Physical Activity Intervention Series

Reversing the Obesogenic Environment

Rebecca E. Lee
Kristen M. McAlexander
Jorge A. Banda

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Rebecca E. Lee, PhD
University of Houston

Kristen M. McAlexander, PhD
Southern Methodist University

Jorge A. Banda, MS
University of South Carolina

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Human Kinetics
Web site: www.HumanKinetics.com

United States: Human Kinetics
P.O. Box 5076
Champaign, IL 61825-5076
800-747-4457
e-mail: humank@hkusa.com

Canada: Human Kinetics
475 Devonshire Road Unit 100
Windsor, ON N8Y 2L5
800-465-7301 (in Canada only)
e-mail: info@hkcanada.com

Europe: Human Kinetics
107 Bradford Road
Stanningley
Leeds LS28 6AT, United Kingdom
+44 (0) 113 255 5665
e-mail: hk@hkeurope.com

Australia: Human Kinetics
57A Price Avenue
Lower Mitcham, South Australia 5062
08 8372 0999
e-mail: info@hkaustralia.com

New Zealand: Human Kinetics
P.O. Box 80
Torrens Park, South Australia 5062
0800 222 062
e-mail: info@hknewzealand.com

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SERIES PREFACE

The purpose of the Physical Activity Intervention Series is to publish texts, written by the leading researchers in the field, that provide specific and evidence-based methods and techniques for physical activity interventions. These books include practical suggestions, examples, forms, questionnaires, and intervention techniques that can be applied in field settings.

Many health professionals who currently provide exercise advice and offer exercise programs use the traditional and structured frequency, intensity, and time (FIT) approach to exercise prescription. Although the exercise prescription is valid, going to a fitness facility and participating in such programs are not attractive to many people. Alternative programs based on the new consensus recommendations and using behavioral intervention methods and techniques are needed.

The books in the Physical Activity Intervention Series provide information, methods, techniques, and support to the many health professionals—clinical exercise physiologists, nutritionists, physicians, fitness center exercise leaders, public health workers, and health promotion experts—who are looking for alternative ways to promote physical activity that do not require a rigid application of the FIT approach. It is to meet this need that Human Kinetics developed this Physical Activity Intervention Series.

The series has a broad scope. It includes books focused on after-school programs for children and youth, ways to implement physical activity interventions in the public health setting, and ways to evaluate physical activity interventions. The series also includes books that focus on the implementation of interventions based on theories and on interventions for other special populations such as older adults and those with chronic disease. Each book is valuable and useful in its own right, but the series will provide an integrated collection of materials that can be used to plan, develop, implement, and evaluate physical activity interventions in a wide variety of settings for diverse populations.

PREFACE

Obesity is a crisis. Some scholars call it an epidemic because over one third of the general population is obese and another third is overweight. Other scholars have done statistical projections that show that by the middle of the 21st century, if things continue as they have been for the last 30 years, the entire U.S. population will be obese, soon followed by the world. National leaders worry about national security, terrorist attacks, and other crises as potential threats to global stability, but we really need look no further than home, our kitchens and living rooms, where we grow bigger and bigger. As obesity prevalence continues to rise, so do associated health care costs, employment costs, and transportation costs, as well as many other hidden costs associated with the grand expansion of America.

On average, between the ages of 25 and 55, Americans gain 1 pound, or .5 kilogram, of fat per year, while they lose half a pound of muscle tissue per year. If someone is overweight at age 25, obesity is already a fait accompli. Most people are mere time bombs in a well-documented cascade of health-compromising conditions and medical expenses that lead to a reduced life span and a reduced quality of life for their remaining years. The fundamental cause of obesity is too many calories consumed (dietary habits or overeating) and too few calories expended (physical activity or the lack thereof). Although this seems obvious to scholars and practitioners, the process that leads to this calorie imbalance is slow and insidious.

Recent research has confirmed numerous genetic predisposing factors that lead to obesity; however, the recent explosion in obesity prevalence is not driven primarily by genetic or biological factors. First, although there are many genetic predisposing factors, there is no single gene or genetic combination prototype that is reliably identified in obese individuals. Second, and more important, humans have had the same genetic makeup for thousands of years, so no sudden genetic shift is to blame for the obesity epidemic. What has changed in recent history is our environment. We have the same genes that humans have had for centuries, but now we are faced with an obesogenic environment.

