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

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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.

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).

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.

References