**Purpose:** Acute submaximal aerobic exercise confers cardiovascular benefits including a prolonged reduction in blood pressure (BP) termed postexercise hypotension (PEH). PEH is thought to contribute to the chronic BP-lowering effects of aerobic training. Chronic sodium (Na⁺) supplementation expands plasma volume (PV) and may attenuate PEH. Therefore, this study tested the hypothesis that Na⁺ supplementation attenuates PEH following acute aerobic exercise.

**Methods:** Healthy young adults (n=11, age 26 ± 4 years; body mass index 23.5 ± 2.4 kg/m²) consumed a recommended Na⁺ diet (2,300 mg Na⁺/d) for 10 days on two occasions; participants consumed Na⁺-free liquids containing a total of either 4,000 mg Na⁺ or a placebo in random order. Participants collected their urine for the final 24 hours of each intervention for quantification of urinary Na⁺ excretion. On day 10 of each intervention, participants completed 50 minutes of dynamic cycling exercise at 60% VO₂peak. Brachial BP was recorded via automated oscillography before and every 10 minutes after exercise for 1 hour. The change in PV was estimated using hemoglobin and hematocrit following each intervention. BP responses following exercise were compared using a two-way repeated measures ANOVA. Urinary and blood measures and the nadir in BP after exercise were compared using paired t-tests.

**Results:** The mean VO₂peak of participants was 41.6 ± 8.8 ml/min/kg and mean power at 60% VO₂peak was 127 ± 40 W. Urinary Na⁺ excretion was increased following Na⁺ supplementation (277 ± 50 vs. 153 ± 73 mmol/24 hours, p<0.001). Na⁺ supplementation expanded PV approximately 10.2 ± 8.9%. Despite significantly greater Na⁺ excretion, serum [Na⁺] (141.0 ± 1.8 vs. 141.7 ± 3.0 mEq/L, p=0.34) and plasma osmolality (294 ± 4 vs. 295 ± 6 mOsm/kg H₂O, p=0.22) were not different following Na⁺ supplementation compared to placebo. PEH was observed following both conditions (nadir systolic BP: -4.7 ± 3.8 vs. -4.6 ± 2.9 mmHg, p=0.91 and mean BP: -6.1 ± 4.3 vs. -5.0 ± 3.4 mmHg, p=0.38). However, when comparing Na⁺ supplementation to placebo, there was not a significant diet effect regarding reductions in systolic BP (p=0.93) or mean BP (p=0.41) following exercise.

**Conclusions:** These preliminary data suggest that Na⁺ supplementation does not attenuate PEH following acute aerobic exercise despite increased PV.