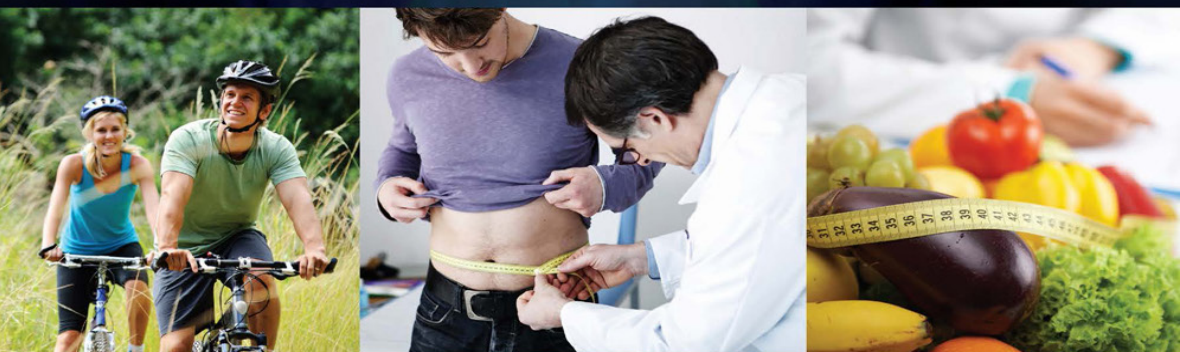


LIFESTYLE MEDICINE SERIES

James M. Rippe, *series editor*



Manual of Lifestyle Medicine

James M. Rippe, MD



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Manual of Lifestyle Medicine

Lifestyle Medicine

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Manual of Lifestyle Medicine

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*To my wonderful wife, Stephanie Hart Rippe, and our
amazing children Hart, Jaelin, Devon, and Jamie,
who give meaning and purpose to my life.*



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Preface

What each of us does in our daily lives profoundly impacts our short- and long-term health and quality of life. This is the fundamental premise of lifestyle medicine. The evidence supporting these assertions comes from literally thousands of studies in the areas of physical activity, nutrition, weight management, and avoiding cigarette-smoking and tobacco products, in general.

More and more clinicians are engaging in lifestyle medicine. Some have devoted their entire careers to this discipline, while others are seeking to incorporate components of lifestyle medicine into their daily practices. It is encouraging to see that numerous medical schools around the country have established at least a few courses in the area of lifestyle practices and health and many more are contemplating this. It is my hope and belief that this will encourage more medical students to embrace these principles as key components of their medical practices. The *Manual of Intensive Care Medicine* is intended to be a clinically oriented summary of many of the disciplines that comprise the study of lifestyle medicine. It is intended to provide a point of entry to individuals who are either starting their career in lifestyle medicine or contemplating using lifestyle medicine concepts as components of their practice.

This manual provides key summaries with an emphasis on clinical factors in lifestyle medicine. For the individual seeking more detailed evidence behind each of these areas, I would refer them to the 3rd edition of my *Lifestyle Medicine* textbook. This comprehensive textbook, which was published in 2019, provides detailed evidence from over 150 experts from around the world in various aspects of lifestyle medicine and health.

There is no longer any serious doubt that lifestyle practices and habits profoundly impact on health. These concepts are central to the evidence-based guidelines from multiple prestigious organizations in the areas of prevention and treatment of disease, including the following:

- JNC VIII Guidelines for Hypertension, Prevention, and Treatment
- ACC/AHA Guidelines for the Prevention, Detection, Evaluation, and Treatment of High Blood Pressure
- NCEP (ATP IV) Guidelines for Blood Cholesterol
- Institute of Medicine Guidelines for Obesity Treatment
- ACC/AHA Scientific Consensus Statement on the Treatment for Blood Cholesterol, 2018
- Guidelines from the American Diabetes Association for the Management of Diabetes
- Dietary Guidelines for Americans 2015–2020 and 2020-2025.
- American Heart Association Nutrition Implementation Guidelines
- Guidelines from the American Academy of Pediatrics for the Prevention and Treatment of Childhood Obesity

- Guidelines from the American Academy of Pediatrics for the Treatment of Pediatric Blood Pressure
- Guidelines from the American Academy of Pediatrics for the Treatment of Lipids
- Guidelines from the American Heart Association and the American Academy of Pediatrics for the Prevention and Treatment of the Metabolic Syndrome
- American Heart Association Strategic Plan for 2020
- Joint Statement from the American Heart Association and American Cancer Society for the Prevention of Heart Disease and Cancer
- Presidential Advisory from the AHA and American Stroke Association on Optimizing Brain Health
- AHA/ACC/TOS Guidelines for the Management of Overweight and Obesity in Adults
- ACS/ADA/AHA Scientific Statement on Preventing Cancer, Cardiovascular Disease, and Diabetes
- Physical Activity Guidelines for Americans Scientific Advisory Committee Report of 2018
- The American Heart Association Impact Goal 2030

Despite the enormous body of information linking lifestyle habits and practices to good health, we are still falling dramatically short in terms of convincing the public at large to adopt these principles and practices. In fact, when the American Heart Association listed their components for “ideal” cardiovascular health, which includes many lifestyle practices such as increased physical activity, healthy nutrition, avoiding tobacco products, and maintaining a healthy body weight, they noted that only 5% of individuals in the United States follow all of the components to generate “ideal” cardiovascular health.

