Acute Renal Injury During High Intensity Training (HIFRT-KH)– Statistical Analysis Plan

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Statistical Analyses

Analyses will include the following:

- Descriptive statistics from baseline and the two pre-exercise time points will be generated for demographics all blood and urine measures. Urine measurements will be separated between on each spot (i.e., single urinations) samples and on 24h pooled samples. Separate groupings of subjects will be completed based on sex (i.e., male versus female) and workout scaling (ie., with vest, without vest, scaled movements). Independent samples t-tests will be used to compare these groupings.

- Participation in a single bout of HIT induces changes in markers consistent with acute kidney injury (AKI) (Aim 1):

    - Characterize the mean change in hematological and urinary hydration biomarkers between immediately pre-exercise and 1 day prior to exercise, immediately post exercise, 24 hours post exercise, and 48 hours post exercise. For all hematological and urinary measurements repeated measures analysis of variance will be first used to determine if there is a significant main effect of time. Next, planned contrasts between the immediate pre-exercise and all post-exercise time points will be used to look for changes due to the exercise. A planned contrast will also be tested between the immediate pre-exercise time point and the 24 hour pre-exercise time point.

    - For Spot urine samples and dipstick analysis the incidence of proteinuria and hematuria will be compared between the immediate pre-exercise and all post-exercise time points using McNemar's test.

- AKI risk is predicted by the pre-exercise concentration of plasma proenkephalin-A (Aim 2)

    - Linear regression will be used to compare the baseline concentration of proenkephalin-A to changes in all above markers of AKI. Linear regression will also be used to compare changes in proenkephalin-A to changes in all above markers of AKI. Lastly, quartiles of AKI risk based on above will be compared to baseline proenkephalin-A