

# Behavioral Counseling Interventions to Promote a Healthy Diet and Physical Activity for Cardiovascular Disease Prevention in Adults Without Cardiovascular Disease Risk Factors

## US Preventive Services Task Force Recommendation Statement

US Preventive Services Task Force

**IMPORTANCE** Cardiovascular disease (CVD), which includes heart disease, myocardial infarction, and stroke, is the leading cause of death in the US. A large proportion of CVD cases can be prevented by addressing modifiable risk factors, including smoking, obesity, diabetes, elevated blood pressure or hypertension, dyslipidemia, lack of physical activity, and unhealthy diet. Adults who adhere to national guidelines for a healthy diet and physical activity have lower rates of cardiovascular morbidity and mortality than those who do not; however, most US adults do not consume healthy diets or engage in physical activity at recommended levels.

**OBJECTIVE** To update its 2017 recommendation, the US Preventive Services Task Force (USPSTF) commissioned a review of the evidence on the benefits and harms of behavioral counseling interventions to promote healthy behaviors in adults without CVD risk factors.

**POPULATION** Adults 18 years or older without known CVD risk factors, which include hypertension or elevated blood pressure, dyslipidemia, impaired fasting glucose or glucose tolerance, or mixed or multiple risk factors such as metabolic syndrome or an estimated 10-year CVD risk of 7.5% or greater.

**EVIDENCE ASSESSMENT** The USPSTF concludes with moderate certainty that behavioral counseling interventions have a small net benefit on CVD risk in adults without CVD risk factors.

**RECOMMENDATION** The USPSTF recommends that clinicians individualize the decision to offer or refer adults without CVD risk factors to behavioral counseling interventions to promote a healthy diet and physical activity. (C recommendation)

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**Group Information:** A complete list of the members of the US Preventive Services Task Force appears at the end of this article.

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### Summary of Recommendation

Adults 18 years or older without known cardiovascular disease risk factors	The USPSTF recommends that clinicians individualize the decision to offer or refer adults without cardiovascular disease risk factors to behavioral counseling interventions to promote a healthy diet and physical activity. See the Practice Considerations section for information on determining which patients may benefit most from this service.	C
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USPSTF indicates US Preventive Services Task Force.

See the Summary of Recommendation Figure.

### Importance

Cardiovascular disease (CVD), which includes heart disease, myocardial infarction, and stroke, is the leading cause of death in the US.<sup>1-3</sup> By 2035, nearly half of US adults are anticipated to have some form of CVD.<sup>4</sup> A large proportion of CVD cases can be prevented by ad-

ressing modifiable risk factors, including smoking, obesity, diabetes, elevated blood pressure or hypertension, dyslipidemia, lack of physical activity, and unhealthy diet.<sup>2,4</sup> Adults who adhere to national guidelines for a healthy diet<sup>5</sup> and physical activity<sup>6</sup> have lower rates of cardiovascular morbidity and mortality than those who do not; however, many US adults do not consume healthy diets or engage in physical activity at recommended levels.<sup>7,8</sup> All persons,

**Table 1. Summary of USPSTF Rationale**

Rationale	Assessment
Benefits of counseling interventions to promote a healthy diet and physical activity	<ul style="list-style-type: none"> <li>• There is inadequate direct evidence that counseling interventions improve CVD and related health outcomes. Data directly assessing the effect of counseling interventions on CVD-related events and mortality are limited</li> <li>• There is adequate evidence that counseling interventions provide a small benefit in improving intermediate outcomes associated with CVD such as blood pressure, LDL-C level, and body weight/adiposity</li> <li>• There is adequate evidence that counseling interventions provide a small benefit in improving physical activity levels and dietary outcomes</li> </ul>
Harms of counseling interventions to promote a healthy diet and physical activity	There is adequate evidence to determine the harms of counseling interventions. Based on the nature of the interventions, these harms can be bound as no greater than small in magnitude
USPSTF assessment	The USPSTF concludes with moderate certainty that counseling interventions to promote a healthy diet and physical activity in adults without CVD risk factors has a small net benefit. <sup>a</sup> Persons who are interested and ready to make behavioral changes may be most likely to benefit from behavioral counseling.