Moreover, it is sad to note that most physicians are not incorporating counseling about these habits and practices in their daily clinical work or incorporating them in their own lives. A number of studies have indicated that only 30–40% of physicians counsel patients on lifestyle practices, whether it be physical activity, weight management, or healthy nutrition. This is unfortunate given that over 70% of adults in the United States visit a physician at least once a year. We simply have to do better!

We live in an era where non-communicable diseases (NCDs) far exceed communicable diseases in terms of their impact on morbidity and mortality, as well as health care costs. It has been estimated that over 80% of all chronic diseases have a significant lifestyle component. The WHO has sounded the alarm in this area and listed nine areas of NCDs where it is hoped that clinicians and public health officials will devote significant resources. These include heart disease, diabetes, lack of physical activity, obesity, and excessive alcohol consumption.

The current manual focuses on two interrelated aspects of lifestyle medicine. The first enumerates the practices and habits which we should be encouraging all of our patients to observe such as healthy nutrition, physical activity and health, and other aspects of behavior change. The second major emphasis is on how lifestyle medicine

practices can impact on specific diseases. These include cardiovascular disease, diabetes, cancer, obesity, and pulmonary disease. In addition, there are chapters focused on specific areas of medical practice such as obstetrics and gynecology.

While much of the structure of the *Manual of Lifestyle Medicine* mirrors that of the 3rd edition of *Lifestyle Medicine*, there are a number of new areas of information which have arisen over the last several years which are given particular emphasis in the manual. One of these is the Physical Activity Guidelines for Americans 2018 Scientific Report. This magnificent compilation of information provides overwhelming evidence of the role of physical activity throughout the lifespan and also touches upon most areas of medicine. In addition, the American Heart Association (AHA) and the American Stroke Association (ASA) joined forces to issue a Presidential Advisory in the area of “Optimal Brain Health.” This document provides an important framework for how lifestyle practices and habits can impact on helping individuals maintain strong cognition throughout their lifespan and lower the risk of decreased brain function, including many forms of dementia and Alzheimer’s disease.

There are important data available now about how lifestyle practice and habits impact on individuals throughout every stage of their lives. With this in mind, I have devoted a whole chapter to lifestyle medicine in the pediatric age group, as well as a chapter on lifestyle medicine for people over the age of 65. Also included are other areas of lifestyle medicine where clinicians have not been involved as we should have been. An example of this is in the area of injury prevention, which is the leading cause of morbidity and mortality for individuals under the age of 44. I have devoted an entire chapter to this.

Lifestyle medicine does not exist in a vacuum. It is important to recognize that multiple factors impact the area of lifestyle medicine. Because of this, I have devoted a whole chapter on public policy and environmental supports for lifestyle medicine. As more clinicians consider making lifestyle medicine practices a key component of their medical careers, it is important to understand resources that are available to help in the area of lifestyle medicine. With this in mind, I have devoted a whole chapter providing a framework for the practice of lifestyle medicine, including guidelines and educational resources.

It is important to note that most adults spend at least half of their waking hours in the work environment. To address this issue, I have devoted an entire chapter to health promotion with a specific emphasis on the workplace, which has been an area of active interest and progress for many decades in our country.

The manual concludes with two chapters looking toward growth and the future. As lifestyle medicine has spread around the world, there is an increasing number of individuals and organizations devoted around the globe to supporting the area of lifestyle medicine. I have devoted an entire chapter to how lifestyle medicine continues to grow around the world.

The *Manual of Lifestyle Medicine* concludes with a chapter on the future of lifestyle medicine. While enormous progress has been made, there are still significant challenges in front of us. We need to work hard to help individuals understand the power of their daily habits and practices so that we can close the gap between current

knowledge and what people are actually doing in their lives. Furthermore, it will be important for lifestyle medicine practitioners to understand that subspecialties such as cardiology and endocrinology are now increasingly embracing lifestyle practices. It will be incumbent upon lifestyle medicine practitioners to seek collaborations with those individuals.

Research areas which will increasingly interact with lifestyle medicine include the emerging data in the area of epigenetics where initial studies have suggested that many of our daily lifestyle habits and practices profoundly impact on the way that DNA is ultimately modified through the process of epigenetics. Another area that is important for lifestyle medicine practitioners to assess are emerging technologies such as smartphones and wearable devices, both of which can provide greater avenues for dissemination of information and also motivation for individuals through direct feedback as well as social interactions through the internet.

The future of lifestyle medicine is indeed bright. It will be essential for all individuals engaged in the area of lifestyle medicine to continue to educate themselves and advocate for the importance of daily lifestyle habits and actions for reducing the great burden of NCDs around the world. I hope that the *Manual of Lifestyle Medicine* will assist individuals in continuing to gain knowledge and clinical expertise in the vitally important area of lifestyle medicine.

James M. Rippe, M.D.
Boston, Massachusetts

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First, my long-time Editorial Director, Beth Grady, who plays a vital role in all my book writing and editorial efforts. The *Manual of Lifestyle Medicine* is one of over 56 books that Beth has either managed or helped generate through our organization. She also helps provide editorial support for two major academic textbooks that I am involved in, *Irwin & Rippe's Intensive Care Medicine* (now in its 8th edition) and *Lifestyle Medicine*, 3rd edition, published in 2019. Beth also helps provide editorial direction to the two academic journals which I edit, the *Journal of Intensive Care Medicine*, which is now in its 35th year of publication, and the *American Journal of Lifestyle Medicine*, which is now in its 15th year of publication. Beth also helps coordinate numerous other academic endeavors. She possesses superb editorial skills and combines her enormous efforts with unfailing good humor to coordinate these complex and difficult projects.

