**TITLE-** Basal Metabolic Rate is Positively Correlated to Average Power and Rate of Fatigue in Anaerobic Activity

**PROGRAM OF STUDY-** MS Biomedical Science

**PRESENTATION TYPE-** PowerPoint

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**CATEGORY-** Applied Research

**Background:** Basal metabolic rate (BMR) can be calculated based on an individual's lean body mass and is a measure of the amount of energy needed to keep the body functioning at rest. The purpose of this experiment was to determine the effects of BMR on average power and fatigability during anaerobic activity using data obtained from a Wingate test. I hypothesize that average power will be positively correlated with BMR, while fatigability will be negatively correlated.

**Methods:** The study was conducted as part of physiology lab using the exercise science laboratory at Liberty University. Seventeen student participants consented to an In-body analysis and 30 second Wingate anaerobic test. The test consisted of a 5s rolling starts and 30s sprint at a set resistance based on weight. Participants were of varying athletic backgrounds with an average age of 25.41. There were 10 female and 7 male participants.

**Results:** Average power and fatigability were compared in the participants in relation to their BMR. A correlation with regression analysis was calculated to predict the effect of BMR on average power output and fatigability. The was a significant positive correlation with average power, $r\ (15) = 0.85$ with a regression equation $F\ (1,15) = 40.54$, $p = <.0001$, $r^2 = 0.73$. There was also a significant positive correlation with fatigability, $r\ (15) = 0.60$ with a regression equation $F\ (1,15) = 8.56$, $p = 0.01$, $r^2 = 0.36$.

**Conclusion:** Our data suggests that a higher BMR leads to an increased power output and fatigability in anaerobic exercise. While this may be beneficial to strength athletes and sprinters who use large amounts of power for short time, it would not help endurance athletes. Further experiments comparing BMR, average power and fatigability of endurance athletes would benefit these results.