whilst stretching.
- Application of ice vest to help reduce core temperature. This may be applied earlier as soon as coach signals the player will not return to the court.

ON ARRIVAL

Application during game brief, kit change and general preperation:

- Once changed, wear an ice vest to offset core temperature prior to the warm-up.
- Consume ice slurry relative to body mass to offset core temperature and reduce forehead skin temperature. ★

Pre-cooling during travel to the venue and preparation for play may be essential to offset critical core temperature and early onset fatigue, particularly in hot and humid conditions. See below for ice slurry conversion.

BREAK BETWEEN QUARTERS

- Apply water spray covering all of exposed skin in combination with fans in periods of inactivity.
- Head/neck cooling whilst inactive to improve thermal perception.
- Consumption of cold fluid/ ice slurry. ★

When core temperature is elevated, head/neck cooling and water spray may cause a dissociation between thermal perceptions and core temperature, meaning you may feel cooler than you are.

RECOVERY

1. During the post game recovery period, the aforementioned cooling strategies may be useful to reduce core temperature back to basal levels which has many advantages.
2. Cold water immersion is the most powerful cooling method to rapidly reduce core temperature, whilst also potentially increasing muscle recovery. ★

Hand cooling may be the best alternative to an ice vest if travelling and activation (freezing) of the vest becomes problematic.

Ice slurry Conversion Table
(these should be split into two drinks)

Body mass (kg)	Ice slurry (ml)
40	272
50	340
60	408
70	483
80	544
90	612

This visual aid provides details of pre-, per-, and post-cooling strategies that may be optimal for a wheelchair rugby game. Identify and be consistent with what works best for you, taking note of the additional strategies available should you need them. Prepared by Dr Tom O'Brien & Prof Vicky Goosey-Tolfrey.

NOTE:

All cooling strategies should be trialled before competition. Particular care should be taken when consuming ice slurry/cold water, and when using cold water immersion, as these methods have the potential to increase likelihood of autonomic dysreflexia in SCI. Be sure to trial ice slurry consumption timing/volume, and cold-water exposure respectively. We also recommend to use an ice vest (e.g., arctic heat) where possible in a frozen state to avoid dripping of the water on the seat of the wheelchair. Remember to 'recharge' or remove the vest once the cooling effect has reached its limit, and perform skin checks regularly.

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