I would also like to express my appreciation to my office support staff, including my Executive Assistant, Carol Moreau, who seamlessly coordinates my schedule and travel plans to free up the time for large writing and publishing projects. In addition, she has word processed a number of chapters in the *Manual of Lifestyle Medicine* and helped track down hundreds of references. Our Office Assistant, Deb Adamonis, assists all of us in the daily tasks required to expedite diverse projects in our office and has also played a specific and important role in tracking down references and word processing chapters for the current book. Our Chief Financial Officer, Connie Martell, makes sure that the financial processes are in place to support all of our projects in order for them to move forward smoothly. Our research team at Rippe Lifestyle Institute has always contributed enormous insights to help clarify my thinking about numerous aspects of lifestyle medicine, particularly our Director of Marketing and Client Services, Amy Continelli, who coordinates the day-to-day interactions with multiple research sponsors.

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The project manager, Keith Emmanuel Arnold, at Deanta Global managed the copyediting and typesetting of this book with great skill. Marsha Hecht at Taylor & Francis oversaw the proofing process.

Finally, I am deeply grateful to my family, including my loving wife, Stephanie Hart Rippe, and our four beautiful daughters Hart, Jaelin, Devon, and Jamie, who love and support me through the arduous process of writing and editing many major textbooks and journals, and my other diverse, professional responsibilities which I juggle along with my family life.

I take full responsibility for any errors or omissions in the *Manual of Lifestyle Medicine*. If there is credit due for this project, it belongs to the numerous people who have made substantial contributions along the way.

James M. Rippe, M.D.
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Author Bio

JAMES M. RIPPE, M.D.

Dr. Rippe is a graduate of Harvard College and Harvard Medical School with post-graduate training at Massachusetts General Hospital. He is currently Founder and Director of the Rippe Lifestyle Institute and Professor of Medicine at the University of Massachusetts Medical School.

Over the past 25 years, Dr. Rippe has established and run the largest research organization in the world exploring how daily habits and actions impact short- and long-term health and quality of life. This organization, Rippe Lifestyle Institute (RLI), has published hundreds of papers that form the scientific basis for the fields of lifestyle medicine and high-performance health. Rippe Lifestyle Institute also conducts numerous studies every year on physical activity, nutrition, and healthy weight management. Dr. Rippe has written over 500 academic papers and research abstracts and also written or edited 56 books, including 33 for health care professionals and 23 for the general public.

A lifelong and avid athlete, Dr. Rippe maintains his personal fitness with a regular walk, jog, swimming, and weight training program. He holds a black belt in karate and is an avid wind surfer, skier, and tennis player. He lives outside of Boston with his wife, television news anchor Stephanie Hart, and their four children, Hart, Jaelin, Devon, and Jamie.



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1 Lifestyle Challenges and Opportunities

KEY POINTS

- The study of how daily habits and actions impact on long- and short-term health and quality of life is the core concept in lifestyle medicine.
- There is no longer any serious doubt that positive habits and actions significantly impact on reduction of risk of disease as well as its treatment.
- Such modalities as increased physical activity, proper nutrition, weight management, avoidance of tobacco products, and sleep and stress reduction, all significantly impact both quality of life and likelihood of developing disease.

1.1 INTRODUCTION

An overwhelming body of scientific and medical literature supports the concept that daily habits and actions exert an enormous impact on short- and long-term health and quality of life (1). Thousands of studies supply evidence that engaging in regular physical activity, following sound nutritional practices, maintaining a healthy body weight, not smoking cigarettes or using other tobacco products, and other health promoting practices, all powerfully influence health and quality of life. These habits and practices have formed the basis of the emerging medical subspecialty of lifestyle medicine.

The strength of the scientific literature supporting the positive health impact of these daily habits and actions is underscored by their incorporation into virtually every evidence-based clinical guideline from organizations involved in the prevention and treatment of metabolically related diseases (2). Some of these guidelines and consensus statements from these prestigious medical organizations are found in Table 1.1.

All of these statements emphasize positive lifestyle habits and practices as key components of prevention and treatment of disease, sometimes in conjunction with surgical and medical therapies.

Despite the widespread recognition in the scientific and medical communities of the important role of lifestyle measures and practices as key components of the treatment of various metabolic diseases, it has been frustratingly difficult to achieve improvements in the habits and actions of the American public. Numerous studies have shown that a distinct minority of adults in the United States follow some or all of the recommended positive lifestyle habits and practices.

