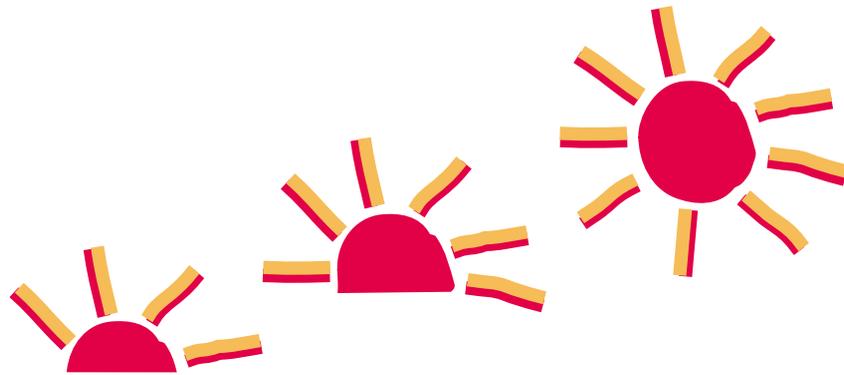




# Bright Futures in Practice



## PHYSICAL ACTIVITY



# Bright Futures in Practice: Physical Activity

**Kevin Patrick, M.D., M.S.**  
**Bonnie Spear, Ph.D., R.D.**  
**Katrina Holt, M.P.H., M.S., R.D.**  
**Denise Sofka, M.P.H., R.D.**  
Editors

Supported by  
Maternal and Child Health Bureau  
Health Resources and Services Administration  
U.S. Department of Health and Human Services

Published by  
National Center for Education in Maternal and Child Health  
Georgetown University



**Cite as**

Patrick K, Spear B, Holt K, Sofka D, eds. 2001. *Bright Futures in Practice: Physical Activity*. Arlington, VA: National Center for Education in Maternal and Child Health.

Permission must be requested in writing before reproducing any material from *Bright Futures in Practice: Physical Activity*. The National Center for Education in Maternal and Child Health (NCEMCH) cannot grant permission to use photographs, or to reproduce any material in the text noted as having been reprinted or adapted from another source. (Contact the original source for permission to reproduce these materials.) For permission to reproduce other material from the text, please write to NCEMCH at the address below. NCEMCH requires that it be credited, in writing, for any material it grants permission to reproduce.

The mission of the National Center for Education in Maternal and Child Health is to provide national leadership to the maternal and child health community in three key areas—program development, policy analysis and education, and state-of-the-art knowledge—to improve the health and well-being of the nation's children and families. The Center's multidisciplinary staff work with a broad range of public and private agencies and organizations to develop and improve programs in response to current needs in maternal and child health, address critical and emergent public policy issues in maternal and child health, and produce and provide access to a rich variety of policy and programmatic information. Established in 1982 at Georgetown University, NCEMCH is part of the Georgetown Public Policy Institute. NCEMCH is funded primarily by the U.S. Department of Health and Human Services through the Health Resources and Services Administration's Maternal and Child Health Bureau (MCHB).

Library of Congress Control Number 2001090359  
ISBN 1-57285-067-1

***Published by***

National Center for Education in Maternal and Child Health  
Georgetown University  
2000 15th Street, North, Suite 701  
Arlington, VA 22201-2617  
(703) 524-7802  
(703) 524-9335 fax  
E-mail: [info@ncemch.org](mailto:info@ncemch.org)  
NCEMCH Web site: [www.ncemch.org](http://www.ncemch.org)  
Bright Futures Web site: [www.brightfutures.org](http://www.brightfutures.org)

***Copies of this publication are available from***

National Maternal and Child Health Clearinghouse  
2070 Chain Bridge Road, Suite 450  
Vienna, VA 22182-2536  
(888) 434-4MCH (4624), (703) 356-1964  
(703) 821-2098 fax  
E-mail: [nmchc@circsol.com](mailto:nmchc@circsol.com)  
NMCHC Web site: [www.nmchc.org](http://www.nmchc.org)

This publication has been produced by the National Center for Education in Maternal and Child Health under its cooperative agreement (MCU-119301) with the Maternal and Child Health Bureau, Health Resources and Services Administration (HRSA), U.S. Department of Health and Human Services (DHHS). It does not necessarily reflect the views of MCHB, HRSA, or DHHS.

