Body weight, diet, and exercise: A dynamic energy balance approach

Diana Thomas, PhD

Abstract: What is a safe, achievable and clinically meaningful goal for weekly weight loss? What are the optimal combination of lifestyle changes (diet or exercise) required to achieve this loss? These questions are asked by both health care professionals and individuals seeking guidance on losing excess weight. The answer to these questions relies on carefully collected data and accurate mathematical model construction. Advances in weight loss monitoring technology, clinical measurements, and computers have led to an explosion of improved mathematical weight loss prediction models. In this presentation I will review mathematical models of human body weight regulation and describe interesting behavioral patterns revealed from mathematical analysis of diet and exercise experimental studies.

Diana Thomas, PhD, is an associate professor of mathematics and Director of the Center for Quantitative Obesity Research at Montclair State University in New Jersey.