

Thomas Edison and Weight Loss

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Thomas Edison, the revered American inventor, defined genius as 98 per cent (%) to 99% perspiration and 1% to 2% inspiration (1). A tireless investigator, Edison considered sleep to be “a waste of time” (2). Edison took naps on a cot in his laboratory and reportedly didn’t sleep for more than four hours per night. He passed away from complications of type 2 diabetes in 1931 at the age of 84, having limited himself at that point in his life to a diet of milk and cigars. Whether Edison’s sleep habits were a factor in his diabetes is unknown, but his legacy is an inspiration for many, and his inventions brought sweeping changes to North American society in the 20th century. His development of the incandescent light bulb into a safe and reliable means of household illumination has, however, been blamed for permanently altering our biological clocks and interfering with sleep (2). Sleep deprivation is one of many potential factors leading to weight gain. Edison would have been intrigued that one of his inventions might have had deleterious effects and would have been inspired to find a solution. Can we use similar scientific curiosity to investigate potential ways that he might have found to help manage diabetes with weight loss?

What is the Biology of Weight Loss?

Edison might have considered looking first at the subject of the weight loss: the human body. Our bodies have powerful hormones in the hypothalamus that regulate appetite; ghrelin stimulates eating and leptin signals satiety. The hypothalamus attempts to maintain our “natural” weight, and rallies against weight loss, actually treating restriction of food intake like it is an illness (3). Weight loss is difficult to achieve but is even harder to maintain, with 95% of all diets failing within two to five years (4). If we return to our usual eating habits, weight regain occurs with additional pounds added as protection against future food restriction. If we continue with ongoing episodes of restricting food intake, our “natural” weight (set point) becomes even higher (4).

What Societal Changes Impede Weight Loss?

Changes to societal practices since Edison’s time increasingly run counter to our evolutionary biology, and are collectively referred to as “diseases of civilization.” Sleep deprivation, prolonged exposure to stress and energy-sparing conveniences are just some of the multiple contributors to increasing obesity, cardiovascular disease and type 2 diabetes. The current eating patterns of Canadians also has an impact on overall health. Food availability studies in Canada show that while access to fresh fruit has been maintained, so has



that of soft drinks (5). Edison would likely have agreed with the observation that in an environment in which energy-dense food is abundant and physical activity is largely unnecessary, maintaining weight loss after a diet is nearly impossible (6).

Start Doing Some Math!

Since 2017, restaurants in Ontario with 20 or more locations have been required to post the caloric content of their menus, and other restaurants in the province have done so voluntarily (7). With this information, there is a statement indicating the caloric requirements for an average adult with the provision that “calorie requirements vary among individuals.” While posted caloric guidelines provide a baseline intake, individuals pursuing weight loss may try to reduce their own intake by consuming 500 to 600 calories less each day. Some adults use calorie-tracking apps to count their caloric intake, but this should be undertaken with caution; some studies suggest that app use may be associated with eating disorder symptomology (8). To help individuals achieve a healthy weight, an appointment with a registered dietitian can provide individuals with evidence-based guidance on making dietary changes for healthy weight loss to achieve and maintain a healthy weight.

Make Simple Changes to Eating Behaviour

Eating is a rich experience that ideally will involve all five senses. If we distract ourselves with electronics or work while we eat, our bodies can’t discern satiety messages effectively. By eating more slowly and with a mindful approach, we give leptin a chance to circulate and trigger the “I am full” signal. Eating with others can often influence our food choices and



experience as well. Seeking support from our family and circles of friends to make lifestyle changes together is more likely to promote motivation and accountability.

Portion Control and Hara Hachi Bu

Edison was never deterred by something that didn't work; he just kept trying different strategies. Trying to institute radical changes to one's eating behaviour is likely to backfire. Instead, an eating change to support a healthy diet is to use portion control strategies, which may reduce the total amounts of foods we may consume. Practising portion control by using smaller plates and bowls may help give the visual cue of having eaten a full meal.

Inhabitants of Okinawa, Japan, are known for lower rates of obesity, as well as longer and healthier lives than many other industrialized nations (9). One of their practices is called Hara Hachi Bu, or eating until one is 80% full (9). This food management strategy may help with recognizing fullness sooner and contributing to the reduction of food waste.

Are You Eating Food or Chemicals?

Humans are drawn to sweet and fat flavours, as our early ancestors knew these tastes to be "safe" (10). Salt, which is an acquired taste, is introduced to us increasingly earlier in life, creating a preference trifecta for the food industry (10). Food scientists have made our taste buds the target of clever chemical manipulations, so that virtually any taste can be imitated for commercial purposes. Many compounds added to commercially prepared foods make them last longer, taste better or assist in the manufacturing process. Here are two helpful questions to ask:

1. Does the food item grow directly from a plant?
2. How many processing steps are there between the original food and what you hold in your hands?

Choosing minimally processed foods is the most effective way to maintain a healthy body weight. By way of a comparison, turning a potato into potato chips increases the caloric content by a factor of seven (11)!

Which Diet is Best?

Any diet can help an individual achieve short-term weight loss: low fat, low carbohydrate, high protein, keto, paleo

and more. If you choose to make dietary changes, aim for a balanced intake of nutrients and a calorie-reduction figure that is realistic for you. While medications are increasingly promoted as a tool for weight loss, they are more effective when combined with modifying food intake and other lifestyle choices. Having a support system of family, friends, your primary-care provider and a registered dietitian can also help support an individual to maintain long-term weight-loss changes that won't end when the fad diet does.

Despite his many physical ailments, Thomas Edison kept a great sense of humour in addition to his relentless optimism. He would have woken up every day looking for ways to choose better foods, be more physically active and would not have been deterred by the lack of short-term results. Edison was above all a practical person who spared no effort in finding a solution to a problem, which can serve as an inspiration to us all!

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