# Table of Contents

	Bright Futures Children’s Health Charter .....	v
	What Is Bright Futures? .....	vi
	A Message from the President’s Council on Physical Fitness and Sports .....	viii
	Creating a Lifelong Foundation for Physical Activity .....	ix
	<i>Bright Futures in Practice: Physical Activity Vision and Goals</i> .....	xi
	How This Guide Is Organized .....	xii
	How This Guide Can Be Used .....	xiii
	Participants in <i>Bright Futures in Practice: Physical Activity</i> .....	xvi
	Acknowledgments .....	xix
	Organizational Support .....	xxi
Introduction	1	
	The Surgeon General’s Report on Physical Activity and Health .....	3
	Physical Activity in Children and Adolescents .....	6
	Building Partnerships to Promote Physical Activity .....	12
Physical Activity Developmental Chapters	15	
	Infancy .....	17
	Early Childhood .....	31
	Middle Childhood .....	47
	Adolescence .....	67
Physical Activity Issues and Concerns	85	
	Asthma .....	87
	Children and Adolescents with Special Health Care Needs .....	92
	Developmental Coordination Disorder .....	102
	Diabetes Mellitus .....	108
	Eating Disorders .....	118
	Ergogenic Aids .....	129
	Girls and Female Adolescents in Physical Activity .....	136
	Heat-Related Illness .....	142
	Injury .....	149
	Nutrition .....	156
	Obesity .....	168
Physical Activity Tools	177	
	Tool A: Definitions of Physical Activity, Exercise, and Fitness .....	179
	Tool B: Helping Children and Adolescents Improve Physical Activity Behaviors .....	182
	Tool C: Appropriate Physical Activity for Children: Executive Summary .....	187
	Tool D: Characteristics of Excellent Physical Activity Programs for Children and Adolescents .....	189
	Tool E: Characteristics of Excellent Coaching .....	195

Indexes 213

Tool F: Physical Activity Resources.....	198
Tool G: <i>Healthy People 2010</i> Physical Activity and Fitness Objectives .....	210
Tool H: CDC Growth Charts .....	212
Developmental Index: Infancy and Early Childhood .....	215
Developmental Index: Middle Childhood and Adolescence .....	217
Tool Index.....	219
Topic Index .....	221

# Bright Futures Children's Health Charter

Principles developed by advocates for children have been the foundation for initiatives to improve children's lives. Bright Futures participants have adopted these principles in order to guide their work and meet the unique needs of children and families in the 21st century.

Every child deserves to be born well, to be physically fit, and to achieve self-responsibility for good health habits.

Every child and adolescent deserves ready access to coordinated and comprehensive preventive, health-promoting, therapeutic, and rehabilitative medical, mental health, and oral health care. Such care is best provided through a continuing relationship with a primary health professional or team, and ready access to secondary and tertiary levels of care.

Every child and adolescent deserves a nurturing family and supportive relationships with other significant persons who provide security, positive role models, warmth, love, and unconditional acceptance. A child's health begins with the health of his parents.

Every child and adolescent deserves to grow and develop in a physically and psychologically safe home and school environment free of undue risk of injury, abuse, violence, or exposure to environmental toxins.

Every child and adolescent deserves satisfactory housing, good nutrition, a quality education, an adequate family income, a supportive social network, and access to community resources.

Every child deserves quality child care when her parents are working outside the home.

Every child and adolescent deserves the opportunity to develop ways to cope with stressful life experiences.

Every child and adolescent deserves the opportunity to be prepared for parenthood.

Every child and adolescent deserves the opportunity to develop positive values and become a responsible citizen in his community.

Every child and adolescent deserves to experience joy, have high self-esteem, have friends, acquire a sense of efficacy, and believe that she can succeed in life. She should help the next generation develop the motivation and habits necessary for similar achievement.

# What Is Bright Futures?

**B**right Futures is a vision, a philosophy, a set of expert guidelines, and a practical developmental approach to providing health supervision for children of all ages, from birth through adolescence. Bright Futures is dedicated to the principle that every child deserves to be healthy and that optimal health involves a trusting relationship between the health professional, the child, the family, and the community as partners in health practice.

## 🌞 Bright Futures Mission

The mission of Bright Futures is to promote and improve the health, education, and well-being of infants, children, adolescents, families, and communities.

## 🌞 Bright Futures Project Goals

- Foster partnerships between families, health professionals, and communities
- Promote desired social, developmental, and health outcomes of infants, children, and adolescents
- Increase family knowledge, skills, and participation in health-promoting and prevention activities
- Enhance health professionals' knowledge, skills, and practice of developmentally appropriate health care in the context of family and community



## 🌞 Bright Futures Project Objectives

- Develop materials and practical tools for health professionals, families, and communities
- Disseminate Bright Futures philosophy and materials
- Train health professionals, families, and communities to work in partnership on behalf of children's health
- Develop and maintain public-private partnerships
- Evaluate and refine the efforts

## Development of Bright Futures

- Was initiated in 1990 and guided by the Health Resources and Services Administration's Maternal and Child Health Bureau, with additional program support from the Health Care Financing Administration's Medicaid Bureau
- Developed comprehensive health supervision guidelines with the collaboration of four interdisciplinary panels of experts in infant, child, and adolescent health
- Was reviewed by nearly 1,000 practitioners, educators, and child health advocates throughout the United States
- Published *Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents* in 1994

- Launched Building Bright Futures in 1995 to implement the Bright Futures guidelines by publishing practical tools and materials and providing technical assistance and training
- Published updated guidelines in 2000 to incorporate current scientific knowledge in health practice

## Funding of Bright Futures

Since its inception in 1990, Bright Futures has been funded by the U.S. Department of Health and Human Services, under the direction of the Maternal and Child Health Bureau.