Abbreviations: CVD, cardiovascular disease; LDL-C, low-density lipoprotein cholesterol; USPSTF, US Preventive Services Task Force.

impaired fasting glucose or glucose tolerance, or mixed risk factors (eg, metabolic syndrome or 10-year CVD risk  $\geq 7.5\%$ ).

<sup>a</sup> Risk factors include hypertension or elevated blood pressure, dyslipidemia,

regardless of their CVD risk status, can gain health benefits from healthy eating behaviors and physical activity.<sup>1</sup>

Important disparities in diet and physical activity exist across the US population.<sup>7-9</sup> Non-Hispanic Black adults report consuming lower amounts of fruits and vegetables than White adults.<sup>8,10</sup> Persons of lower socioeconomic status report less consumption of fruits and vegetables and lower levels of physical activity than those of higher socioeconomic status.<sup>10-12</sup> Adults with lower educational attainment report exercising less than those with higher educational attainment.<sup>13</sup> Race is often a proxy for exposure to systemic racism, a known source of inequities in social determinants of health.<sup>14,15</sup> Social determinants of health and systemic racism contribute to differences in healthy diet and physical activity by influencing healthy food availability and physical activity barriers and opportunities.<sup>7,8,16,17</sup> For example, while obstacles to pedestrian walking exist across US racial and ethnic groups and income levels,<sup>16</sup> Hispanic/Latino adults and non-Hispanic Black adults report more barriers (eg, animals or crime) to safe walking than White adults.<sup>18</sup>

## USPSTF Assessment of Magnitude of Net Benefit

The US Preventive Services Task Force (USPSTF) concludes with moderate certainty that behavioral counseling interventions have a **small net benefit** on CVD risk in adults without CVD risk factors.

See **Table 1** for more information on the USPSTF recommendation rationale and assessment and the eFigure in the Supplement for information on the recommendation grade. See the **Figure** for a summary of the recommendation for clinicians. For more details on the methods the USPSTF uses to determine the net benefit, see the USPSTF Procedure Manual.<sup>19</sup>

## Practice Considerations

### Patient Population Under Consideration

This recommendation applies to adults 18 years or older without known CVD risk factors, which include hypertension or elevated blood pressure, dyslipidemia, impaired fasting glucose or glucose tolerance, or mixed or multiple risk factors such as metabolic syndrome or an estimated 10-year CVD risk of 7.5% or greater. While

obesity is a risk factor for CVD, a separate recommendation statement addresses individuals with a body mass index (BMI) of 30 or greater (calculated as weight in kilograms divided by the square of height in meters).<sup>20</sup>

Behavioral interventions to reduce CVD risk in adults *with* known modifiable risk factors (ie, hypertension or dyslipidemia) and weight management interventions are addressed in separate USPSTF recommendations.<sup>20,21</sup> See **Table 2** for a summary of current and related USPSTF recommendations on CVD prevention.

### Definitions of Healthy Diet and Physical Activity

The term "healthy diet" is defined as a balance and variety of foods and beverages that assist an individual in achieving and maintaining a healthy weight, supporting health, and preventing disease. As recommended by the US Department of Health and Human Services and the US Department of Agriculture, a healthy diet includes increased consumption of fruits, vegetables, whole grains, fat-free or low-fat dairy, lean proteins, and oils and limited consumption of foods and beverages with high sodium levels, saturated or *trans* fats, and added sugars.<sup>5</sup> Additionally, a healthy diet should limit consumption of alcoholic beverages.<sup>5</sup>

Physical activity is broadly defined as any bodily activity that enhances or maintains overall health and physical fitness. The US Department of Health and Human Services recommends that adults 18 years or older engage in at least 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity aerobic physical activity per week in addition to engaging in strengthening activities at least twice per week.<sup>6</sup>

### Behavioral Counseling Interventions and Implementation Considerations

The USPSTF recommends selectively offering or providing behavioral counseling interventions to patients based on clinician professional judgment and patient preferences.<sup>19</sup> Behavioral counseling interventions may promote physical activity, healthy diet, reducing sedentary time, or some combination thereof. Common dietary counseling advice promotes increased consumption of fruits, vegetables, and fiber; reduced consumption of saturated fats, sodium, and sugar-sweetened beverages; or both.<sup>1</sup> Patient-tailored approaches to enhance skills with reading food labels, preparing healthy meals, and recognizing appropriate caloric intake and portion size

