

# North American Association for the Study of Obesity

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### Activities of Daily Living Resistance (ADLR) Study

#### Abstract

Non-Exercise Activity Thermogenesis (NEAT) plays an important role in the energy balance equation and is a potential point of intervention in the treatment of obesity. Our study tested the effect of Activities of Daily Living Resistance (ADLR) in the form of wearable weights on energy expenditure during simulated NEAT activities. The mean caloric expenditure during the NEAT protocol without the use of ADLR was 24.8 Calories and with ADLR was 28.3 Calories over a 10-minute period. The use of ADLR resulted in a 14% increase in caloric expenditure. The use of ADLR during a weight loss regimen may improve outcomes through enhancement of NEAT.

#### Background

Obesity is a rising epidemic and is responsible for over 300,000 deaths in the United States alone (1). Non-Exercise Activity Thermogenesis (NEAT) has been validated as a potentially important element in resistance to weight gain in lean individuals (2). NEAT represents the calories an individual utilizes when involved in non-volitional exercise. Examples of NEAT activities include such things as teeth brushing, fidgeting, housecleaning, running errands, etc. Providing a mechanism to enhance caloric expenditure during NEAT activities could potentially enhance weight loss in obese individuals.

1. National Center for Health Statistics, Centers for Disease Control and Prevention, Web site  
[www.cdc.gov/nchs/products/pubs/pubd/hestats/obese/obse99.htm](http://www.cdc.gov/nchs/products/pubs/pubd/hestats/obese/obse99.htm) (accessed April 20, 2004)

2. Levine, J.A., Schleusner, S.J., Jensen, M.D., Energy expenditure of nonexercise activity. *Am J Clin Nutr* 2000; 72:1451

## Method/Design

This prospective study was conducted at the MPMPC Weight Management Clinic located in Largo, FL. We tested the effect of Activities of Daily Living Resistance (ADLR) in the form of wearable weights on energy expenditure during simulated routine NEAT activities. Participants included 10 patient volunteers whose BMI ranged between 25-40. Patients underwent a 10-minute monitored protocol involving NEAT activities (including simulation of teeth brushing, ironing, dishwashing, and pacing). The protocol was completed once with ADLR and once without ADLR, with a 5-minute rest period in between. Total extra weight carried during the ADLR portion of the study was 15 lbs in the form of two 5-lb ankle weights and two 2.5-lb wrist weights. Energy expenditure was recorded via indirect calorimetry (ReeVue Indirect Calorimeter, KORR Medical Technologies). Our study was approved by the Morton Plant Mease Hospital Institutional Review Board.

## Results

There were 10 participants in the study (9 female, 1 male) with a mean age of 60 years (range 46 to 69 years) and a mean BMI of 31.5 (range 26.7 to 41.8). The mean caloric expenditure during the NEAT protocol without the use of ADLR was 24.8 Calories and with ADLR was 28.3 Calories (figure 1). The use of ADLR resulted in a 14% increase in caloric expenditure. Paired t-tests showed this increase was significant ( $p=0.035$ ).

## Conclusion

The use of ADLR during a weight loss regimen may improve outcomes through enhancement of NEAT. A long-term clinical study is required to further test the feasibility of the regular daily use of ADLR.

**Figure 1. Non-Exercise Activity Thermogenesis**

