

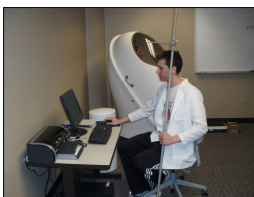
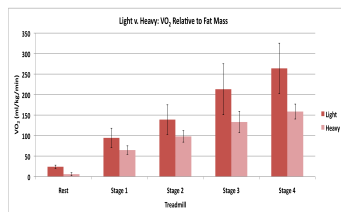
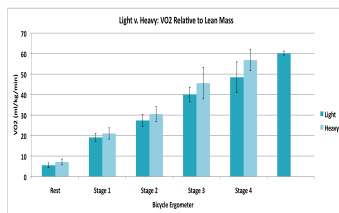
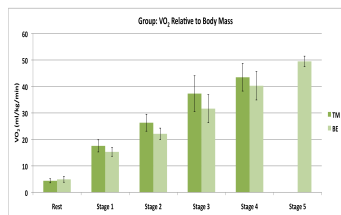
Does Body Composition Play a Role in Sub-Maximal Oxygen Consumption During Weight-Bearing and Non-Weight Bearing Exercises in College-Aged Females?

Cassandra J Baar

Advisor: Dr. Lloyd Laubach, PhD

Why?

- ✦ **2001:** Over 60% of the US population aged 20-74 is overweight or obese. Obesity can lead to: Diabetes II, stroke, hypertension, various cancers, high blood cholesterol, and psychological disorders.
- ✦ **2006:** Surgeon General, Richard Carmona, stated: "Obesity is the terror within. Unless we do something about it, the magnitude of the dilemma will dwarf 9-11 or any other terrorist attempt."
- ✦ **The results of this study may assist in tailoring exercise prescriptions to the specific needs of subjects with varying body compositions.**



Materials & Methods

- ✦ 22 college-aged females
- ✦ Life Measurement, Inc. *Gold Standard* BodPod
- ✦ ParvoMedics TrueOne 2400 Metabolic Cart
- ✦ Polar FS3 Heart Rate Monitor
- ✦ Monark Bicycle Ergometer and Vision Fitness Treadmill
- ✦ Bruce Treadmill Protocol and a bicycle protocol with similar calculated work rates.
- ✦ Subjects underwent BodPod testing
- ✦ Subjects had resting metabolic rates calculated
- ✦ Subjects completed ergometer or treadmill test
- ✦ Subjects completed remaining exercise test
- ✦ Data was analyzed as a group, by percent body fat, by BMI and by activity type

Findings

- ✦ **Group:** Statistically significant difference in VO_2 between the Treadmill and Bicycle Ergometer relative to BM and LM during st. 1 and st. 3. Treadmill created larger metabolic demand and therefore demonstrated increased VO_2 .
- ✦ **Treadmill:** No statistical differences between groups for LM; however, both total BM (st. 3,4) and FM (all stages except resting) demonstrated significantly larger VO_2 values for the skinny group
- ✦ **Bicycle:** there was evidence of statistically significant differences at all stages. Interestingly, heavier girls exhibited greater VO_2 values relative to LM (st. 2,4) while lighter girls exhibited greater VO_2 values relative to FM (st. 1,3).



References

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- ✦ Biaggi, Robert R., Vollman, Michael W., Neis, Mary A., et al. (1999). Comparison of Air-Displacement Plethysmography with Hydrostatic Weighing and Bioelectrical Impedance Analysis for the Assessment of Body Composition in Healthy Adults. *American Journal of Clinical Nutrition* 69: 898-903.
- ✦ Ellis, Kenneth J. (2001). Selected Body Composition Methods can be Used in Field Studies. *Journal of Nutrition* 131: 1589S-1595S.
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