Circulation

AHA SCIENCE ADVISORY

Built Environment Approaches to Increase Physical Activity

A Science Advisory From the American Heart Association

ABSTRACT: Engaging in regular physical activity is one of the most important things people can do to improve their cardiovascular health; however, population levels of physical activity remain low in the United States. Effective population-based approaches implemented in communities can help increase physical activity among all Americans. Evidence suggests that built environment interventions offer one such approach. These interventions aim to create or modify community environmental characteristics to make physical activity easier or more accessible for all people in the places where they live. In 2016, the Community Preventive Services Task Force released a recommendation for built environment approaches to increase physical activity. This recommendation is based on a systematic review of 90 studies (search period, 1980–June 2014) conducted using methods outlined by the Guide to Community Preventive Services. The Community Preventive Services Task Force found sufficient evidence of effectiveness to recommend combined built environment strategies. Specifically, these strategies combine interventions to improve pedestrian or bicycle transportation systems with interventions to improve land use and environmental design. Components of transportation systems can include street pattern design and connectivity, pedestrian infrastructure, bicycle infrastructure, and public transit infrastructure and access. Components of land use and environmental design can include mixed land use, increased residential density, proximity to community or neighborhood destinations, and parks and recreational facility access. Implementing this Community Preventive Services Task Force recommendation in communities across the United States can help promote healthy and active living, increase physical activity, and ultimately improve cardiovascular health.

John D. Omura, MD, MPH, FAHA, Chair
Susan A. Carlson, PhD, MPH
David R. Brown, PhD
David P. Hopkins, MD, MPH
William E. Kraus, MD, FAHA
Beth A. Staffileno, PhD, FAHA
Randal J. Thomas, MD, MS, FAHA
Felipe Lobelo, MD, PhD, FAHA
Janet E. Fulton, PhD, FAHA, Vice Chair
On behalf of the American Heart Association Physical Activity Committee of the Council on Lifestyle and Cardiometabolic Health; Council on Cardiovascular and Stroke Nursing; and Council on Clinical Cardiology

Key Words: AHA Scientific Statements ■ built environment ■ exercise

https://www.ahajournals.org/journal/circ

Regular physical activity is associated with a wide array of health benefits, from reducing feelings of anxiety and depression and improving sleep and cognition to lowering the risk of developing type 2 diabetes mellitus, some cancers, and heart disease.[1] Among its many health benefits, physical activity imparts significant cardiovascular health benefits by reducing the risk and progression of cardiovascular disease and cardiovascular disease mortality.[2,3] Recognizing the importance of physical activity for achieving ideal cardiovascular health, the American Heart Association includes physical activity as one of its Life's Simple 7 metrics.[4] The *Physical Activity Guidelines for Americans*, second edition from the US Department of Health and Human Services, recommends that adults should move more and sit less.[1] For substantial health benefits, they should do at least 150 to 300 minutes of moderate-intensity aerobic physical activity, 75 to 150 minutes of vigorous-intensity aerobic physical activity, or an equivalent combination per week.[1] For youth, the Guidelines recommend ≥60 minutes of moderate to vigorous physical activity daily.[1] However, despite the known health benefits of physical activity, only 26% of adolescents and 54% of adults in the United States reported levels of physical activity consistent with meeting the guideline for aerobic activity.[5]

Effective strategies for promoting active lifestyles and overcoming related barriers can help increase physical activity levels among all Americans. Population-based approaches, often implemented at the community level, are a promising way to accomplish this goal, in part because they offer several benefits compared with approaches focused on individual behavior change.[1,6] For example, population-based approaches tend to have greater reach and can result in longer-lasting changes. Even modest improvements in health behaviors in the population can substantially improve health outcomes and disease risk at the population level.[1,6,7] These types of approaches such as built environment interventions, as well as community programs (eg, social support programs) and policies (eg, Complete Streets policies), can help populations reduce or eliminate barriers to making physical activity the easy choice.[1] Population-based approaches to supporting physical activity in communities have been recommended in several seminal documents released over the past decade, including reports from the American Heart Association, the Office of the US Surgeon General, and the Department of Health and Human Services.[1,6,8,9]