# A Message from the President's Council on Physical Fitness and Sports

**T**he President's Council on Physical Fitness and Sports (PCPFS) is pleased to recognize *Bright Futures in Practice: Physical Activity* for its role in promoting physical activity and healthy behaviors for our nation's infants, children, and adolescents. The PCPFS has worked hard over the years to improve the fitness of children and adolescents throughout the United States, and we believe that this guide will help many children and adolescents lead more active and healthy lives.

With obesity in our nation reaching near epidemic proportions, it is particularly important that we stress the significant role physical activity plays in promoting and maintaining health. If we can instill this critical message in children and adolescents while they are young, while at the same time

making physical activity enjoyable for them, it will help them develop a lifelong appreciation for the benefits of physical activity. *Bright Futures in Practice: Physical Activity* is a stepping stone toward reaching this goal.

Publications such as *Bright Futures in Practice: Physical Activity* are key to effectively helping children and adolescents develop not only their bodies but also their self-discipline and self-esteem through participation in physical activity. The PCPFS appreciates the time and effort that has gone into developing this guide. We know it will benefit countless individuals in the months and years to come.

Christine G. Spain

President's Council on Physical Fitness and Sports  
Director of Research, Planning, and Special Projects

# Creating a Lifelong Foundation for Physical Activity

**P**hysical activity provides infants, children, and adolescents with many physical and psychological health benefits. However, for a host of social, environmental, economic, cultural, familial, and health-related reasons, there exists a substantial and by most measures growing disparity between the amount of physical activity infants, children, and adolescents participate in and the amount that is beneficial to their health. Therefore, promoting physical activity is critical to the health of infants, children, and adolescents not only now but also in the future.

To meet the challenge of developing physical activity guidelines for infants, children, and adolescents, in June 1997 the Bright Futures team convened a multidisciplinary panel of health professionals, including educators, clinicians, exercise and behavioral scientists, public health officials, and representatives from family organizations. The panel focused on two key issues:

1. What do families need to do to promote the health and physical status of infants, children, and adolescents?
2. What do health professionals and communities need to do to become more effective in promoting the health and physical status of infants, children, and adolescents?

The goal was to develop physical activity guidelines for the infancy through adolescence developmental periods. Physical activity guidelines based on the best available scientific research, professional standards, and expert opinions were developed and

sent for review to more than 100 individuals from a variety of health agencies and organizations.

*Bright Futures in Practice: Physical Activity* presents physical activity guidelines and tools emphasizing health promotion, disease prevention, and early recognition of physical activity issues and concerns of infants, children, and adolescents. It is designed for use by a wide array of health professionals, including physicians, nurses, dietitians, and



health educators. The guide provides information health professionals can use to screen and assess the physical activity levels of infants, children, and adolescents and to provide anticipatory guidance on physical activity to families.

The guide can serve as a practical, educational resource for families and communities. Throughout the guide, we use the term “parent” to refer to the adult or adults responsible for the care of the infant, child, or adolescent. In some situations this person could be an aunt, uncle, grandparent, custodian, or legal guardian.

The guide helps answer the following questions:

- Why is physical activity important for infants, children, and adolescents?
- How do physical activity issues vary by developmental period?
- How do I provide anticipatory guidance about physical activity to children, adolescents, and their families?
- What questions are children, adolescents, and their families likely to raise frequently about physical activity?
- What resources can I use to help children and adolescents become more physically active?

*Bright Futures in Practice: Physical Activity* also highlights the way partnerships among health professionals, families, and communities can improve the health and physical status of infants, children, and adolescents. Health professionals, parents and other family members, teachers, coaches, and community leaders all have a role to play. They can work together to enhance opportunities for physical activity.

*Bright Futures in Practice: Physical Activity* builds on the physical activity guidelines presented in

*Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents*. The guide is a practical tool for applying concepts and principles essential to physical activity supervision. It also supports the *Healthy People 2010* objectives for the nation, and it can be used to develop and implement programs and policies for the health and well-being of infants, children, and adolescents. *Bright Futures in Practice: Physical Activity* represents a vision for the new millennium, a direction for integrating physical activity into health services in the 21st century.

Together, health professionals, families, and communities can work to improve the health and physical status of our nation’s infants, children, and adolescents and to build a foundation for lifelong physical activity behaviors—a foundation that encourages infants, children, and adolescents to enjoy physical activity.

Kevin Patrick, M.D., M.S.

Bonnie Spear, Ph.D., R.D.

Katrina Holt, M.P.H., M.S., R.D.

Denise Sofka, M.P.H., R.D.

