

Electrolyte Optimization Checklist

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Evidence-based guide to sodium, potassium, magnesium & electrolyte timing for performance and recovery

WHY ELECTROLYTES MATTER

Electrolytes are minerals that carry an electrical charge in solution. Sodium, potassium, magnesium, calcium, and chloride regulate fluid balance, nerve conduction, and muscle contraction. Depletion through sweat, inadequate diet, or over-hydration with plain water causes fatigue, cramps, impaired cognition, and reduced exercise capacity. A 2016 meta-analysis in Sports Medicine found sweat sodium loss ranges from 230 to 1,700 mg/hour — individual variation is enormous.

DAILY BASELINE TARGETS (SEDENTARY DAYS)

Sodium	1,500–2,300 mg	Primary osmolyte. Regulates blood volume and nerve firing.
Potassium	2,600–3,400 mg	Counterbalances sodium. Critical for cardiac rhythm and muscle function.
Magnesium	310–420 mg	Cofactor for 300+ enzymatic reactions. Often deficient in Western diets.
Calcium	1,000–1,200 mg	Bone mineral and key signaling ion for muscle contraction.
Chloride	2,300 mg	Balances sodium. Found abundantly in table salt and most whole foods.

EXERCISE DAY PROTOCOL

PRE-WORKOUT (60–90 min before)

- ☐ 250–500 mg sodium + 500 ml water if session > 60 min
- ☐ 200 mg magnesium glycinate or L-threonate if training in heat
- ☐ Small meal with potassium-rich foods (banana, sweet potato)

INTRA-WORKOUT (sessions > 60 min or high sweat rate)

- ☐ 400–700 mg sodium per hour via electrolyte drink or capsules
- ☐ 150–300 ml fluid per 15–20 min — do not over-hydrate
- ☐ Add carbohydrate if session exceeds 90 min (30–60 g/hr)

POST-WORKOUT (within 2 hrs)

- ☐ Replace ~150% of fluid lost (weigh before/after to estimate)
- ☐ 500–1,000 mg sodium in recovery meal or drink
- ☐ 400 mg magnesium before sleep on heavy training days
- ☐ Potassium-rich recovery foods: Greek yogurt, salmon, avocado

HYPONATREMIA: THE OVER-HYDRATION RISK

Drinking plain water during prolonged endurance events without sodium replacement dilutes blood sodium, causing hyponatremia — a potentially fatal condition. A NEJM study (2005) of Boston Marathon runners found 13% had hyponatremia post-race, all from excessive plain water intake. Thirst is a more reliable guide than fixed drinking schedules. Drink to thirst; salt accordingly.

TOP FOOD SOURCES BY ELECTROLYTE

Sodium	Table salt, olives, pickles, miso, cheese, canned fish
Potassium	Sweet potato, avocado, white beans, salmon, spinach, banana
Magnesium	Pumpkin seeds, dark chocolate, almonds, black beans, edamame
Calcium	Dairy, sardines with bones, tofu (calcium-set), kale, almonds
Chloride	Table salt, seaweed, tomatoes, lettuce, olives

SUPPLEMENT TIER LIST (EVIDENCE RANKING)

STRONG EVIDENCE

- ☐ Sodium — replace sweat losses during exercise. Non-negotiable for sessions > 60 min.
- ☐ Magnesium glycinate / L-threonate — most deficient mineral in Western populations.

MODERATE EVIDENCE

- ☐ Electrolyte drinks with sodium + carbohydrate — superior to plain water for endurance.
- ☐ Potassium supplementation — beneficial if dietary intake is chronically low.

LIMITED EVIDENCE

- ☐ Calcium supplementation without deficiency — conflicting data on cardiovascular outcomes.
- ☐ Chloride supplements — rarely needed; corrected by sodium intake alone.

WEEKLY TRACKING LOG

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Hydration (L)							
Sodium target met?							
Pre-workout electrolyte							
Post-workout sodium?							
Magnesium taken?							