The Guide to Community Preventive Services (The Community Guide) is a resource to help communities select community-level intervention approaches to improve health, including approaches to increase physical activity (Table 1).[10] The Community Guide is a collection of evidence-based findings from the Community Preventive Services Task Force (CPSTF), an independent, nonfederal group of public health and disease prevention experts.[11] The CPSTF is supported by 32 liaison organizations that represent federal agencies, including the Armed Forces, and national organizations invested in America's health. The Centers for Disease Control and Prevention provides the CPSTF with scientific and administrative support.[11] The CPSTF makes evidence-based recommendations about the effectiveness and economics of community preventive services, programs, and other interventions. The work of the CPSTF complements that of the US Preventive Services Task Force, which makes evidence-based recommendations about clinical preventive services.[12]

In 2016, the CPSTF recommended combined built environment approaches to increase physical activity, updating its 2004 recommendations for land use and street-scale interventions.[13] Combined built environment approaches work to create or modify environmental characteristics in a community to make physical activity easier or more accessible. This new built environment recommendation provides a timely review of the evidence on this evolving topic; it also outlines 2 specific components that built environment interventions should include to ensure their effectiveness.

Table 1. Recommended Interventions for Increasing Physical Activity

Recommendation	Year
Digital health interventions for adults ≥55 y of age	2019
Interventions to increase active travel to school	2018
Obesity prevention and control: meal or fruit and vegetable snack interventions combined with physical activity interventions in schools	2018
Interventions including activity monitors for adults with overweight or obesity	2017
Built environment approaches combining transportation system interventions with land use and environmental design	2016
Family-based interventions	2016
Diabetes mellitus: combined diet and physical activity promotion programs to prevent type 2 diabetes mellitus among people at increased risk	2014
Enhanced school-based physical education	2013
Health communication and social marketing: campaigns that include mass media and health-related product distribution	2010
Worksite programs	2007
Point-of-decision prompts to encourage use of stairs	2005
Community-scale urban design and land use policies*	2004
Street-scale urban design land use policies*	2004
Creating or improving places for physical activity	2001
Community-wide campaigns	2001
Individually adapted health behavior change programs	2001
Social support interventions in community settings	2001
College-based physical education and health education	2001

*Recommendation replaced by the updated 2016 built environment recommendation.

Data derived from the Community Preventive Services Task Force.[10]

Table 2. Built Environment Approaches to Increase Physical Activity in Combination by Intervention Type

Pedestrian and Bicycle Transportation System Intervention Component		Land Use and Environment Design Intervention Component	
Intervention	**Selected Examples**	**Intervention**	**Selected Examples**
Street pattern design and connectivity	Designs that increase street connections and create multiple route options, shorter block lengths	Mixed land use	Residential, commercial, cultural, institutional, or industrial land uses that are physically and functionally integrated to provide a complementary or balanced mix of restaurants, office buildings, housing, and shops
Pedestrian infrastructure	Sidewalks, trails, traffic calming, intersection design, street lighting, and landscaping	Increasing residential density	Smart growth communities and new urbanist designs, relaxed planning restrictions in appropriate locations to reduce sprawl, sustainable compact cities and communities with affordable housing
Bicycle infrastructure	Bicycle systems, protected bicycle lanes, trails, traffic calming, intersection design, street lighting, and landscaping	Proximity to community or neighborhood destinations	Community destinations such as stores, health facilities, banks, and social clubs that are accessible and close to each other
Public transit infrastructure and access	Expanded transit services, times, locations, and connections	Parks and recreational facility access	Public parks, public recreational facilities, private fitness facilities

Data derived from the Community Preventive Services Task Force.[13]

Increased collaboration within and across sectors, including health care, can help to amplify and extend existing efforts to implement this recommendation and to undertake new initiatives to support it.[8] The accompanying policy statement addresses upstream interventions for cardiovascular health related to community infrastructure and transportation and highlights the important intersection between the public health sector and the healthcare system related to this field.[14] The purpose of this science advisory is to highlight the recent CPSTF recommendation on built environment approaches to increase physical activity in communities across the United States.

