# FAT-LOSS DECREASES AND WEIGHT-LOSS INCREASES ALL-CAUSE MORTALITY: RESULTS FROM TWO EPIDEMIOLOGIC STUDIES.

**Angelo Pietrobelli, Myles S. Faith, Moonseong Heo, Steven B. Heymsfield, David B. Allison.**
Obesity Research Center, St. Luke's-Roosevelt Hospital Center,
Columbia University College of Physicians & Surgeons, New York, NY, USA.

## Practical Implications:

- Fat loss extends human longevity.
- Weight loss may extend longevity only if sufficient loss is from fat loss.
- Weight loss that is related to increases in mortality may be a result of lean body mass loss.

## ABSTRACT

**Objective:** Obesity is associated with increased all-cause mortality.  Moreover, modest reductions in obesity are associated with reduced obesity-related comorbidities.  This has lead to the speculation that weight loss itself might strongly be associated with reduced all-cause mortality rate.  However, there has been counter-intuitive evidence that the weight loss is associated with increased mortality.  This issue remains controversial.  To see how weight loss operates in mortality analyses, we tried to separate the effects of <u>weight</u> loss (WL) from those of <u>fat</u> loss (FL).  Specifically, WL and FL were hypothesized to have increasing and decreasing effects, respectively, on all-cause mortality rate.

**Design:** Using data from the *Tecumseh Heart Study* (THS; n=1,890) and the *Framingham Heart Study* (FHS; n=2,734), we investigated how WL and FL are associated with all-cause mortality.

**Materials & Methods:** For both studies, fatness was measured by skinfold thickness and the losses in kg (WL and FL) were calculated as the measurements taken at time 1 minus those at time 2, this being later than time 1 and earlier than end of the follow-up.

**Results:** Results from logistic regression analyses in both data bases, adjusted for age, sex, and smoking status, supported the hypotheses.  That is, WL and FL were positively and negatively associated with all-cause mortality, respectively (OR for one unit change in WL=1.02 (p<0.001) for FHS and 1.06 (p=0.002) for THS; OR for one unit change in FL=0.97 (p=0.049) for FHS 0.83 (p=0.022) for THS).  Therefore, the positive association of weight loss with mortality might have resulted from lean body mass loss.  In addition, these results underscore the importance of more accurate and precise body composition measurements for better understanding of mechanisms of their effects on all-cause mortality.  To our knowledge, this is the first study to show that fat loss extends longevity among humans.  These results suggest that weight loss may only extend longevity if a sufficient proportion of the weight loss is lost as fat.