Editors

*Bright Futures in Practice: Physical Activity*

# Bright Futures in Practice: Physical Activity Vision and Goals

The vision and goals of *Bright Futures in Practice: Physical Activity* are to:

- ☀️ Improve the health and physical activity status of infants, children, and adolescents
- ☀️ Establish health supervision guidelines focusing on physical activity (e.g., interview questions, screening and assessment, counseling) to help health professionals improve the health and physical activity status of infants, children, and adolescents
- ☀️ Identify desired health and physical outcomes that result from regular physical activity
- ☀️ Encourage partnerships among health professionals, families, and communities to improve the health and physical status of infants, children, and adolescents
- ☀️ Increase family knowledge, skills, and participation in developmentally appropriate physical activities



# How This Guide Is Organized

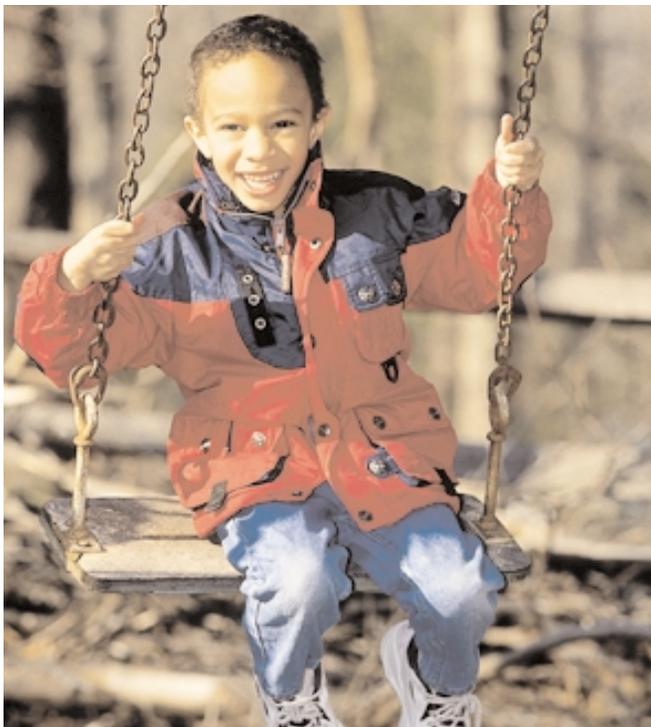
The guide is divided into the following sections.

## Introduction

This section provides information on *Physical Activity and Health: A Report of the Surgeon General* on the benefits of physical activity to children and adolescents; and on building partnerships among health professionals, families, and communities to promote physical activity in infants, children, and adolescents.

## Physical Activity Supervision

This section presents guidance on establishing the foundation for lifelong physical activity through approaches tailored to the infant's, child's, or adoles-



cent's health and medical history. Each chapter contains an overview of the developmental period; strengths, and issues and concerns of the infant, child, or adolescent, family, and community; physical activity supervision (including interview questions, screening and assessment, and counseling); desired health outcomes; and a list of frequently asked questions with answers.

## Physical Activity Issues and Concerns

This section provides an overview of common physical activity issues and concerns that affect infants, children, and adolescents.

## Physical Activity Tools

This section provides additional tools for health professionals, families, and communities to use to promote physical activity in infants, children, and adolescents. Tools include definitions of physical activity, fitness, and exercise; strategies to improve physical activity behaviors; information on appropriate physical activity; and characteristics of excellent physical activity programs and coaching. A list of physical activity resources and Centers for Disease Control and Prevention (CDC) growth charts are included.

## Indexes

This section provides developmental and topic indexes and a listing of all the tools that appear throughout the guide.

# How This Guide Can Be Used

**B**right Futures in Practice: Physical Activity can be used in many settings, including child care facilities, schools, recreational facilities, health clinics and centers, and universities and colleges. Potential uses of the information fall into four main areas: clinical, community, policy, and education and training. Examples of uses appear below.

## Clinical

### Uses

- Incorporate into each health supervision visit as outlined in *Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents*.
- Develop and evaluate physical activity programs.
- Implement standards of practice and protocol.
- Educate children, adolescents, and their families.
- Refer families to physical activity resources.
- Support studies to determine the efficacy of Bright Futures physical activity guidelines.

### Examples

- Use Interview Questions from the developmental chapters to gather information about the

child's physical activity status. This is a useful starting point to determine further screening and assessment and counseling.

- Measure the child's or adolescent's height and weight, determine body mass index (BMI), and plot these on a CDC growth chart at each health supervision visit.



- Incorporate physical activity screening, assessment, and counseling information into health encounter forms.
- Incorporate Desired Outcomes (e.g., “uses appropriate safety equipment during physical activity”) from the developmental chapters to track developmental milestones on health encounter forms.
- Implement recommendations for screening, assessment, and treatment of childhood obesity.

## Community

### Uses

- Provide anticipatory guidance to families on developmentally appropriate physical activity.
- Provide information to community-based program staff to develop physical education activities for children and adolescents.
- Develop physical education programs.
- Refer families to physical activity resources.
- Help schools incorporate physical activity education into the health curricula.
- Implement standards of practice and protocol.

