

The Correlation of Physical Activity and Body Composition in Inbred Mice

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ABSTRACT

Obesity is a growing epidemic related to physical inactivity, cardiovascular disease, and Type II diabetes. In smaller mouse cohorts, there has been no association reported between physical activity and body composition indices. The purpose of this experiment was to determine if there was a correlation between the physical activity level and body composition in a large cohort of inbred mouse strains. Using a GE Lunar Piximus (Madison, WI), body composition of 420 mice across 17 strains was analyzed for association with percent body fat, lean mass, and fat mass. Activity data using a running wheel had previously been measured in each of these mice. Pearson correlations were determined using the indices of body composition and physical activity level with alpha <0.05 set *a priori*. There was a significant ($p=0.013$) correlation ($r^2 = 0.87$) between mouse strain and fat mass ($p < 0.05$). Additionally, there trends for lean mass ($p=0.053$) and total body weight ($p=0.056$) to be correlated to mouse strain. There was not a significance association between the body composition characteristics (fat mass ($p=0.013$), lean mass ($p=0.053$), and percent body fat ($p=0.068$)) and physical activity in the mice. From these results, we have supported previous literature showing a genetic predisposition for fat mass within each mouse strain. Further, the lack of significant relationship between body composition and daily activity is not surprising given previous published data in smaller mouse cohorts. Our data support previous suggestions that body composition and the inherent drive to be active are independent of each other.