Obesogenic is a term that was coined in the mid-1990s to refer to situations or conditions that lead to people becoming increasingly obese. The word *obesogenic* is a combination of the words *obese* and *genic*—something that creates or leads to obesity. Something in our environments is leading us to become obese. The billion dollar question then is this: "What is it?" Strong evidence first came from the social epidemiologists who found that, in the United States and many other industrialized nations, regardless of who you were—

your education, your income, your marital status, your race—the likelihood you were overweight or obese depended upon where you lived. For example, people who lived in neighborhoods made up of, in general, individuals with lower educational attainment and lower paying jobs were more likely to be overweight or obese compared to people living in neighborhoods of residents with more education and higher paying jobs. The remarkable thing was that it did not matter who the individual was—residents were interchangeable. Regardless of what walk of life they came from, people were more likely to be overweight or obese if they lived in these so-called "deprived" neighborhoods.

The challenge with social epidemiology studies is that the data are based on aggregate data, so it is impossible to determine what the specific, manifest characteristics of the obesogenic neighborhoods were. Was it the lack of fresh fruits and vegetables? Was it the lack of safe places to be physically active? Was it the oppressive lack of neighborhood curb appeal? Perhaps it was something else. Maybe these neighborhoods had more fast food restaurants, greater reliance on automobiles, or greater marketing efforts by snack food companies. Perhaps it was all of these factors and more. Often, concerned communities will attempt to take action, but unless efforts occur at multiple levels in the system, it is difficult to have sustainable results. Sometimes, too, some groups of the population will exhibit particular vulnerabilities to obesity, and the emphasis is shifted to individual factors associated with these individuals, such as sex, race, or ethnicity. It is likely that those individual factors are a very small part of the problem, and much broader efforts are needed.

This book is intended to help recognize the many factors that lead to an obesogenic environment and propose how we, collectively, can work to reverse those factors. To that end, this book is organized into five sections. Although nearly everything in this book is related to other parts of the book, it makes sense conceptually to organize the book into separate chapters that can be read as stand-alone references on a topic, combined with other related chapters in a section, or taken together with the other chapters in the book. Part I, Public Health and Obesity, provides the background and foundation for the remaining chapters in the book. The first chapter, Emergence of the Obesogenic Environment, provides a brief historical perspective and theoretically grounds the book in an ecologic framework. The next chapter, Scope of Obesity, provides information on the prevalence of obesity, discusses particularly vulnerable populations, and illustrates the risks of obesity. The last chapter in this first part of the book, Body Composition Measurements, describes the measurement of obesity, with particular attention paid to methods used in public health and community settings.

The second part of the book, Physical Activity and Obesity, discusses neighborhood and home environmental factors related to physical activity. Chapter 4, The Built Environment, defines and describes components of the built environment that influence physical activity and discusses how these are measured and quantified. We present an overview of the limitations and current understanding of the knowledge base and comment on some emerg-

ing directions. Chapter 5, Physical Activity Resources, describes common types of physical activity resources, how they are measured, and their role in the promotion of physical activity and prevention of obesity. Chapter 6, Active Transportation, defines and describes active transportation systems, both outdoor and indoor, and how active transportation is related to physical activity and obesity.

The third part of the book, Food Accessibility, describes how food production and technology directly and indirectly affect obesity. Chapter 7, Food Supply and Security, discusses how the food supply has contributed to the nutrition transition and the resulting nutritional disparities: obesity and undernutrition. This is followed by an overview of food security, the interventions and programs that have been developed in response to this issue, and their impact on obesity. Chapter 8, Food Technology, discusses the trend toward biotechnological innovation and the impact this has on the food supply, dietary habits, obesity, and health.

The fourth section, Public Policy, Sociocultural Influences, and Obesity, highlights social factors such as cultural beliefs and policies that influence obesity. Chapter 9, Policy and Individual Health Choices, describes levels of prevention as a framework to guide policies that directly affect individual-level choices. Examples illustrating these types of policies include educational guidelines, regulations at the point of purchase, and incentives. Chapter 10, Policy and the Obesogenic Environment, focuses on policies that shape the environment to promote or hinder obesity and includes examples from agriculture, trade, the food industry, and the built environment, along with transportation, schools, and worksites. Chapter 11, Cultural and Familial Influences, describes the role of the immediate social context of culture and family in terms of understanding how they influence dietary habits and physical activities. Chapter 12, Social Justice, Health Disparities, and Obesity, describes the role health disparities play in contributing to obesity and explores resiliency and possible solutions.

