

TEXAS AMERICAN COLLEGE OF SPORTS MEDICINE 2009 CONFERENCE

Long-term Weight Gain in Response to High-fat Feeding in CD-1 mice

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Int J Exerc Sci 2(1): S33, 2009. **Background.** Excessive weight gain is known to cause numerous health related consequences in humans and rodents. Due to ethical issues, it is not appropriate to cause weight gain in humans. From an experimental design prospective, murine models are often used to measure the effect of weight gain. Despite the validity of murine models, there is little published information concerning long-term weight gain when mice consume a high-fat (60% of calories from fat) diet. The purpose of this study was to examine weight gain during high-fat feeding in wild type CD-1 male mice. **Methods.** This study utilized data collected during the completion of four separate experiments. These experiments were selected so that we could compare: 1) the effects of husbandry type (i.e. individual vs. small groups), 2) weight gain following discontinuation of aerobic exercise training, and 3) the effect of changing to a high-fat diet following long-term acclimation to a stock diet. Two separate data sets were used for experiment 1 (N=120 and N=36). The data set used for experiment 2 demonstrates the long-term effects of the discontinuation of an exercise program (N=24). The data set for experiment 3 allows us to examine the effects of switching diets after an extended period of time (N=36). Change data was analyzed using separate linear mixed models (LMM) for weight gain and food intake. **Results.** Weight gain was similar over time between mice housed in groups or individually (experiment one). Following discontinuation of an aerobic exercise-training program, mice gained weight similar to that of sedentary controls that did not exercise (experiment two). When mice are switched to a high-fat diet at 25 weeks of age, they gain less weight than when they eat a high-fat diet at 6 weeks of age (experiment three). **Conclusions.** The results our investigation document long-term changes in mouse weight gain during *ad libitum* consumption of a high-fat diet. These findings will be useful to future researchers interested in using murine weight gain models.