### Examples

- Develop a resource guide for child care program staff to promote regular physical activity for all children (including children and adolescents with special health care needs) enrolled in the program.
- Develop “fact sheets” for distribution to parents, physical education teachers, and coaches.



- Help children and adolescents in group homes and juvenile justice facilities obtain access to physical activity and knowledge of the relationships among body weight, fitness, body image, and substance use.
- Promote partnerships among health professionals, families, and the community (e.g., PTA members, principals, teachers, coaches) interested in promoting physical activity in schools.

## Policy

### Uses

- Provide information to policymakers, program administrators, and community leaders on relevant physical activity issues and concerns.
- Obtain support for physical activity policies and programs.
- Develop standards of practice and protocol for physical activity programs.

### Examples

- Incorporate information into state physical activity education guidelines and regulations.
- Incorporate information into policies for environmental support (e.g., well-maintained sidewalks, bicycle racks outside public facilities) that encourage physical activity.
- Revise health care guidelines for managed care settings to cover physical activity screening, assessment, and counseling for infants, children, and adolescents.
- Focus advocacy efforts on promoting the use of protective gear to reduce sports-related injuries.
- Focus advocacy efforts to develop and implement a policy for appropriate fluid breaks during physical activity practice and competition when temperature and humidity levels are high.
- Use physical activity guidelines to help develop cost-effectiveness studies of physical activity interventions in health care and community settings.

## Education and Training

### Uses

- Educate and train other health professionals and paraprofessionals.
- Provide in-service education and training to staff.
- Use the physical activity guide as a textbook or reference.

### Examples

- Incorporate information into a self-paced training module and offer to health professionals for continuing education credits.
- Incorporate information into medicine, nursing, nutrition, and other health professional training programs.
- Incorporate information into materials for physical education teachers and coaches.
- Plan monthly physical activity case conferences in training programs, using physical activity supervision guidelines. Use “Desired Outcomes” from the developmental chapters to evaluate developmental milestones and formulate physical activity action plans.
- Use the guide as the textbook for a distance learning course.

# Participants in *Bright Futures in Practice: Physical Activity*

## Contributors

**Lucy Adams, M.S., C.N.S.**

University of California, San Francisco

**Eric J. Anish, M.D.**

Department of Primary Care Sports Medicine, School of Nursing, University of Pittsburgh Medical Center

**David R. Brown, Ph.D.**

Division of Nutrition and Physical Activity, Centers for Disease Control and Prevention, U.S. Department of Health and Human Services, Atlanta, GA

**Barbara N. Campaigne, Ph.D.**

Eli Lilly and Company, Indianapolis, IN

**Jane E. Clark, Ph.D.**

Department of Kinesiology, University of Maryland at College Park

**Randal Claytor, Ph.D.**

Department of Physical Education, University of Miami, Oxford, OH

**Charles B. Corbin, Ph.D.**

Department of Exercise Science and Physical Education, Arizona State University, Tempe

**William Dietz, M.D., Ph.D.**

Division of Nutrition and Physical Activity, Centers for Disease Control and Prevention, U.S. Department of Health and Human Services, Atlanta, GA

**M. Ann Drum, D.D.S., M.P.H.**

Maternal and Child Health Bureau, Health Resources and Services Administration, U.S. Department of Health and Human Services, Rockville, MD

**Ronald A. Feinstein, M.D.**

Department of Pediatrics, University of Alabama at Birmingham

**B. Don Franks, Ph.D.**

University of Maryland at College Park; President's Council on Physical Fitness and Sports, U.S. Department of Health and Human Services, Washington, DC

**Julie Gilchrist, M.D.**

Division of Unintentional Injury Prevention, Centers for Disease Control and Prevention, U.S. Department of Health and Human Services, Atlanta, GA

**Sally Harris, M.D., M.P.H.**

Sports Medicine, Palo Alto Medical Clinic, Palo Alto, CA

**David Heppel, M.D.**

Maternal and Child Health Bureau, Health Resources and Services Administration, U.S. Department of Health and Human Services, Rockville, MD

**Katrina Holt, M.P.H., M.S., R.D.**

National Center for Education in Maternal and Child Health, Georgetown University, Arlington, VA

**Mimi D. Johnson, M.D.**

Private Practice, Kirkland, WA

**Barbara J. Long, M.D., M.P.H.**

Division of Adolescent Medicine, University of California, San Francisco

**Douglas B. McKeag, M.D.**

School of Medicine, Indiana University, Indianapolis

**Russell Pate, Ph.D.**

Department of Exercise Science, University of South Carolina, Columbia

**Kevin Patrick, M.D., M.S.**

Graduate School of Public Health and Student Health Services, San Diego State University, CA

**Will Risser, M.D., Ph.D.**

Department of Pediatrics, University of Texas at Houston

**Tom W. Rowland, M.D.**

Bay State Pediatric Associates, Springfield, MA

**Denise Sofka, M.P.H., R.D.**

Maternal and Child Health Bureau, Health Resources and Services Administration, U.S. Department of Health and Human Services, Rockville, MD

