

Health & Nutrition Sciences

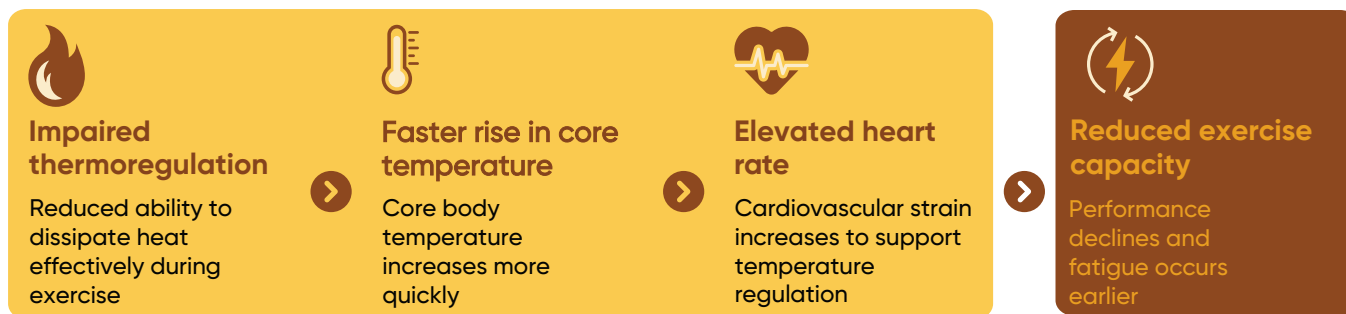
HYDRATION STRATEGIES FOR EXERCISE PERFORMANCE

Importance of hydration for exercise performance

During exercise, heat generated by working muscles increases core body temperature. Sweating acts as the primary cooling mechanism, helping dissipate heat through evaporation.¹ This results in the loss of fluid and electrolytes primarily sodium, chloride and potassium. Given the key role of hydration in supporting exercise performance, athletes and active individuals are recommended to focus on their pre, during and post exercise hydration strategies.

Hydration recommendations pre-exercise

Research indicates that athletes often start exercise in a hypo-hydrated state,^{2,3} which can contribute to a cascade of physiological responses that can compromise thermoregulation and performance.

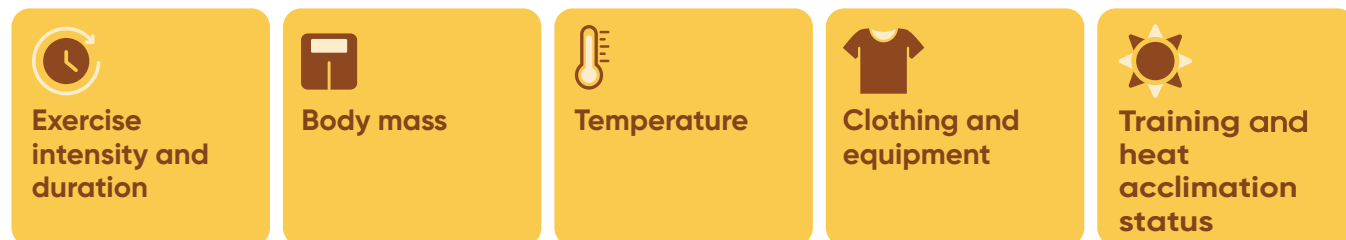


Practical guidance:

- To begin exercise in a euhydrated state, consume a fluid volume equivalent to 5–10 mL/kg body mass in the **2–4 hours pre-exercise** (≈350–800 mL)⁴
- If markers of hypohydration persist (e.g. dark, low-volume urine) consume an additional 3–5 mL/kg in the **1–2 hours pre-exercise** (≈200–300 mL)⁴

Hydration recommendations during exercise

Substantial fluid and electrolyte losses can occur particularly during endurance exercise in the heat with considerable inter-individual variability influenced by a range of exercise, environmental and individual factors.

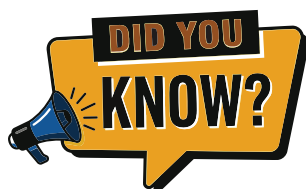


Individuals exercising intensively in the heat can experience fluid losses of **1.0–2.0L/hour**, while sodium losses can reach over **2.0–3.0 g/hour**.

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Practical guidance:

- Aim to limit body mass losses to **<2%** and maintain electrolyte balance to support performance⁶
- Hydration strategies should be **individualised**, reflecting variability in sweat rates
- Assessing sweat rate across different environments and exercise intensities can help guide appropriate fluid intake
- **Carbohydrate–electrolyte drinks** may support performance and enhance fluid absorption during exercise^{7,8}



Practical tools like the GSSI Fluid Loss Calculator can help athletes estimate their hourly sweat rate during exercise

Hydration recommendations post-exercise

Post-exercise rehydration is a key component of recovery to restore fluid balance and replace electrolyte losses that are often not fully replaced during exercise. Inadequate rehydration can impair subsequent performance, particularly when recovery time is short between sessions (<24 hours).⁹

Practical guidance:

- In most situations, fluid and sodium losses can be replaced through **normal eating and drinking**
- When rapid rehydration is the goal (e.g. multiple sessions per day or evening-to-morning training)
 - **Fluid:** ~1.25–1.5 L per kg body mass lost through sweat⁴
 - **Sodium:** Beverages containing ≥20–30 mmol/L sodium can replace losses through sweat, support fluid retention, stimulate thirst, and enhance overall rehydration⁶

References:

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