

## The maintenance of energy balance is compromised after weight loss

Eric Doucet<sup>1</sup>, Jennifer L. Reed<sup>1,2</sup>, Jean-Philippe Chaput<sup>3</sup> and Angelo Tremblay<sup>4</sup>

<sup>1</sup>University of Ottawa, Canada

<sup>2</sup>University of Ottawa Heart Institute, Canada

<sup>3</sup>Children's Hospital of Eastern Ontario Research Institute, Canada

<sup>4</sup>Laval University, Canada

Available literature reveals that of the majority of individuals who are able to lose weight, only a small number are able to maintain their weight loss over time. Effective weight maintenance strategies after weight loss are illusive, which is most likely the result of a number of yet poorly understood factors. In fact, both appetite and energy expenditure are profoundly altered in response to reductions in body energy reserves. Weight reduction leads to decreased energy needs, but to an augmented drive to eat, thus compromising the maintenance of energy balance in the weight-reduced state by widening the theoretical gap between the 2 components of energy balance. This review first provides a summary of the factors related to the control of feeding and energy expenditure during weight stability. More specifically related to the topic of this review, the bulk of the literature presented depicts the post weight-loss control of appetite and energy expenditure. The integration of the literature presented in this paper reveals that body weight loss seems to orchestrate a coordinated response to resist further energy depletion, which would seem to create a state of increased vulnerability of weight regain. It is argued that these changes are largely responsible for the more than apparent difficulty in maintaining weight maintenance after weight loss.

edoucet@uottawa.ca