

Williamson, P. (2010). *Exercise for special populations*. Philadelphia: Wolters Kluwer business.

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Not all stages of life are same, and neither are the considerations for exercise across those stages. Physiological characteristics and needs of people at particular stages of life, including pregnancy, youth, and the later years, differ significantly. In addition, individuals who exhibit medical conditions such as obesity, cardiovascular disease, diabetes, asthma, multiple sclerosis and cancer present unique challenges. Exercise prescription for people who experience such conditions becomes more complicated and uncertain for health and fitness professionals. The exercise professionals in the past considered exercise programs to be an added strain for such populations. They believed that physical activity presented the risk of exacerbating the condition; however, recent research supports the fact that structured exercise programs addressing the specific needs of individuals with health concerns or disabilities could be significantly beneficial.

This book clearly differentiates the needs of various specialized populations and addresses the exercise guidelines and nutrition requirement for each group. The book is divided into three parts. The first part deals with scientific foundations and the next two parts discuss exercise and nutrition for life stages, and disease and illness respectively. The author begins the book by pointing the fact that appropriately manipulating modifiable factors such as diet, activity level, alcohol consumption, and cigarette use can enhance both quality and quantity of life. This book focuses on two such modifiable factors: exercise and diet. The first two chapters in the section one of the book are built around the general impact of exercise and nutrition on health and fitness and a basic overview of anatomy and physiology of body systems.

Williamson focuses on exercise and nutrition for specific populations in the remaining chapters of the book. All exercise prescription recommended in this book are based on FITT principle. The exercise recommendations are then followed by sample exercises with pictures. The uniqueness of this book is that it does not only discusses the exercise guidelines, but also the nutritional requirement of specific populations. The author points out that people in all stages of life require the similar basic nutrients, but the amount differs across specific groups. She adds specific nutrition considerations of the respective population at the end of every chapter. All the chapters are organized in a similar format, but the essential and specific needs of each population are stressed within each.

Chapter 3 describes the anatomical and physiological changes that occur in pregnant woman during each trimester and outlines precautions, contraindications, and the benefits of exercises in this population. The presented exercise testing and exercise prescription guidelines are recommended based on extensive research and ACSM guidelines. In addition the author also differentiates the pregnant women based on their pre pregnancy activity level and discusses their specific needs.

Chapter 4 discusses differences between adults and youth in terms of growth development, neuro-muscular control, response to exercise, regulation of body temperature, overweight, obesity, and blood pressure. Overweight and obesity among children are discussed in detail. The exercise prescription part of this chapter presents general guidelines, as well as tips for cardiovascular exercises and resistance exercises. The difference between infants, toddlers, children, and adolescents are then outlined and nutritional considerations are discussed.

Like the previous chapter, chapter 5 introduces statistical information regarding the senior adults in the United States. This chapter outlines the process of aging and its associative changes in various body systems. The precautions to be followed during exercise in elderly population are presented. For example, factors such as inability to regulate body temperature, loss of ROM, loss of balance, decrease in lean tissue, loss of cardio-respiratory functioning are explained. The benefits of exercise, exercise testing and prescription, and nutritional considerations for the aging are discussed.

The remaining chapters make up Part 3 of the book, and focus on exercise and nutrition for persons with disease and illness. The secondary risks associated with overweight and obesity with respect to various body systems including cardiovascular system, musculoskeletal system, respiratory system, digestive system, hormone levels are discussed in chapter 6. The author points out that the fitness professionals should emphasize the health improvements that occur even in the absence of weight loss. The author strongly recommends combining increased activity with nutritious diet. In addition to the exercise prescription, an overview of drug-based and surgical treatments for obesity are included in this chapter.

Chapter 7 reviews the major components and disease of the cardiovascular system including atherosclerosis, coronary artery disease, heart attacks, hypertension, congestive heart failure and peripheral vascular disease in depth. The precautions and benefits of exercise are highlighted. ACSM guidelines for the exercise testing and prescription are recommended for outpatient exercise programs for those with CHF, hypertension, and peripheral artery disease. The diet and risk factor for CVD and therapeutic lifestyle changes from the National Cholesterol Education Program are also covered.

Chapters 8–12 describe disorders of the skeletal system, diabetes and its complications, pathology of cancer, changes with asthma and development of multiple sclerosis, respectively. These chapters highlight the anatomical and physiological variances, recommended exercise prescription, precautions during exercises, and nutritional considerations. In chapter 8 the osteoporosis and arthritis conditions are discussed in detail and the exercise guidelines are subdivided into two groups: guidelines for those at risk of developing osteoporosis and those diagnosed with osteoporosis. The methods to diagnose diabetes, pathology of type I and type II diabetes, the associated complications including retinopathy, neuropathy and nephropathy, increased risk of hypoglycemia are discussed extensively in chapter 9. Common causes of cancer, benign versus malignant tumors, diagnosis and various treatment options for cancer, exercise guidelines, precautions during exercise and energy needs are well documented in chapter 10.

The normal respiratory system functioning, respiratory changes with asthma, managing asthma, exercise prescription for individuals with mild or controlled asthma and for individuals with moderate to severe asthma are the primary concerns of chapter 11. The final chapter of this book highlights the factors contributing to the development of

multiple sclerosis, categories and treatment of MS. The general exercise recommendations proposed by National Sclerosis Society and National Center on Physical Activity and Disability are outlined.

In regard to the usefulness of this book, there are several strengths to consider. First, the content of this book is based on extensive research. All recommendations and precautions are backed up by specific rationale, which gives readers a thorough understanding of why addressing specific need is vital and why certain things are avoided within each specific population. For example, the author points out the need to avoid exercise during peak insulin activity since exercise causes increased sensitivity to insulin. Thus, elevated insulin level with increased insulin sensitivity will predispose to hypoglycemia.

Secondly, the author has succeeded in being very precise when discussing the anatomical and physiological variances, recommended exercises, precautions during exercises and nutritional considerations for special populations. Experts have the responsibility to identify the client's specific needs and address them appropriately. This book is well organized and each chapter deals with a specific population; therefore, it has the potential to serve as a concise, ready reference for practitioners when working with the identified groups. Another strength and useful aspect of this book is the quick reference, which highlights the interesting facts, exercise tips, and important information. Other features such as highlights, sample exercise sections with pictures, case studies, and critical thinking questions are also useful.

The book is an ideal resource for the therapeutic recreation specialist who works in the realms of rehabilitation, prescriptive exercise, wellness, and nutrition. Target audiences for this book also include, but are not limited to personal trainers, fitness professionals, and students pursuing health/fitness professional degree. Generally the book would be of use to any exercise professional who works with the targeted populations. This book is highly recommended as a resource for the reader to develop a better understanding of changes in anatomy and physiology, thereby to develop and implement exercise programs to address the specific needs and to promote health and well being of individuals whose needs are congruent with those covered in the book.