

THE MOUNTAINEER'S GUIDE TO

DEEP SLEEP

AND HIGH-ALTITUDE
PERFORMANCE

BY KATE SIELMANN

SLEEP DEEPER, RECOVER
FASTER, AND ADAPT BETTER
TO HIGH-ALTITUDE



6—8 HOURS

BEFORE BED

AVOID CAFFEINE

Caffeine increases sleep latency (time to fall asleep) and reduces deep sleep (Wach et al., 2018).

4—6 HOURS

BEFORE BED

HYPOXIC BREATHING EXERCISES



At high-altitude, periodic breathing, also known as Cheyne-Stokes respiration, causes cycles of hyperventilation, apnoea, and sleep disruption (Nussbaumer-Ochsner et al., 2012).

HYPOXIC BREATHING EXERCISES

trains the body to better tolerate low oxygen, and as a result, stabilises breathing, reduces apnoea, and improves sleep quality (Burtscher et al., 2022).

Regular practice increases erythropoietin (EPO) production, which boosts red blood cell count and oxygen delivery—enhancing acclimatisation, recovery, and sleep at altitude (Burtscher et al., 2022).

- ✓ 30 slow breaths (inhale through nose, short hold, slow exhale).
- ✓ Every 5th breath: hold for 10–15 seconds before exhaling.
- ✓ Repeat 3–4 rounds.

2—3 HOURS

BEFORE BED



EAT A CARBOHYDRATE-RICH MEAL FOR SLEEP SUPPORT

Carbohydrates boost serotonin and melatonin for better sleep (St-Onge et al., 2016). Avoid high-fat foods that slow digestion and disrupt sleep.



1—2 HOURS

BEFORE BED

HYDRATION AND ELECTROLYTE BALANCE

Proper hydration prevents dehydration-induced sleep disturbances (Siebenmann et al., 2017). Aim to drink electrolyte-rich fluids but avoid excessive water intake.

ENVIRONMENTAL ADJUSTMENTS AND SLEEP POSITIONING

Ventilate the tent to prevent CO₂ buildup (West, 2012). Sleep with a slight head elevation (5–10 degrees) to improve oxygen flow and decrease the risk of facial oedema.

Use extra insulation (foam and inflatable mat) to prevent cold-induced sleep disruption. Reduce light exposure by using red or dim headlamps instead of bright LEDs.

15—30 MINUTES

BEFORE BED



UPON
WAKING



MORNING OXYGENATION ROUTINE

Early oxygenation helps mitigate morning hypoxia effects and reduces altitude headaches (Roach et al., 2018).

5 to 10 minutes of box breathing (4-second inhale, 4-second hold, 4-second exhale, 4-second hold).

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