

AMBULATORY BLOOD PRESSURE IN OLDER ADULTS AT LOW VERSUS HIGH ALTITUDE: THE COLORADO HIGH ALTITUDE MONITORING BLOOD PRESSURE STUDY (CHAMPS)

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Introduction: Blood pressure (BP) after acute high altitude exposure varies between individuals and is most accurately measured by 24-hour ambulatory BP (ABP) monitoring. Understanding impacts of altitude on BP is essential in the creation of evidence-based travel guidelines.

Objective: Compare 24-hour ABP at low versus high altitude in participants with and without preexisting hypertension.

Methods: This was a prospective observational cohort study of adult lowlanders, comparing 24-hour ABP at low (<1,000 m) versus high altitude (2,800-3,000 m). BP was monitored every 30 minutes while awake and hourly overnight for 24 hours using Welch-Allyn 6100 ABP monitors.

Results: 19 participants completed the high altitude study (mean age 64, 11 with underlying hypertension). 12 participants completed low and high altitude measurements. We found no difference in average 24-hour mean arterial pressure (MAP) between low and high altitude in all-comers, mean difference 4 mmHg, [95% CI:-4-11 mmHg], $p=0.3$. Participants without preexisting hypertension had a greater increase in 24-hour MAP from low to high altitude on average versus those with preexisting hypertension (average change +11 mmHg vs -2 mmHg, respectively, $p=0.042$). Asymptomatic severely elevated BP was common at both altitudes.

Conclusions: In these older adults, BP was similar at low and high altitude, with high individual variation. Our data suggest that BP is more likely to increase at high altitude in those without underlying hypertension, and to stay the same or decrease in those with hypertension.