THE COMMUNITY GUIDE SYSTEMATIC REVIEW

Methods for the Systematic Review

The CPSTF defined built environment interventions to increase physical activity as those creating or modifying environmental characteristics in a community to make physical activity easier or more accessible.[13] Coordinated approaches must combine new or enhanced elements of pedestrian or cycling transportation systems with the creation or enhancement of land use and environmental design features. Intervention approaches must be designed to enhance opportunities for active transportation, leisure-time physical activity, or both. Active transportation encompasses all human-powered means of travel to reach a destination such as walking, bicycling, or wheelchair rolling.

The systematic review was conducted with the use of a rigorous methodology developed by the Centers for Disease Control and Prevention's Community Guide Branch, which has been described previously.[15] The review was conducted by a team of specialists in systematic review methods and in research, practice, and policy related to increasing physical activity. The team identified and abstracted evidence from articles published between 1980 and June 2014.[13] Ultimately, 90 studies that evaluated the effectiveness of built environment approaches used in combination to create or enhance opportunities for physical activity met the criteria for inclusion in the systematic review. Longitudinal changes (16 studies) or cross-sectional differences (74 studies) for a wide range of physical activity outcomes were evaluated.

Main Findings

The CPSTF found sufficient evidence of effectiveness to recommend built environment strategies combining ≥1 interventions to improve pedestrian or bicycle transportation systems with ≥1 land use and environmental design interventions to increase physical activity.[13] Effect estimates for changes in the level of physical activity could not be calculated because of differences in outcome measures, analyses, and reporting in the included studies. The CPSTF based its finding on a qualitative synthesis and assessment of results for the included studies.

The CPSTF recommendation for built environment approaches to increase physical activity is specific to intervention approaches including ≥1 components that improve pedestrian or bicycle transportation systems and ≥1 land use and environmental design components (Table 2).[13] Improving transportation systems involves creating activity-friendly routes (ie, pedestrian, bicycle, or public transit access) that are a direct and

convenient connection with common or everyday destinations. Such interventions may benefit from safety considerations such as offering physical protection from cars and making it safer and easier to cross the street. Specific components to consider when improving transportation systems include street pattern design and connectivity, as well as supports for multimodal transportation, including pedestrian, bicycle, and public transit infrastructure and access (Table 2).[13]

Land use and environmental design involves creating and enhancing access to everyday destinations, places people can get to from where they live by walking, bicycling, or public transit. These can include grocery stores, schools, worksites, libraries, parks, restaurants, cultural and natural landmarks, and healthcare facilities. These places are often desirable, useful, and attractive. Specific components to consider in land use and environmental design include mixed land use, increased residential density, proximity to community or neighborhood destinations, and parks and recreational facility access (Table 2).[13]

The CPSTF's recommendation is applicable to a wide range of populations and environments, including adults and youth, women and men, urban and mixed environments (urban, suburban, rural), macrolevel interventions (elements of overall community design related to walkability), and microlevel interventions (eg, bike racks, street-crossing amenities).[13]

DISCUSSION

Lack of physical activity is an important modifiable risk factor for many chronic diseases, including cardiovascular disease. Physical activity levels in the United States remain low. Population approaches implemented in communities such as built environment interventions creating or enhancing activity-friendly environments offer important mechanisms to promote physical activity and to encourage active lifestyles. In 2016, the CPSTF found sufficient evidence of effectiveness for built environment interventions and released a new recommendation in The Community Guide.[13] This recommendation is for strategies combining ≥1 interventions to improve pedestrian or bicycle transportation systems with ≥1 land use and environmental design interventions to increase physical activity.

This recommendation is based on a comprehensive systematic review and provides a valuable synthesis and summary of the substantial evidence that has accumulated on this evolving topic over the past decade. In addition, the recommendation adds details about specific components that built environment interventions should include. Such guidance will be useful for practitioners when implementing strategies. For these reasons, this recommendation provides a critical addition to help support the uptake and dissemination of previous calls for community strategies using built environment interventions, including those from the American Heart Association and the Office of the US Surgeon General.[6,8,9] Most recently, the *Physical Activity Guidelines for Americans*, second edition, released in 2018, includes a new chapter, "Taking Action: Increasing Physical Activity Levels of Americans," that provides evidence-based strategies to promote and support physical activity.[1] One of the community-level strategies recommended in this chapter pertains to community design whereby communities can implement built environment interventions that make it easier for people to be active. This chapter also provides examples of what various sectors, including the healthcare sector, can do in partnership with other sectors to improve physical activity. Strategies such as counseling, social support programs, and campaigns can help promote or complement the CPSTF recommendation for effective built environment interventions.