**Christine G. Spain**

President's Council on Physical Fitness and Sports, U.S. Department of Health and Human Services, Washington, DC

**Bonnie A. Spear, Ph.D., R.D.**

Department of Pediatrics, University of Alabama at Birmingham

**Elaine J. Stone, Ph.D., M.P.H.**

National Heart, Lung, and Blood Institute, National Institutes of Health, U.S. Department of Health and Human Services, Bethesda, MD

**Mary Story, Ph.D., R.D.**

School of Public Health, University of Minnesota, Minneapolis

**Phyllis Stubbs-Wynn, M.D., M.P.H.**

Maternal and Child Health Bureau, Health Resources and Services Administration, U.S. Department of Health and Human Services, Rockville, MD

**Wendell C. Taylor, Ph.D., M.P.H.**

School of Public Health, University of Texas, Houston

**Anne Turner-Henson, D.S.N., R.N.**

School of Nursing, University of Alabama at Birmingham

**Jill Whitall, Ph.D.**

Department of Physical Therapy, University of Maryland at Baltimore

**Judith Young, Ph.D.**

National Association for Sports and Physical Education, Reston, VA

## Executive Steering Committee Members

### **Robin Brocato, M.H.S.**

Head Start Bureau, Administration on Children and Families, U.S. Department of Health and Human Services, Washington, DC

### **David R. Brown, Ph.D.**

Division of Nutrition and Physical Activity, Centers for Disease Control and Prevention, U.S. Department of Health and Human Services, Atlanta, GA

### **Cathie Burns, Ph.D., C.P.N.P.**

School of Nursing, Oregon State Health Sciences University, Portland

### **Eileen Clark**

National Center for Education in Maternal and Child Health, Georgetown University, Arlington, VA

### **Randal Claytor, Ph.D.**

Department of Physical Education, University of Miami, Oxford, OH

### **M. Ann Drum, D.D.S., M.P.H.**

Maternal and Child Health Bureau, Health Resources and Services Administration, U.S. Department of Health and Human Services, Rockville, MD

### **Ronald A. Feinstein, M.D.**

Department of Pediatrics, University of Alabama at Birmingham

### **Sally Harris, M.D., M.P.H.**

Sports Medicine, Palo Alto Medical Clinic, Palo Alto, CA

### **Katrina Holt, M.P.H., M.S., R.D.**

National Center for Education in Maternal and Child Health, Georgetown University, Arlington, VA

### **Naomi Kulakow, M.A.T.**

Food and Drug Administration, U.S. Department of Health and Human Services, Washington, DC

### **Barbara J. Long, M.D., M.P.H.**

Division of Adolescent Medicine, University of California, San Francisco

### **Connie Lotz, M.S., R.D.**

Health Resources and Services Administration Field Office, Region III, U.S. Department of Health and Human Services, Philadelphia, PA

### **Elaine McLaughlin, M.S., R.D.**

Food and Nutrition Service, U.S. Department of Agriculture, Alexandria, VA

### **Judith S. Palfrey, M.D., F.A.A.P.**

Children's Hospital of Boston, MA

### **Russell Pate, Ph.D.**

Department of Exercise Science, University of South Carolina, Columbia

### **Kevin Patrick, M.D., M.S.**

Graduate School of Public Health and Student Health Services, San Diego State University, CA

### **Karyl Rickard, Ph.D., R.D.**

School of Medicine, Indiana University, Indianapolis

### **William Robinson, M.D., M.P.H.**

Health Resources and Services Administration, U.S. Department of Health and Human Services, Rockville, MD

### **Patricia McGill Smith**

National Parent Network on Disabilities, Washington, DC

### **Denise Sofka, M.P.H., R.D.**

Maternal and Child Health Bureau, Health Resources and Services Administration, U.S. Department of Health and Human Services, Rockville, MD

### **Christine G. Spain**

President's Council on Physical Fitness and Sports, U.S. Department of Health and Human Services, Washington, DC

### **Bonnie A. Spear, Ph.D., R.D.**

Department of Pediatrics, University of Alabama at Birmingham

### **Elaine J. Stone, Ph.D., M.P.H.**

National Heart, Lung, and Blood Institute, National Institutes of Health, U.S. Department of Health and Human Services, Bethesda, MD

### **Phyllis Stubbs-Wynn, M.D., M.P.H.**

Maternal and Child Health Bureau, Health Resources and Services Administration, U.S. Department of Health and Human Services, Rockville, MD

### **Wendell C. Taylor, Ph.D., M.P.H.**

School of Public Health, University of Texas, Houston

### **Judith Young, Ph.D.**

National Association for Sport and Physical Education, Reston, VA

## Organizational Reviewers

### **Ambulatory Pediatric Association**

Bradley Bradford, M.D.

Latha Chandran, M.D.

