

Statistical Analysis Plan
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Statistical Analysis Plan

Isometric testing: This will be conducted at a knee angle of 1.22 rad (70°). After the final rest period, subjects will perform an all-out 50 contraction fatigue test (at 3.14 rad/s) to determine whether dietary NO₃ – influenced fatigue during repetitive, maximal muscle activation. Torque data will be windowed and smoothed using the manufacturer's software, after which the highest torque will be generated at each velocity which will be used to calculate peak power at that velocity. The peak power–velocity data will be fit with a parabolic function to determine maximal knee extensor power and velocity. All statistical analyses will be performed using GraphPad Prism version 6.05 (GraphPad Software, La Jolla, CA). Normality of data distribution will be first tested using the D'Agostino–Pearson omnibus test. Data will be subsequently analyzed using 2-way (treatment x order) ANOVA, with the subject as a repeated measures factor within treatment. A P value of <0.05 will be considered significant. Sample size will be chosen based on our recent study of the effects of dietary NO₃ – on muscle power in healthy individuals and will enable us to detect any effect size of ≥0.69 with a power (ie, 1–β) of 0.80 at an α of 0.05 assuming a within-subject correlation of 0.95. Primary outcome variables will be changes in breath NO and peak and maximal muscle power and velocity in response to dietary NO₃; all other variables measured will be considered secondary.

VO2 testing:

Respiratory gas exchange data will be collected during the final 2 minutes of each stage of the submaximal exercise test will be averaged and used in all subsequent analyses. Gross efficiency will be calculated as the ratio of external power to metabolic power, multiplied by 100%. Delta efficiency (ie, the slope of the relationship between external and metabolic power) and the metabolic cost of unloaded cycling (ie, the y intercept of this relationship) will be determined by regression analysis. During the maximal exercise test the oxygen uptake efficiency slope will be calculated by regressing VO₂ (in L/min) on the log of ventilation (V_e; also in L/min), both will be measured at 15-second intervals. The V_e/carbon dioxide production (VCO₂) slope will be calculated in a similar fashion. V_T will be determined using the V-slope method. Peak power will be defined as the average power during the last 1 minute of exercise. VO₂peak was defined as the highest VO₂ will be measured over any 1-minute period. Statistical analyses will be performed using GraphPad Prism, version 7.02 (GraphPad Software, La Jolla, CA). Normality of data distribution will first be tested using the D'AgostinoPearson omnibus test. Data will be subsequently analyzed using 2-way (treatment × order) analysis of variance, with subject as a repeated measures factor within treatment. A P value <.05 will be considered significant. Primary outcome variables will be changes in ventilatory responses and VO₂peak in response to dietary NO₃-. Secondary outcome variables will be changes in exercise performance and efficiency; all other variables measured were considered tertiary.