This built environment CPSTF recommendation can be applicable to a wide variety of everyday destinations, including grocery stores, schools, worksites, libraries, parks, restaurants, cultural and natural landmarks, and healthcare facilities. In August 2018, the CPSTF released a recommendation that focuses on schools as the destination.[16,17] Specifically, the CPSTF recommended interventions to increase active travel to school such as Safe Routes to School on the basis of evidence that they increase walking among students and reduce risks for traffic-related injury. Active travel interventions make it easier for children and adolescents to commute to school actively (eg, walking or biking) by improving the physical or social safety of common routes to school or by promoting safe pedestrian behaviors.

Implementation guides and other supportive resources and documents can help practitioners from a variety of sectors (eg, public health, health care, transportation, land use, and community design) act on the CPSTF recommendation for effective built environment interventions. For example, Connecting Routes to Destinations materials from the Centers for Disease Control and Prevention can help practitioners implement strategies aligned with this recommendation at the community level.[18] These materials include a visual guide illustrating what a community may look like when activity-friendly routes connect to everyday destinations, a list of resources to help communities implement the CPSTF built environment recommendation, and real-world examples of communities that have implemented the recommendation. For example, opening a previously closed road in Hernando, MS, connected a middle school and high school. The revitalized road provides opportunities for safe travel between the schools and gives neighborhood residents access to a newly surfaced school track. A second example is from El Paso, TX, where a new walking route connects cultural and economic hubs, namely the Downtown Arts District and the El Paso Union Plaza District. Previously,

a locked parking lot prevented pedestrian access between districts. These and other examples contained in the real-world resource illustrate how the CPSTF recommendation can be implemented in communities. In addition, the CPSTF review includes selected examples of the different components of the recommendation, which may also help facilitate implementation at the community level (eg, pedestrian infrastructure can refer to sidewalks, trails, traffic calming, intersection design, street lighting, and landscaping; Table 2).

Surveillance of built environment supports for physical activity can help monitor progress in the implementation of this CPSTF recommendation. Previous studies have assessed the national prevalence of such efforts in the United States on the basis of survey respondents' perceptions. In data from the 2015 National Health Interview Survey, an estimated 85.1% of US adults reported roads, sidewalks, paths, or trails on which to walk and 62.6% reported sidewalks on most streets where they live.[19] The most frequently reported destination that respondents could walk to was a place to relax (71.8%), followed by shops (58.0%), transit stops (53.2%), and movies, libraries, or churches (47.5%). For most design elements, the prevalence was similar among adults 18 to 24 and 25 to 34 years of age but decreased at >35 years of age. Adults in the South reported a lower prevalence of all elements compared with those in other Census regions. These findings provide a useful overview of the current presence of built environment supports for physical activity and highlight substantial room for improvement in activity-friendly built environment infrastructure nationally. However, these estimates report primarily individual components of this CPSTF recommendation (ie, activity-friendly routes or everyday destinations). Future surveillance efforts examining the combined components as recommended by the CPSTF can help assess and monitor the implementation of this recent recommendation comprehensively. In addition, surveillance strategies may expand beyond self-reported perceptions of the environment to include more objective measures of the environment (eg, geospatial technology, image analysis) that also capture local data.[20]

Additional research is needed in several areas.[13] For example, longitudinal studies are needed to strengthen the evidence base and to help identify specific combinations of interventions that have the greatest impact on physical activity. These studies could be based on evaluation of existing or planned interventions, including natural experiments.[21] Such evaluation efforts would be strengthened by the use of common metrics to allow comparisons of various interventions and between communities.[8] Studies examining the magnitude of changes in physical activity or the proportion of the population influenced can help quantify the impact of such interventions at the population level. Future research evaluating combinations of microscale interventions in different settings and populations, as well as intervention effectiveness among different community characteristics or demographic populations (eg, racial and ethnic minorities, varying socioeconomic statuses), would also be useful. Designing studies that can evaluate dose-response relationships between multiple environment changes and physical activity, as well as longer-term clinical outcomes such as stroke, heart disease, and mortality, can help to improve our understanding of the potential impact of built environment interventions. Finally, it would be beneficial for researchers to continue updating and refining summary assessment tools and measures of objective and perceived environmental characteristics and changes.