The last part of the book, Media and Marketing, discusses pervasive marketing influences and how they affect physical activity, dietary choices, and obesity. Chapter 13, Point of Purchase, describes marketing materials and techniques used at the retail point of purchase to stimulate the purchase and consumption of less healthy foods using product, price, placement, and promotion strategies. Chapter 14, Influence of Media and Technology, describes how images of food influence brain activity which, in turn, contributes to dietary habits. This chapter also provides an overview of the advertising typically used to induce purchase and trial of food.

Throughout the book, we provide recommendations couched within an ecologic framework and tailored to individuals, practitioners, policy makers, communities, and interested citizens. The problem of obesity is an excellent example of the complexities of a public health system. Obesity represents a failure at nearly all levels of the system: genetic predisposition for gaining weight; poor choices by individuals; social traditions that celebrate obesogenic

behaviors; community design that limits physical activity; policies that provide for plentiful, nutritionally vacuous food choices and sedentary living; and environments that don't support healthy living and accommodate obese individuals. Reversing the obesity epidemic will take coordinated, multilevel, systemic, long-term efforts that may take years. However, it is possible, and it is never too late to take action.

Obesity is a problem that, ultimately, affects us all, yet it also provides a rich learning opportunity. This text does not provide all the answers, but it will help broaden the scope with which we view this complex societal problem. Thank you for your interest and support.

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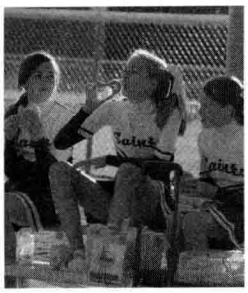
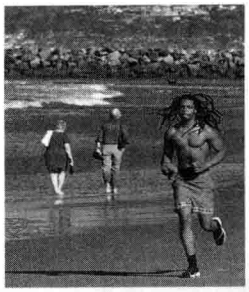
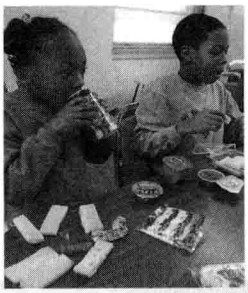
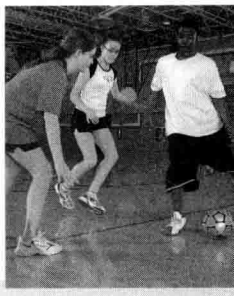
CONTENTS



