was 0.966 for the 125 mg BID dose group and 1.014 for the 62.5 mg BID dose group (CI, 0.885–1.144). Side effects experienced by the 62.5 mg BID group were, curiously, slightly higher than those of 125 mg BID dose group, but these differences diminished when controlling for participant weight.

Conclusions.—A reduced dose of acetazolamide 62.5 mg BID is as effective as the currently recommended dose of 125 mg BID for the prevention of AMS. These results could influence future recommendations for climbers and trekkers with ascent profiles similar to those seen in our study.

Sleep Characterization at High Altitude

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Introduction.—Poor sleep at high altitude is a well-described phenomenon and is associated with acute mountain sickness (AMS); however, large comprehensive studies characterizing sleep are lacking.

Objective.—This study aims to better understand factors contributing to the observed poor-quality sleep.

Methods.—We completed a descriptive analysis of the SLEEP-AID randomized controlled trial limited to the placebo arm (n=104 using resistance-free nasal strip, mean LLQ=1.86, 17% AMS incidence) and analyzed 52 participants with complete data. Minute-by-minute sleep data and oxygen saturation were acquired with WatchPAT-200 sleep monitors on the first night of trekking to 4371 to 4530 m altitude in Nepal.

Results.—Participants were 70% male with an average age of 37 years (interquartile range [IQR] 27–48), and had mean 24-hour elevation gain of 448 m (IQR 380–550). Participants slept on average 477 minutes (IQR 442–517) with 11 awakening events (IQR 6–14). Their average sleep was 68% light sleep (IQR 63–78), 11% deep sleep (IQR 6–17), and 20% rapid eye movement (REM) sleep (IQR 15–24). Average sleep latency was 22 minutes (IQR 19–26) with REM latency of 104 minutes (IQR 63–119). They experienced an average of 275 desaturation events (IQR 105–399), in which oxygen saturation dropped below 80%, and spent 46% of the night below that threshold (IQR 11–84). All calculated sleep quality indices were profoundly abnormal: Respiratory Disturbance Index (mean 53, IQR 32–74), Apnea Hypopnea Index

(mean 51, IQR 27–73), and Oxygen Desaturation Index (mean 37, IQR 14–54). All of these metrics (except % REM sleep) were significantly worse in participants with AMS prior to sleep than in those who did not have AMS ($P < .05$).

Conclusions.—This study more accurately describes altitude-related sleep metrics contributing to poor sleep. There were a large number of nocturnal desaturation and awakening events likely contributing to the hypobaric hypoxic insult of sleeping at high altitude and accounting for the profoundly abnormal sleep indices.

Oral L-Tyrosine Supplementation Improved Core Temperature Maintenance to Whole-Body Cold Exposure in Older Adults

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Introduction.—During cold exposure, an immediate and sustained increase in sympathetic nerve activity evokes vasoconstriction (VC) of cutaneous vessels to minimize heat loss and maintain body core temperature. In older adults, this reflex VC response is impaired, thereby increasing their susceptibility to excess heat loss and hypothermia. This may be explained in part by reduced bioavailability of the amino acid substrate, L-tyrosine, for catecholamine production. Thus, the thermoregulatory benefit of tyrosine supplementation in older adults is unknown.

Objective.—We hypothesize that oral L-tyrosine ingestion will augment the cutaneous VC response and thereby attenuate the decline in core temperature resulting from prolonged whole-body cooling in older adults.

Methods.—In a randomized, double-blind design, 8 older participants (aged 68 ± 4 years) ingested either 150 mg/kg of L-tyrosine or placebo before commencing 90 minutes of whole-body cooling to decrease skin temperature to $\sim 30^\circ\text{C}$. Esophageal temperature (TES) and forearm laser Doppler flux was measured continuously throughout the protocol to provide an index of core temperature and skin blood flow, respectively. Cutaneous vascular conductance (CVC) was calculated as $\text{CVC} = \text{laser Doppler flux} / \text{mean arterial pressure}$ and expressed as a percent change from baseline ($\%\Delta\text{CVC}$). The change in esophageal temperature (ΔTES) was the difference in temperature at the end of cooling subtracted from baseline. Data were analyzed using 2-way (drug by cooling time) analysis of variance with repeated measures with Bonferroni post hoc analysis.

Results.—Oral tyrosine supplementation improved the reflex cutaneous VC response to cooling in older adults (placebo = 15.0 ± 0.9 , tyrosine = 29.6 ± 0.7 $\%\Delta\text{CVC}$; $P < .05$). Additionally, tyrosine maintained body core temperature throughout cooling (placebo = -0.31 ± 0.04 , tyrosine = -0.09 ± 0.03 ΔTES ; $P < .05$).

Conclusions.—These results indicate that L-tyrosine supplementation may improve thermoregulatory function in response to acute cold exposure in an older population.