CONCLUSIONS

Strategies to improve the built environment as recommended by the CPSTF can enhance community design to promote physical activity in the places where people live.[13] Partnerships between key sectors are important to help increase the planning, implementation, and evaluation of these strategies. Resources such as Connecting Routes to Destinations materials[18] from the Centers for Disease Control and Prevention can help practitioners implement strategies aligned with the CPSTF recommendation. In addition, surveillance efforts can help monitor progress in implementation, and future research can add to the evidence on this topic by filling research gaps. By implementing built environment strategies, communities across the United States can be designed in ways that help promote healthy and active living, increase physical activity, and ultimately improve cardiovascular health for everyone.

ARTICLE INFORMATION

Disclaimer: The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

The American Heart Association makes every effort to avoid any actual or potential conflicts of interest that may arise as a result of an outside relationship or a personal, professional, or business interest of a member of the writing panel. Specifically, all members of the writing group are required to complete and submit a Disclosure Questionnaire showing all such relationships that might be perceived as real or potential conflicts of interest.

This advisory was approved by the American Heart Association Science Advisory and Coordinating Committee on May 28, 2020, and the American Heart Association Executive Committee on June 22, 2020. A copy of the document is available at https://professional.heart.org/statements by using either "Search for Guidelines & Statements" or the "Browse by Topic" area. To purchase additional reprints, call 215-356-2721 or email Meredith.Edelman@wolterskluwer.com.

The American Heart Association requests that this document be cited as follows: Omura JD, Carlson SA, Brown DR, Hopkins DP, Kraus WE, Staffileno BA, Thomas RJ, Lobelo F, Fulton JE; on behalf of the American Heart Association Physical Activity Committee of the Council on Lifestyle and Cardiometabolic Health; Council on Cardiovascular and Stroke Nursing; and Council on Clinical Cardiology. Built environment approaches to increase physical activity: a science advisory from the American Heart Association. *Circulation.* 2020;142:e000–e000. doi: 10.1161/CIR.0000000000000884.

The expert peer review of AHA-commissioned documents (eg, scientific statements, clinical practice guidelines, systematic reviews) is conducted by

the AHA Office of Science Operations. For more on AHA statements and guidelines development, visit https://professional.heart.org/statements. Select the "Guidelines & Statements" drop-down menu, then click "Publication Development."

Acknowledgment

The authors thank Cammie Marti, PhD, MPH, RN, Science and Medicine Advisor, American Heart Association, for her expert assistance in the preparation of this manuscript.

Disclosures

Writing Group Disclosures

Writing Group Member	Employment	Research Grant	Other Research Support	Speakers' Bureau/ Honoraria	Expert Witness	Ownership Interest	Consultant/ Advisory Board	Other
John D. Omura	Centers for Disease Control and Prevention	None	None	None	None	None	None	None
Janet E. Fulton	Centers for Disease Control and Prevention	None	None	None	None	None	None	None
David R. Brown	Centers for Disease Control and Prevention	None	None	None	None	None	None	None
Susan A. Carlson	Centers for Disease Control and Prevention	None	None	None	None	None	None	None
David P. Hopkins	Centers for Disease Control and Prevention, Community Guide Branch	None	None	None	None	None	None	None
William E. Kraus	Duke University Medical Center, Duke Molecular Physiology Institute	None	None	None	None	None	None	None
Felipe Lobelo	Emory University Rollins School of Public Health	None	None	None	None	None	None	None
Beth A. Staffileno	Rush University Medical Center	DSMB (NIH SIREN DSMB committee member)*	None	None	None	None	None	None
Randal J. Thomas	Mayo Clinic	None	None	None	None	None	None	None