Ed Christophersen, Ph.D., F.A.A.P.

Katherine Kaufer Christoffel, M.D., M.P.H.

Gary Emmett, M.D.

D. Michael Foulds, M.D.

Elizabeth Specht, M.D.

### **American Academy of Pediatrics**

Steven J. Anderson, M.D., F.A.A.P.

Susan Baker, M.D., Ph. D., F.A.A.P.

Sally Harris, M.D., M.P.H., F.A.A.P.

Adrian D. Sandler, M.D., F.A.A.P.

Eric Small, M.D., F.A.A.P.

Judith S. Palfrey, M.D., F.A.A.P.

### **American Alliance for Health, Physical Education, Recreation and Dance**

Judith Young, Ph.D.

### **American Association of Health Plans**

Nassi Irannaejad, M.P.H.

### **American College of Nurse-Midwives**

Mary Hammond-Tooke, C.N.M.

Sharon Rising, C.N.M., F.A.C.N.M.

### **American College of Sports Medicine**

Ted Kaplan, M.D.

### **American Dental Association**

R. Terry Grubb, D.D.S.

David Perry, D.D.S.

### **American Dietetic Association**

Bonnie A. Spear, Ph.D., R.D.

Mary Story, Ph.D., R.D.

**Association of State and Territorial Health Officials**

Christa-Marie Singleton, M.D., M.P.H.  
Darcy Steinberg, M.P.H.

**Association of State and Territorial Public Health Nutrition Directors**

Maria Bettencourt, M.P.H.  
Michael Hanna, M.S.

**Child Welfare League of America**

Ellen Battistelli

**CityMatCH**

Gerald Wagner, M.D.

**Family Voices**

Betsy Anderson

**Federation for Children with Special Needs**

Betsy Anderson

**March of Dimes**

Richard Johnston, Jr., M.D.

**National Association of County and City Health Officials**

Cheryl Juntunen, M.S., R.N.

**National Association of Pediatric Nurse Associates and Practitioners**

Linda Jonides, C.P.N.P., R.N.

**National Association of School Nurses**

Dorothy Reilly, B.S.N., M.S.N., R.N.  
Janie Sailors, B.S.N., C.S.N.

**Society for Adolescent Medicine**

Marc Jacobson, M.D.  
Dianne Neumark-Sztainer, Ph.D., M.P.H., R.D.

**Society of Pediatric Nurses**

Laura Hayman, Ph.D., R.N., F.A.A.N.

**U.S. Department of Agriculture, Food and Nutrition Service**

Elaine McLaughlin, M.S., R.D.

**U.S. Department of Health and Human Services, Administration for Children and Families, Head Start Bureau**

Robin Brocato, M.H.S.

**U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, Division of Adolescent and School Health**

Howell Wechsler, Ed.D., M.P.H.

**U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, Division of Nutrition and Physical Activity**

David R. Brown, Ph.D.  
Charlene Burgeson, M.A.

**U.S. Department of Health and Human Services, Food and Drug Administration**

Naomi Kulakow, M.A.T.

**U.S. Department of Health and Human Services, National Institutes of Health, National Heart, Lung, and Blood Institute**

Tom Baranowski, Ph.D.  
Philip Nader, M.D.  
Elaine J. Stone, Ph.D., M.P.H.

**U.S. Department of Health and Human Services, President's Council on Physical Fitness and Sports**

Christine G. Spain

**ZERO-TO-THREE: National Center for Infants, Toddlers, and Families**

Marilyn Segal, Ph.D.

**NCEMCH Project Staff**

**Carol Adams, M.A.**

Director of Publications

**Ruth Barzel, M.A.**

Senior Editor

**Adjoa Burrowes**

Senior Graphic Designer

**Eileen Clark**

Assistant Project Director, Bright Futures

**Oliver Green**

Senior Graphic Designer

**Katrina Holt, M.P.H., M.S., R.D.**

Project Director, *Bright Futures in Practice: Physical Activity*

**Anne Mattison, M.A.**

Editorial Director

**Rochelle Mayer, Ed.D.**

Director

**Terry McHugh**

Information Specialist

**Linda Randolph, M.D., M.P.H.**

Chair, Division of Programs

**Consultants**

**Sarah Kolo**

Project Assistant

**Philomena O'Neill**

Illustrator

**Megan O'Reilly**

Production Editor

**Beth Rosenfeld**

Senior Editor

# Acknowledgments

**T**he Bright Futures project is a major initiative of the Maternal and Child Health Bureau (MCHB), Health Resources and Services Administration, U.S. Department of Health and Human Services. As part of the project's current phase, Building Bright Futures, leaders in the field of physical activity and health worked together to develop *Bright Futures in Practice: Physical Activity*. The guide is a unique contribution to the field.

