

## **Proposal**

**Title** – Identifying Predictors of Anaerobic Exercise Performance Using Body Composition Measurements

**Program of Study** – M.S. Biomedical Sciences

**Presentation Type** – PowerPoint

**Mentor and Mentor Email** – Dr. Ben Kalu (bnkalu@liberty.edu)

**Student Name and Email** – Emily Pocius (ejpocius@liberty.edu)

**Category** - Applied

### **Abstract:**

Background:

Body Mass Index (BMI) is a commonly utilized measure of body composition as it requires no special equipment, but only the individual's height and weight. As BMI is widely used to indicate an ideal physical health, it should be posited that BMI may also predict an individual's athletic performance.

Methods:

Seventeen participants were recruited for this experiment. The body composition of each participant was measured using the In-body 770 Analyzer. Participants were then asked to perform a 30 second modified Wingate Anaerobic Test on the Wattbike cycle ergometer. Results were recorded and analyzed using statistical means.

Hypothesis:

We hypothesize that higher values of Skeletal Muscle Mass (SMM) and lower values of Body Mass Index (BMI) will be associated with a better anaerobic exercise performance.

#### Results:

We observed that SMM, LBM and DLM had significant positive correlations with total power and fatigability while BFM and PBF showed significant negative correlations with total power and fatigability. We also observed that BMI did not have a significant correlation to total power and fatigability and that BFM did not have a significant correlation to fatigability. The predictive values of the measures of body composition derived from  $R^2$  values of the regression analyses were in this order of strength for total power output; SMM(0.748) > LBM(.711) > DLM(.707) > PBF(.587) > BFM(.236) > BMI(.001). The predictive values of the measures of body composition derived from  $R^2$  values of the regression analyses were in this order of strength for fatigability; SMM(.374) > LBM(.355) > DLM(.354) > PBF(.237) > BFM(.044) > BMI(.016).

#### Conclusion:

The results show that SMM is the best predictor of anaerobic exercise performance among the parameters that were measured and contrary to popular assumption, BMI is not a reliable predictor of anaerobic exercise performance.