TABLE 1.1**Consensus Statements from Various Organizations which feature Lifestyle Modalities**

- JNC VIII Guidelines for Hypertension, Prevention and Treatment
- ACC/AHA Guidelines for the Prevention, Detection, Evaluation and Treatment of High Blood Pressure
- NCEP (ATP IV) Guidelines for Blood Cholesterol
- Institute of Medicine Guidelines for Obesity Treatment
- ACC/AHA Scientific Consensus Statement on the Treatment for Blood Cholesterol
- Guidelines from the American Diabetes Association for the Management of Diabetes
- Dietary Guidelines for Americans 2015–2020 and 2020-2015
- American Heart Association Nutrition Implementation Guidelines
- Guidelines from the American Academy of Pediatrics for the Prevention and Treatment of Childhood Obesity
- Guidelines from the American Academy of Pediatrics for the Treatment of Pediatric Blood Pressure
- Guidelines from the American Academy of Pediatrics for the Treatment of Lipids
- Guidelines from the American Heart Association and the American Academy of Pediatrics for the Prevention and Treatment of the Metabolic Syndrome
- American Heart Association Strategic Plan for 2020
- Joint Statement from the American Heart Association and American Cancer Society for the Prevention of Heart Disease and Cancer
- Presidential Advisory from the AHA and American Stroke Association
- AHA/ACC/TOS Guideline for the Management of Overweight and Obesity in Adults
- ACS/ADA/AHA Scientific Statement on Preventing Cancer, Cardiovascular Disease and Diabetes
- Physical Activity Guidelines Advisory Committee Report of 2018.

Rippe JM. Lifestyle Medicine (3rd edition). CRC Press (Boca Raton), 2019.

For example, the Strategic Plan for 2020, which was released by American Heart Association (AHA), stated that only 5% of the adult population in the United States practice the positive lifestyle measures or have the health parameters which are clearly shown to significantly reduce the risk of developing cardiovascular disease (CVD) (3).

Numerous studies, including randomized control trials and a variety of cohort studies, have uniformly demonstrated the enormous power of positive lifestyle habits and practices. For example, the Nurses' Health Study, which is a study of over 100,000 female nurses followed for more than 20 years, showed that over 80% of all heart disease and over 91% of all diabetes in women could be eliminated if these individuals would adopt a cluster of positive lifestyle practices, including regular physical activity (30 minutes or more of moderate intensity physical activity on most or all days), maintenance of healthy body mass index (BMI of 19–25 kg/m²), not smoking cigarettes, and following a few simple nutritional practices such as consuming more fruits and vegetables and increasing whole grains (4). The U.S. Professional Health Study, which is a long-term study of male health professionals,

showed similar dramatic reductions in risk of chronic diseases in men who followed the same behaviors (5). In fact, in both studies, individuals who adopted only one of these positive behaviors were able to reduce their risk of developing coronary heart disease (CHD) in half.

While the medical community is generally aware of the wealth of information in this area, a distinct minority of physicians has incorporated it in their medical practices. Physicians agree that we should practice “evidence-based medicine,” and yet in the area of lifestyle practices and habits we in the medical community have been relatively slow to apply this standard to preserving good health (6). Virtually every physician would agree with the premise that weight management, sound nutrition, regular physical activity, and not smoking cigarettes all result in health benefits. Less than 40% of physicians regularly counsel patients in these areas.

The purpose of the *Manual of Lifestyle Medicine* is to bring key summaries of lifestyle medicine habits and practices into a user-friendly format to the medical community. This book is an outgrowth of the major academic textbook, *Lifestyle Medicine* 3rd Edition, CRC Press, which I have the honor of editing. This larger text was published in 2019.

The *Manual of Lifestyle Medicine* distills some of the similar information, adds studies which have been published since the 3rd edition of *Lifestyle Medicine*, and puts it in a shorter, perhaps more user-friendly, format for practicing physicians and other health care professionals.

Optimally, individuals will utilize the *Manual of Lifestyle Medicine* in conjunction with my major academic textbook to not only refer to the practical guidelines but also have in-depth summaries of the evidence supporting the power of daily lifestyle habits and actions.

1.2 WHAT IS LIFESTYLE MEDICINE?

I had the privilege of editing the first multiauthored academic textbook in lifestyle medicine. In fact, this textbook, which was published in 1999, introduced the term “Lifestyle Medicine” into the academic literature (7). We defined lifestyle medicine as “the discipline of studying how daily habits and practices impact both on the prevention and treatment of disease often in conjunction with pharmaceutical or surgical therapy to provide an important adjunct to overall health.” This initial textbook has continued to expand as the field of lifestyle medicine has continued to grow and mature. The 3rd edition of *Lifestyle Medicine* was published in 2019 and represents the combined wisdom of over 200 scientists and physicians in a 1,500-page double-column textbook (1).

Of course, many investigators have been involved in the diverse areas which are included under the umbrella of lifestyle medicine such as nutrition, physical activity, weight management, and smoking cessation. It is clear, however, that the study of these individual modalities when combined will coalesce around the term of lifestyle medicine.

For example, the AHA changed the name of one of its councils from the “Council on Nutrition, Physical Activity and Metabolism” to “Council on Lifestyle and

Cardiometabolic Health” in 2013 (8). In addition, both the *American College of Preventive Medicine* and the *American Academy of Family Practice* have established working groups and educational tracks in the area of lifestyle medicine.

Representatives from a variety of organizations, including the *American Academy of Pediatrics*, *American College of Sports Medicine*, the *Academy of Nutrition and Dietetics*, the *American Academy of Family Practice*, and the *American College of Preventive Medicine* all sent representatives to a working group which established the first academic summary of competencies for physicians who wish to practice lifestyle medicine which was published in the *Journal of American Medical Association* (9). Recently, the “Competencies for Advanced Knowledge and Intensive Lifestyle Medicine” was published in the *American Journal of Lifestyle Medicine* (10) and expands the prior summary to define the parameters of advanced lifestyle medicine.