*Bright Futures in Practice: Physical Activity*, the third guide in the Bright Futures in Practice series, benefited from the commitment of MCHB. The support of the following individuals at MCHB was particularly important: Peter C. van Dyck, associate administrator for maternal and child health; M. Ann Drum, division director; David Heppel, division director; and Phyllis Stubbs-Wynn, branch chief. Judith S. Palfrey, former Building Bright Futures chair, also supplied leadership and vision.

The National Center for Education in Maternal and Child Health (NCEMCH), the “home” of the Bright Futures project since its inception in 1990, provided a supportive and creative environment for the development of the physical activity guide, under the leadership of Rochelle Mayer, director.

This collaborative effort would not have been possible without the leadership, vision, and editorial assistance of Kevin Patrick and Bonnie Spear, co-chairs of *Bright Futures in Practice: Physical Activity*.

Katrina Holt, *Bright Futures in Practice: Physical Activity* project director, was key to the process of creating and honing the guide. The guide would not have achieved its current level of excellence without her tireless efforts in organizing the work

of the Executive Steering Committee, contributors, and reviewers. The important part she played in synthesizing the document improved its quality immensely, as well.

Executive Steering Committee members who provided guidance for this document include Robin Brocato, David R. Brown, Cathie Burns, Eileen Clark, Randal Claytor, M. Ann Drum, Ronald A. Feinstein, Sally Harris, Katrina Holt, Naomi Kulakow, Barbara J. Long, Connie Lotz, Elaine McLaughlin, Judith S. Palfrey, Russell Pate, Kevin Patrick, Karyl Rickard, William Robinson, Patricia McGill Smith, Christine Spain, Bonnie Spear, Elaine J. Stone, Phyllis Stubbs-Wynn, Wendell C. Taylor, and Judith Young.

The following individuals provided outstanding contributions to the guide: Lucy Adams, Eric J. Anish, David R. Brown, Barbara Campaign, Jane E. Clark, Randal Claytor, Charles B. Corbin, William Dietz, M. Ann Drum, Ronald A. Feinstein, B. Don Franks, Sally Harris, David Heppel, Katrina Holt, Mimi D. Johnson, Barbara J. Long, Douglas B. McKeag, Russell Pate, Kevin Patrick, Will Risser, Tom W. Rowland, Bonnie Spear, Elaine J. Stone, Mary Story, Phyllis Stubbs-Wynn, Wendell C. Taylor, Anne Turner-Henson, Jill Whitall, and Judith Young.

Many representatives from federal agencies and national organizations offered thoughtful and important suggestions.

I extend my deep appreciation to current and former NCEMCH staff members and consultants: Eileen Clark, Bright Futures assistant project director; Sarah Kolo, project assistant consultant; and Terry McHugh, information specialist, for their assistance in developing the guide. I would also like

to recognize the editorial and artistic contributions of publications department staff and consultants: Carol Adams, director of publications; Anne Mattison, former editorial director; Ruth Barzel, senior editor; Beth Rosenfeld, senior editorial consultant; Adjoa Burrowes and Oliver Green, senior graphic designers; Megan O'Reilly, freelance production editor; Philomena O'Neill, freelance illustrator; Stephen Grote, Rick Reinhardt, and Randy Santos, freelance photographers; and all NCEMCH

staff and other individuals who contributed photographs from personal collections.

It has been most rewarding to be a part of this effort.

Denise Sofka, M.P.H., R.D.

Project Officer, *Bright Futures in Practice:*

*Physical Activity*

Maternal and Child Health Bureau

Health Resources and Services Administration

# Organizational Support

-  Ambulatory Pediatric Association
-  American Academy of Child and Adolescent Psychiatry
-  American Academy of Family Physicians
-  American Academy of Pediatric Dentistry
-  American Academy of Pediatrics
-  American Academy of Physician Assistants
-  American Alliance for Health, Physical Education, Recreation, and Dance
-  American Association for Health Education
-  American College of Nurse-Midwives
-  American College of Sports Medicine
-  American Dental Hygienists' Association
-  American Dietetic Association
-  American Medical Association
-  American Medical Women's Association
-  American Nurses Association
-  American Public Health Association
-  American School Health Association
-  Association of Graduate Programs in Public Health Nutrition
-  Association of Maternal and Child Health Programs
-  Association of State and Territorial Health Officials
-  Association of State and Territorial Public Health Nutrition Directors
-  Child Welfare League of America
-  CityMatCH
-  Family Voices
-  Federation for Children with Special Needs
-  March of Dimes
-  National Association for Health and Fitness
-  National Association for Sport and Physical Education
-  National Association of Community Health Centers
-  National Association of County and City Health Officials
-  National Association of Pediatric Nurse Associates and Practitioners
-  National Association of School Nurses
-  National Association of School Psychologists

 National Association of WIC Directors

 National Organization of Nurse  
Practitioner Faculties

 National Parent Network on  
Disabilities

 Society for Adolescent Medicine

 Society for Developmental and  
Behavioral Pediatrics

 Society for Nutrition Education

 Society of Pediatric Nurses

 ZERO TO THREE: National Center for  
Infants, Toddlers, and Families