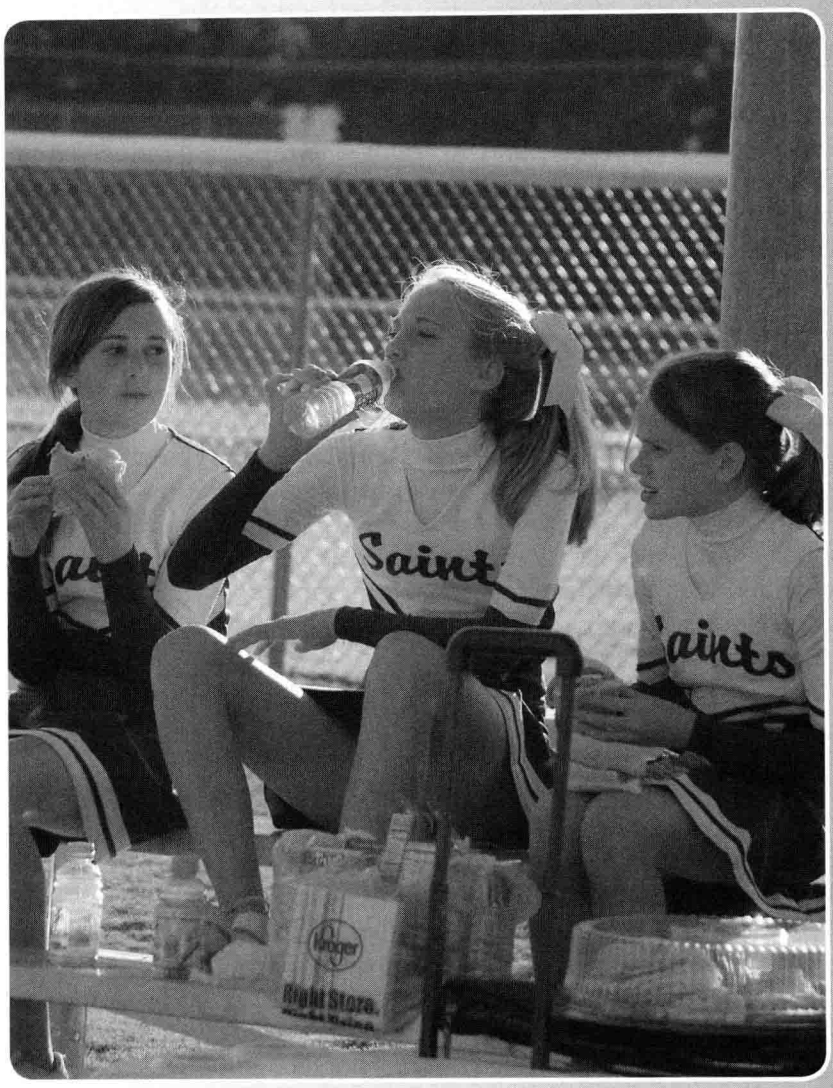




Public Health and Obesity

PART one

This first part of the book introduces the concept of the obesogenic environment. Here we define obesity, describe the populations most vulnerable to obesity, discuss the consequences of obesity, and explain the methodologies used to measure obesity. Our obesogenic environment is complex, composed of multiple factors spanning multiple venues, contexts, and sectors. The obesogenic environment has recently been recognized as a factor that contributes to the pervasive lack of physical activity and to eating habits that involve consumption of too much food of poor nutritional quality. The resulting obesity epidemic is now well underway in the United States as well as every other industrialized country. The situation has become so important that U.S. health promoters and researchers have developed a National Physical Activity Plan (2010), building on previous nutritional guidelines and standards. Countries that have been formerly believed to be immune to obesity are facing dramatic increases in its prevalence, particularly among children. It can be hard to understand the scope and causes of the problem. This part of the book sets the stage for the discussion to follow and provides historical background, along with important definitions to give the reader a sense of context. Not all epidemics are reversible, but the obesity epidemic can be, if we reverse the obesogenic environment that created it.

CHAPTER 1



Emergence of the Obesogenic Environment

Obesity has emerged as the number one public health problem facing the United States as well as many other countries in both the industrialized and developing worlds. Overweight and obesity have historically been a measure of wealth, but in recent times they have come to represent reduced quality of health. Although diet plans and strategies to lose weight are employed multinationally, and many of them are effective in producing weight loss, most are not sustainable. This chapter discusses the historical emergence of obesity and defines some of the etiological factors, external to the individual, that have emerged in recent history. These factors are obesogenic—they create obesity—and represent environmental and social forces that tend to encourage overeating, consumption of unhealthful foods, and physical inactivity, thus promoting weight gain in general. These factors are couched within an ecologic framework that incorporates individual biological and behavioral factors as well as environmental and social forces and their interactions that drive behavior and health outcomes, including obesity.

Obesogenic = obese + genic = something that creates or generates obesity.

Historical Emergence of Obesity as a Public Health Concern

Excess adiposity, or fat, on the body, clinically known as overweight or obesity, has enjoyed a colorful history. In less industrialized times, excess weight signified health and wealth, suggesting that people who were overweight had sufficient, and perhaps excessive, food to eat. Larger body shapes have been immortalized in the past by artists such as Rubens and Renoir, illustrating that the ideal body was one of plenty. Excess adiposity in women, particularly in the breast and hip areas, was considered a symbol of fecundity. The perception of fertility was highly valued in a time where both women and infants died in childbirth and few adults saw their 40th birthday. In men, excess weight was perceived as a sign of wealth and prosperity, suggesting that a man would be a good provider for a family.

In the 20th century, while both longevity and technological innovation increased, preferred body sizes decreased. For example, claims have been made that Marilyn Monroe, one of the greatest sex symbols and models of westernized female beauty of the 20th century, was overweight; however, that is simply not the case. Reports of her height (ranging from 5 feet to 5 feet 5 inches, or 152 to 165 cm) and weight (ranging from approximately 120 to 140 pounds, or 54 to 64 kg) suggest that she had a body mass index close to 23, which is considered nearly ideal by health professionals, and wore a classic size medium dress. She was more slender than her body shape ideal sisters from history, and larger than body shape ideals to come. In the 1970s, in the