Importantly, a new health care organization called The American College of Lifestyle Medicine (ACLM), which was established in 2004, has over the last 16 years rapidly expanded (11). This organization has doubled its membership each year over the last five years. ACLM has also spawned important initiatives to develop curricula and encourage education and certification in the area of lifestyle medicine. Lifestyle medicine has also become an international movement with the inauguration of the Lifestyle Medicine Global Alliance (12).

As already indicated, an academic peer-reviewed journal has been established in lifestyle medicine called the *American Journal of Lifestyle*, where I serve as Editor-in-Chief (13). This journal provides a forum for individuals interested in exchanging academic information in the growing field of lifestyle medicine. AJLM, which is in its 16th year of publication, has over 13,000 subscribers and in 2019 had over 100,000 downloads full text articles. AJLM is listed on PubMed, which assures wide dissemination of important literature in the field of lifestyle medicine.

The name “lifestyle medicine” is appropriate for a variety of reasons. Perhaps, on the most fundamental level, it is the combination of lifestyle and its relationship to health. Clearly, this is an important component of medicine, hence the term “lifestyle medicine” is particularly apt and supported by an enormous body of scientific literature.

1.3 THE POWER OF LIFESTYLE AND ITS PRACTICES TO PROMOTE GOOD HEALTH

The first section of this manual will deal with a number of key issues related to daily lifestyle habits and practices and their impact on short- and long-term health and quality of life. Specifically, I will focus on the following six daily lifestyles issues: physical activity, nutrition, weight management, use of tobacco products, stress, anxiety and depression, and sleep.

- *Physical Activity*

Physical activity is an extremely important component for overall health and the prevention and treatment of various diseases. Physical activity has specifically demonstrated to reduce the risk of multiple diseases such as

CVD, type 2 diabetes (T2DM), metabolic syndrome, obesity, and certain types of cancer (14,15). In addition, regular physical activity is important for brain function and cognition, as well as mental health, and lowers the risks of anxiety and depression as well as assisting in the reduction of symptoms of stress.

Regular physical activity is important to lower the risk of age-related conditions and is vitally important at every stage of the life span from youth to old age. Regular physical activity is also very important for women's health at all stages of their life span, including pregnancy, postpartum, and menopause. Regular physical activity plays an essential role in optimizing brain health and improving cognition and lowering the risk of various dementias, including Alzheimer's disease. The important role of physical activity in these conditions has been underscored by its prominent role in multiple evidence-based guidelines and consensus statements from virtually every organization that deals with chronic disease.

The recently released 2018 Physical Activity Guidelines Advisory Committee Scientific Report emphasizes that increased physical activity carries multiple benefits both for individuals and public health (14). In addition to lowering the risk of chronic diseases, the report also catalogs that regular physical activity powerfully contributes to improved quality of life by improving sleep, as well as feelings of well-being and daily functioning. As the report emphasizes, some of these benefits occur immediately, while others require ongoing regular performance of physical activity.

Physical activity has also been shown to prevent or minimize excessive weight gain both in children and in adults. Other conditions where regular physical activity results in benefits include osteoarthritis (the leading cause of chronic disability in individuals over the age of 65) and hypertension, the most chronic medical condition in the United States.

For all these reasons, regular physical activity should be recommended to every patient that physicians see. An entire chapter of this book will be devoted to the most recent evidence concerning physical activity and its benefits for multiple conditions (see Chapter 3).

- *Nutrition*

Sound nutrition plays a key role in lifestyle habits and practices that affect virtually every chronic disease. This is spelled out in great detail in the Dietary Guidelines for Americans 2015–2020 (DGA) and 2020-2025 (16). There is strong evidence that proper nutrition lowers the risk of CVD, T2DM, obesity, and cancer and many other conditions.

Virtually every major organization recommends proper nutrition, which includes increase in consumption of fruits and vegetables, whole grains (particularly, high fiber), nonfat dairy, seafood, legumes, and nuts. The guidelines further uniformly recommend that those who consume alcohol (among adults) use it in moderation. Also recommended are diets that are lower in red and processed meats, refined grains, sugar sweetened foods, and saturated and trans fats. The guidelines all emphasize the importance

of balancing calories and regular physical activity as a strategy of maintaining healthy weight and lowering the risk of various chronic diseases. These issues will all be discussed in Chapter 2.

- *Weight Management*

Overweight and obesity are extremely common in the United States, with approximately 70% of people falling into these categories (17). In many ways, overweight and obesity represent quintessential lifestyle diseases. Even small amounts of excess weight or weight gain have been associated with many chronic diseases, including CVD, T2DM, some forms of cancer, musculoskeletal disorders, arthritis, and many other diseases and conditions. The cornerstones of obesity treatment rely on lifestyle measures that contribute to balancing energy to prevent weight gain or creating energy deficits to achieve weight loss. These factors will be discussed in detail in Chapter 8.

- *Tobacco Products*

There is overwhelming evidence from multiple sources that cigarette smoking and second-hand exposure to cigarette smoke both significantly increase the risk of multiple chronic diseases, including CVD, stroke, T2DM, and cancer (18). In the 1950s, over half of both men and women smoked cigarettes. The prevalence of cigarette smoking has declined dramatically over the last 50 years. However, unfortunately, it seems to have leveled off with approximately 15% of individuals currently smoking cigarettes.