This table represents the relationships of writing group members that may be perceived as actual or reasonably perceived conflicts of interest as reported on the Disclosure Questionnaire, which all members of the writing group are required to complete and submit. A relationship is considered to be "significant" if (a) the person receives $10 000 or more during any 12-month period, or 5% or more of the person's gross income; or (b) the person owns 5% or more of the voting stock or share of the entity, or owns $10 000 or more of the fair market value of the entity. A relationship is considered to be "modest" if it is less than "significant" under the preceding definition.

*Modest.

Reviewer Disclosures

Reviewer	Employment	Research Grant	Other Research Support	Speakers' Bureau/ Honoraria	Expert Witness	Ownership Interest	Consultant/ Advisory Board	Other
David R. Bassett	University of Tennessee	None	None	None	None	None	None	None
David Berrigan	National Cancer Institute	None	None	None	None	None	None	None
Amy A. Eyler	Washington University in St. Louis	None	None	None	None	None	None	None
Leonard A. Kaminsky	Ball State University	None	None	None	None	None	None	None
James F. Sallis	University of California San Diego	Robert Wood Johnson Foundation (study includes an assessment of environments where adolescents are active)†; NIDDK (coinvestigator on a study that includes environmental measures)†	None	University of Colorado at Denver*; Department of Health, Tasmania, Australia*	None	None	America Walks*; Rails to Trails Conservancy*; Voices for Healthy Kids*; University of Tasmania, Australia*	None

This table represents the relationships of reviewers that may be perceived as actual or reasonably perceived conflicts of interest as reported on the Disclosure Questionnaire, which all reviewers are required to complete and submit. A relationship is considered to be "significant" if (a) the person receives $10 000 or more during any 12-month period, or 5% or more of the person's gross income; or (b) the person owns 5% or more of the voting stock or share of the entity, or owns $10 000 or more of the fair market value of the entity. A relationship is considered to be "modest" if it is less than "significant" under the preceding definition.

*Modest.

†Significant.

