

Title: Relative Sarcopenia and Cardiometabolic Risk in Young Adults with Obesity

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BIOSTATISTICAL ANALYSIS

Exercise sub-study endpoints

Primary endpoint

Aim 1A: change in serum myostatin levels from pre- to 3-hours post-exercise

Secondary endpoints

Aim 1B: change in serum irisin levels from pre- to 3-hours post-exercise

Aim 1C: change in serum IL-6 levels from pre- to 3-hours post-exercise

Statistical Power and Statistical Analysis:

Exercise sub-study

Power: A total of 30 subjects will enter this sub-study. The probability is >95% that the study will detect a difference in change in serum myostatin levels 3 hours post exercise at a two-sided 0.05 significance level, if the true difference in change in serum myostatin levels between the insulin resistant and insulin sensitive groups is 4.54 ng/mL. This is based on the assumption that the standard deviation (SD) of change in serum myostatin levels 4 hours post exercise is 1.95 ng/mL in a cohort of 12 healthy men (1). This is a reasonable difference to expect since the mean decrease in serum myostatin levels from pre-exercise to 4 hours post exercise was 4.54 ng/mL in this cohort of 12 healthy men (1) (similar to our insulin sensitive group). We hypothesize that adults with insulin resistance will not have a decrease in serum myostatin levels from pre-exercise to 3 hours post exercise.

Aim 1: Cross-sectionally, insulin-resistant adults (HOMA-IR of ≤ 1.85) will have less reduction in serum myostatin levels from pre- to 3 hours post-exercise than insulin-sensitive adults (HOMA-IR of > 1.85).

Data Analysis Plan: We will examine the change in serum myostatin (**1^o endpoint**), irisin, and IL-6 levels from pre- to 3 hours post-exercise in insulin-sensitive compared to insulin-resistant adults (**1^o exposure**) using paired t-tests. Multivariable models will be constructed to adjust for age, race, sex, appendicular lean mass, and physical activity (by Paffenberger Physical Activity Questionnaire).

BIBLIOGRAPHY

1. Seyed HR, MR. The effects of a single bout of resistance exercise on serum level of myostatin and follistatin in elderly men. . *Cibtech Journal of Zoology*. 2015;4(3):19-26.