- *Stress, Anxiety, and Depression*

Stress is endemic in our modern fast paced world. It has been estimated that over 30% of individuals experience enough stress in daily lives to negatively impact their life at home or at work (19). Multiple lifestyle practices and strategies are available to help in the reduction of stress and its impact. Anxiety is the most common affective disorder in the United States, with almost 20% of individuals experiencing high enough levels of anxiety to impact their daily life. Depression is the second most common effective disorder, with 10% of the population experiencing major depressive episodes on an annual basis.

- *Sleep*

Healthy sleep is extremely important both for risk factor reduction and for improved quality of life. It has been estimated that 15–30% of individuals experience significant sleep disorders (20). In addition, difficulty in sleeping may contribute to fatigue, which in turn may contribute to motor vehicle accidents. The National Highway Transportation Council has estimated that 2–3% of all fatal accidents occur because of drowsiness. Some investigators have suggested that the prevalence of sleep-related fatal accidents may be significantly higher, perhaps as high as 15–20%.

1.4 BEHAVIORAL CHANGE

In many instances, adopting more positive lifestyle practices and habits will require changes in behavior (21). Behavior is often very ingrained, and behavior change is difficult. It is, however, possible. A robust science concerning behavior change

has arisen with multiple frameworks and strategies that have been demonstrated to help people effectively change their behaviors. Since this is so important in lifestyle medicine, a whole chapter will be devoted to this (see Chapter 4).

1.5 LIFESTYLE MEDICINE AND CHRONIC DISEASE REDUCTION

As already indicated, lifestyle modalities play a critically important role in risk reduction and treatment of various chronic diseases: cardiovascular disease (CVD), T2DM and prediabetes, cancer, obesity and weight management, and dementia. Separate chapters will be devoted to each of these chronic diseases.

1.6 LIFESTYLE PRACTICES AND IMPROVED HEALTH

In addition to the central role that lifestyle practices play in the disease reduction, lifestyle habits also impact on multiple other medical areas. These include immunology and infectious disease, pulmonary medicine, obstetrics and gynecology, and brain health. Separate chapters will be devoted to each of these. In addition, lifestyle practices and habits significantly impact on the health of both women and men, and separate chapters will be devoted to each of these important areas.

1.7 LIFESTYLE MEDICINE ACROSS THE LIFE SPAN

Healthy lifestyle habits and practices are important throughout one's life span. For this reason, separate chapters will be devoted to lifestyle medicine in youth (22) and lifestyle medicine in older adults (23). In addition, lifestyle practices and habits are essential in preventing injuries, which is an extremely important area that is often neglected when habits and actions are considered, and a separate chapter is devoted to this area. Lifestyle habits and practices can also play a very significant role in reducing the likelihood of substance abuse and addiction and a whole chapter is devoted to this.

1.8 THE PRACTICE OF LIFESTYLE MEDICINE

As lifestyle medicine has grown and matured, an increasing number of physicians have chosen to include lifestyle medicine modalities within the context of their overall practice or even devoted their entire practice to lifestyle medicine (24). A robust body of information is now available about key factors related to the practice of lifestyle medicine. An entire chapter will be devoted to this emerging area, including educational resources for those who wish to pursue more advanced knowledge in lifestyle medicine.

1.9 PUBLIC POLICY AND ENVIRONMENTAL SUPPORT

The practice of lifestyle medicine does not occur in a vacuum. There are multiple interactions with not only individuals but also families, communities, national policies, and the built environment. For this reason, an entire chapter is devoted to this important area.

1.10 LIFESTYLE MEDICINE AROUND THE WORLD

The practice of lifestyle medicine has important implications throughout every country in the world. The lifestyle movement has expanded to include many countries and a whole chapter is devoted to how lifestyle medicine has advanced around the world, including both specific challenges and opportunities.

1.11 THE FUTURE OF LIFESTYLE MEDICINE

As the field of lifestyle medicine continues to advance, it will be important to examine where additional research is important and how various emerging technologies can play central roles in the advancement of lifestyle medicine. An entire chapter is devoted to this.

1.12 HOW TO USE THIS BOOK

The intent of the *Manual of Lifestyle Medicine* is to provide a user-friendly, practical basis for those who wish to improve their knowledge of lifestyle medicine and put its concepts into practice. With this in mind, the emphasis throughout this book will be on application of lifestyle medicine to various population groups and conditions and specific pathways to increase lifestyle medicine in the clinical practice of medicine. While evidence will be presented for the benefits of lifestyle medicine, those who wish to have a much more in-depth exploration of this knowledge are encouraged to combine the use of this manual with the much more extensive 3rd edition of my textbook *Lifestyle Medicine*.

1.13 PRACTICAL APPLICATIONS

- The *Manual of Lifestyle Medicine* is intended to provide a practical and user-friendly approach to incorporation of lifestyle medicine and its principles into the practice of medicine.
- Modalities of lifestyle medicine are discussed as well as the impact of lifestyle medicine habits and practices on chronic disease reduction.
- Individuals who wish to have a more in-depth knowledge of the evidence base behind lifestyle medicine are encouraged to utilize the *Manual of Lifestyle Medicine* in conjunction with the 3rd edition of my major textbook, *Lifestyle Medicine* (CRC Press, 2019).