REFERENCES

1. US Department of Health and Human Services. *Physical Activity Guidelines for Americans*. 2nd ed. Washington, DC: US Department of Health and Human Services; 2018.
2. 2018 Physical Activity Guidelines Advisory Committee. *2018 Physical Activity Guidelines Advisory Committee Scientific Report*. Washington, DC: US Department of Health and Human Services; 2018.
3. Piercy KL, Troiano RP. Physical Activity Guidelines for Americans from the US Department of Health and Human Services. *Circ Cardiovasc Qual Outcomes.* 2018;11:e005263. doi: 10.1161/CIRCOUTCOMES.118.005263
4. Lloyd-Jones DM, Hong Y, Labarthe D, Mozaffarian D, Appel LJ, Van Horn L, Greenlund K, Daniels S, Nichol G, Tomaselli GF, et al; American Heart Association Strategic Planning Task Force and Statistics Committee. Defining and setting national goals for cardiovascular health promotion and disease reduction: the American Heart Association's strategic Impact Goal through 2020 and beyond. *Circulation.* 2010;121:586–613. doi: 10.1161/CIRCULATIONAHA.109.192703
5. Centers for Disease Control and Prevention. Trends in meeting the 2008 physical activity guidelines, 2008–2017. 2019. https://www.cdc.gov/physicalactivity/downloads/trends-in-the-prevalence-of-physical-activity-508.pdf. Accessed January 15, 2019.
6. Mozaffarian D, Afshin A, Benowitz NL, Bittner V, Daniels SR, Franch HA, Jacobs DR Jr, Kraus WE, Kris-Etherton PM, Krummel DA, et al; on behalf of the American Heart Association Council on Epidemiology and Prevention, Council on Nutrition, Physical Activity and Metabolism, Council on Clinical Cardiology, Council on Cardiovascular Disease in the Young, Council on the Kidney in Cardiovascular Disease. Population approaches to improve diet, physical activity, and smoking habits: a scientific statement from the American Heart Association. *Circulation.* 2012;126:1514–1563. doi: 10.1161/CIR.0b013e318260a20b
7. Frieden TR. A framework for public health action: the health impact pyramid. *Am J Public Health.* 2010;100:590–595. doi: 10.2105/AJPH.2009.185652
8. US Department of Health and Human Services. *Step It Up! The Surgeon General's Call to Action to Promote Walking and Walkable Communities*. Washington, DC: US Department of Health and Human Services, Office of the Surgeon General; 2015.
9. Kraus WE, Bittner V, Appel L, Blair SN, Church T, Després JP, Franklin BA, Miller TD, Pate RR, Taylor-Piliae RE, et al; on behalf of the American Heart Association Physical Activity Committee of the Council on Lifestyle and Metabolic Health, Council on Clinical Cardiology, Council on Hypertension, and Council on Cardiovascular and Stroke Nursing. The National Physical Activity Plan: a call to action from the American Heart Association: a science advisory from the American Heart Association. *Circulation.* 2015;131:1932–1940. doi: 10.1161/CIR.0000000000000203
10. Community Preventive Services Task Force. The Community Guide: physical activity topic. 2019. https://www.thecommunityguide.org/topic/physical-activity/. Accessed January 15, 2019.
11. Community Preventive Services Task Force. The Community Guide. 2019. https://www.thecommunityguide.org/. Accessed January 15, 2019.
12. US Preventive Services Task Force. U.S. Preventive Services Task Force website. https://www.uspreventiveservicestaskforce.org/. Accessed January 15, 2019.
13. Community Preventive Services Task Force. Physical activity: built environment approaches combining transportation system interventions with land use and environmental design. 2016. https://www.thecommunityguide.org/findings/physical-activity-built-environment-approaches. Accessed January 15, 2019.
14. Young DR, Cradock AL, Eyler AA, Fenton M, Pedroso M, Sallis JF, Whitsel LP; on behalf of the American Heart Association Advocacy Coordinating Committee. Creating built environments that expand active transportation and active living across the United States: a policy statement from the American Heart Association. *Circulation*. 2020;142:eXXX–eXXX. doi: 10.1161/CIR.0000000000000878
15. Briss PA, Zaza S, Pappaioanou M, Fielding J, Wright-De Agüero L, Truman BI, Hopkins DP, Mullen PD, Thompson RS, Woolf SH, et al. Developing an evidence-based Guide to Community Preventive Services–methods: the Task Force on Community Preventive Services. *Am J Prev Med.* 2000;18(suppl):35–43. doi: 10.1016/s0749-3797(99)00119-1
16. Community Preventive Services Task Force. Community Preventive Services Task Force finding and rationale statement–physical activity: interventions to increase active travel to school. 2018. https://www.thecommunityguide.org/content/tffrs-physical-activity-interventions-increase-active-travel-school. Accessed April 30, 2020.
17. Community Preventive Services Task Force. Physical activity: interventions to increase active travel to school. 2018. https://www.thecommunityguide.org/findings/physical-activity-interventions-increase-active-travel-school. Accessed April 30, 2020.
18. Centers for Disease Control and Prevention. Connecting routes + destinations. 2018. https://www.cdc.gov/physicalactivity/community-strategies/beactive/index.html, Accessed January 15, 2019.
19. Whitfield GP, Carlson SA, Ussery EN, Watson KB, Adams MA, James P, Brownson RC, Berrigan D, Fulton JE. Environmental supports for physical activity, National Health Interview Survey–2015. *Am J Prev Med.* 2018;54:294–298. doi: 10.1016/j.amepre.2017.09.013
20. National Academies of Sciences, Engineering, and Medicine. *Implementing Strategies to Enhance Public Health Surveillance of Physical Activity in the United States*. Washington, DC: National Academies Press; 2019.
21. Craig P, Cooper C, Gunnell D, Haw S, Lawson K, Macintyre S, Ogilvie D, Petticrew M, Reeves B, Sutton M, et al. Using natural experiments to evaluate population health interventions: new Medical Research Council guidance. *J Epidemiol Community Health.* 2012;66:1182–1186. doi: 10.1136/jech-2011-200375