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2 Nutrition in Lifestyle Medicine

KEY POINTS

- Nutrition plays a significant role in seven out of the ten leading causes of death worldwide.
- Sound nutritional practices are central to the prevention and treatment of many chronic diseases as is emphasized in multiple evidence-based guidelines from various scientific organizations.
- There is widespread consensus among healthy nutrition guidelines, all of which emphasize increasing consumption of fruits and vegetables, whole grains, and low-fat dairy as well as recommending decreased consumption of red meat, processed meats, and sugar-sweetened beverages.
- The influences on eating behavior are complex, including individual, family, community, and public policy factors.
- Key challenges include making existing knowledge on sound nutrition more accessible to help individuals implement this knowledge into their daily lives.
- Additional education of physicians to improve knowledge in the area of nutrition will be vital to meeting this challenge.

2.1 INTRODUCTION

An overwhelming body of scientific literature supports the power of daily habits and actions to lower the risk of chronic disease and improve short- and long-term health and quality of life: (1) Thousands of studies support the evidence that maintaining healthy weight, following sound nutrition practices, engaging in regular physical activity, not smoking cigarettes, and other health-promoting practices profoundly impact on health and quality of life. Nutrition, in particular, plays a very prominent role in multiple aspects of positive lifestyle and good health. In fact, there is a nutritional component in seven out of the ten leading causes of death worldwide (2).

Nutritional practices are a central component along with other lifestyle habits and practices in the field that is called “Lifestyle Medicine.” Eating behavior and other aspects of nutrition are complex, including individual, family, community, and public health factors. However, a considerable amount of science-based evidence exists in this area. A key challenge remains to apply this existing knowledge concerning sound nutrition to help people implement this knowledge in their daily lives (3).

Despite an abundance of knowledge, it has been frustratingly difficult to improve nutritional practices in the American population. Consider the following:

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- Almost 70% of the adult population in the United States is either overweight or obese. (There has been a staggering 40% increase in obesity over the past 20 years.)
- Less than one-third of the adult population in the United States consumes adequate servings of fruits and vegetables and follows other simple evidence-based nutritional practices for good health (4).
- The prevalence of diabetes in the United States has doubled in the past 20 years.
- Over 40% of the adult population in the United States has high blood pressure, yet less than 20% of individuals with high blood pressure follow the Dietary Approach to Stop Hypertension (DASH) diet which has been demonstrated to clearly help in the control and reduction of blood pressure (5).
- Despite improvements in the last 20 years, cardiovascular disease (CVD) remains the leading killer of men and women in the United States, resulting in 37% of mortality each year. Multiple nutritional practices impact on the likelihood of developing CVD (6).

Finding practical strategies to help individuals make proper nutritional choices in their lives is an urgent mandate in the United States and in many other countries. Unfortunately, many individuals in the health care community do not have adequate skills or background knowledge to provide nutritional counseling and/or do not incorporate this information into the regular practice of medicine.

All of these issues will be discussed in more detail in this chapter and also in chapters on specific disease entities found throughout this book.

2.2 WIDESPREAD CONSENSUS

Numerous scientific organizations have published guidelines concerning the important role of positive nutritional habits in the prevention or treatment of disease. Among these organizations, there is widespread agreement (2). Major authoritative guidelines which incorporate an important role for nutritional practices include the following:

- Dietary Guidelines for Americans 2015–2020
- National Cholesterol Education Program
- JNC VII and JNC VIII evidence-based guidelines for blood pressure control
- 2017 Guidelines for Prevention and Management of Hypertension
- Institute of Medicine Guidelines for the Management of Obesity
- Lifestyle Management Guidelines from the American Diabetes Association
- Numerous guidelines from the American Heart Association

In addition, virtually every scientific body that deals with metabolic diseases has recommended sound nutrition as a cornerstone for the prevention and treatment of various diseases. A list of some of these guidelines is found in Table 2.1.

TABLE 2.1**Nutrition Guidelines from Various Scientific Organizations**

AHA Guidelines for the Prevention and Management of Coronary Artery Disease

AHA Nutrition Implementation Guidelines

AHA 2020 Strategic Impact Goals

Guidelines from the American Diabetes Association for the Management of Diabetes

American Academy of Pediatrics Guidelines for Prevention and Treatment of Childhood Obesity

American Academy of Pediatrics for Heart Disease Risk Factor Reduction in Children

AHA and AAP Guidelines for Prevention and Treatment of Metabolic Syndrome

AHA and American Cancer Society Joint Statement on Prevention of Heart Disease and Cancer

Source: Rippe JM. Nutrition in Lifestyle Medicine: Overview. *Nutrition in Lifestyle Medicine*. Springer International Publishing, Cham, 2017:3-12.

Thus, the role of nutrition and positive lifestyle is built on a broad consensus of scientific statements and authoritative guidelines.

2.3 BACKGROUND

Consensus statements and recommendations from a variety of organizations over the past ten years on the relationship between nutrition and metabolic health are very similar. These recommendations have been drawn from similar data bases and large epidemiological studies. These published consensus statements form the basis of the recommendations made in this chapter:

- Diet and lifestyle recommendations revision 2006: The Scientific Statement from the American Heart Association Nutrition Committee (7)
- Dietary Guidelines for Americans 2015–2020 (8)
- Defining and Setting National Goals for Cardiovascular Health Promotion and Disease Reduction: The American Heart Association Strategic Impact Goals through 2020 and Beyond (9)
- 2013 AHA/ACC Guidelines for Lifestyle Management to Reduce Cardiovascular Risk: The Report of the American College of Cardiology/AHA Task Force on Practice Guidelines (10)
- The American Dietetic Association Practice Guidelines, Evidence-Based Nutrition Practice Guidelines for Diabetes and Scope and Standards of Practice. *Journal of the American Dietetic Association*. 2008;108:S52-58 (11)
- 2017 ACC/AHA Guidelines for Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults (12)
- 2018 AHA/ACC Guidelines for the Management of Blood Cholesterol (13)

These consensus statements consistently recommend a dietary pattern that is high in fruits and vegetables, whole grains (particularly high fiber), nonfat dairy, seafood, legumes, and nuts. The guidelines also consistently recommend diets that are lower in red and processed meats, refined grains, sugar-sweetened foods, and saturated or

trans fat (TFA). The guidelines further recommend that those who consume alcohol (among adults) do so in moderation. The guidelines also emphasize the importance of balancing calories and physical activity as a strategy to maintain healthy weight, thereby reducing the risk of obesity and various other metabolic conditions.

In the area of nutrition, the AHA Strategic Plan for 2020 gives specific guidance. The document recognizes that the optimal nutritional pattern for CVD reduction is complicated but states that with regard to dietary goals, the recommendation is “in the context of a diet that is appropriate in energy balance pursuing an overall dietary pattern consistent with DASH (Dietary Approach to Stop Hypertension).”(5) This diet makes the following recommendations for consumption:

- Consume fruits and vegetables ≥ 4.5 cups a day
- Consume fish ≥ 2 or $2\frac{1}{2}$ ounce servings per week (preferably oil fish)
- Whole grain ≥ 1.1 g of fiber/10 g carbohydrates, 3 one ounce equivalent servings per day
- Sodium ≤ 1500 mg/day
- Sugar-sweetened beverages ≤ 460 calories or 36 ounces per week

While recognizing that comprehensive nutrition guidelines are more detailed than this, these recommendations represent a reasonable starting point.

Dietary guidelines over the past 20 years have moved from recommendations related to specific nutrients or specific foods to a greater emphasis on dietary patterns. This will be the approach taken in this chapter as well.

An additional emphasis in nutritional guidelines has shifted to include the critical aspect of implementation. This will also be discussed toward the end of this chapter. An example of the implementation problem is that with regard to nutrition and hypertension, less than 20% of individuals with high blood pressure currently follow the recommended DASH diet. An example is that it has been estimated that less than 30% of adults in the United States consume the recommended number of fruits and vegetables. Thus, the emphasis on nutrition now includes how to help people meet the current and existing guidelines.

2.4 DIETARY PATTERNS

The 2015–2020 Dietary Guidelines for Americans provided a variety of sources of information to integrate scientific research, food pattern modeling, and the analysis of the current intake of population to develop “healthy US style eating pattern.” This approach allowed a blending of a variety of components of a diet with health outcomes. In addition, this approach allowed more flexibility in terms of the amounts of food from all food groups to establish healthy eating patterns and also meet nutrient needs and accommodated limitations in saturated fats, sugar, and sodium. With this approach the Dietary Guidelines for 2015–2020 indicated the following (8):

Within the body of evidence, higher intakes of vegetables and fruits consistently have been identified as characteristics of healthy eating patterns: whole grains have been

identified as well, although with slightly less consistency. Other characteristics of healthy eating patterns have been identified with less consistency including fat free or low-fat dairy, seafood, legumes, and nuts. Lower intakes of meat including processed meats, poultry, sugar-sweetened foods, particularly beverages and refined grains have also been identified as characteristics of healthy eating patterns.

Some examples of healthy eating patterns include the following:

- **Healthy U.S. Style Eating Pattern**
Utilizing the guidelines outlined in the preceding paragraph, the DGA 2015–2020 developed the Healthy U.S. Style Eating Pattern for the 2000-calorie diet, including daily or weekly amounts of various food groups and components. These are found in Table 2.2.
The DGA 2015–2020 also emphasizes that it is important to balance the intake of calories and that added sugars, saturated fats, and alcohol should be limited and not exceed acceptable macronutrient distribution ranging from protein, carbohydrates, and total fats. The Healthy U.S. Style Eating

TABLE 2.2
Healthy U.S.-Style Eating Pattern at the 2,000-Calorie Level, with Daily or Weekly Amounts from Food Groups, Subgroups, and Components

Food Group ¹	Amount* in the 2,000-Calorie-Level Pattern
Vegetables	2¹/₂c-eq/day
Dark Green	1 ¹ / ₂ c-eq/wk
Red and Orange	5 ¹ / ₂ c-eq/wk
Legumes (Beans and Peas)	1 ¹ / ₂ c-eq/wk
Starchy	5 c-eq/wk
Other	4 c-eq/wk
Fruits	2 c-eq/day
Grains	6 oz-eq/day
Whole Grains	≥3 oz-eq/day
Refined Grains	≤3 oz-eq/day
Dairy	3 c-eq/day
Protein Foods	5¹/₂ oz-eq/day
Seafood	8 oz-eq/wk
Meats, Poultry and Eggs	26 oz-eq/wk
Nuts, Seeds and Soy Products	5 oz-eq
Oils	27 g/day

Source: U.S. Department of Health and Human Services and U.S. Department of Agriculture. *2015–2020 Dietary Guidelines for Americans*, 8th edition. 2015:144