**Figure. Clinician Summary: Behavioral Counseling Interventions to Promote a Healthy Diet and Physical Activity for Cardiovascular Disease Prevention in Adults Without Cardiovascular Disease Risk Factors**

<b>What does the USPSTF recommend?</b>	<p>For adults 18 years or older <b>without</b> known cardiovascular disease (CVD) risk factors:  <b>Individualize the decision to offer or refer</b> adults without CVD risk factors to behavioral counseling interventions to promote a healthy diet and physical activity.  <b>Grade: C</b></p>
<b>To whom does this recommendation apply?</b>	<p>This recommendation applies to adults 18 years or older without known CVD risk factors, which include hypertension or elevated blood pressure, dyslipidemia, impaired fasting glucose or glucose tolerance, or mixed or multiple risk factors such as metabolic syndrome or an estimated 10-year CVD risk of 7.5% or greater. Interventions to reduce CVD risk in adults with known modifiable risk factors (ie, hypertension or dyslipidemia) and weight management interventions are addressed in separate USPSTF recommendations.</p>
<b>What's new?</b>	<p>This recommendation is consistent with the 2017 USPSTF recommendation.</p>
<b>How to implement this recommendation?</b>	<p><b>The USPSTF recommends selectively offering or providing</b> behavioral counseling interventions to patients based on clinician professional judgment and patient preferences.</p> <ul style="list-style-type: none"> <li>• Common <b>dietary counseling</b> advice promotes increased consumption of fruits, vegetables, and fiber; reduced consumption of saturated fats, sodium, and sugar-sweetened beverages; or both.</li> <li>• <b>Physical activity counseling</b> often encourages patients to gradually increase aerobic activity (walking is often emphasized) to achieve at least 150 minutes (2 hours and 30 minutes) per week of equivalent moderate-intensity activity.</li> <li>• <b>Interventions</b> can be delivered individually, in a group, or both, with or without follow-up (telephone calls or emails), or delivered remotely through a combination of print materials, telephone calls, technology-based activities, or some combination thereof.</li> <li>• <b>Typical counseling techniques</b> include behavioral change techniques such as goal setting, problem solving, and self-monitoring; approaches including motivational interviewing principles or portions of the "5 A's" Model (assess, advise, agree, assist, and arrange) are common.</li> <li>• A wide range of <b>specialty trained professionals</b> can deliver these interventions.</li> <li>• <b>Interaction time</b> with a clinician may range from 30 minutes to 6 hours over 6 months or longer.</li> </ul>
<b>What additional information should clinicians know about this recommendation?</b>	<p>In determining whether behavioral counseling interventions are appropriate, patients and clinicians should consider the following.</p> <ul style="list-style-type: none"> <li>• Persons who are interested and ready to make behavioral changes may be most likely to benefit from behavioral counseling.</li> <li>• Higher-intensity counseling interventions may vary in availability and feasibility in clinical settings.</li> <li>• Adoption of healthy behavior advice may be increased by tailoring behavioral counseling to consider patient motivations and goals, activity level and ability, circumstances, preferences, and overall health status, as well as availability of healthy eating establishments, grocery stores, parks, sidewalks, bicycle trails, safe/pleasant walking paths close to home or workplace, traffic, public transportation, crime, and pollution levels.</li> </ul>
<b>Why is this recommendation and topic important?</b>	<ul style="list-style-type: none"> <li>• CVD, which includes heart disease, myocardial infarction, and stroke, is the leading cause of death in the US.</li> <li>• By 2035, nearly half of US adults are anticipated to have some form of CVD.</li> <li>• A large proportion of CVD cases can be prevented by addressing modifiable risk factors, including smoking, obesity, diabetes, elevated blood pressure or hypertension, dyslipidemia, lack of physical activity, and unhealthy diet.</li> <li>• Adults who adhere to national guidelines for a healthy diet and physical activity have lower rates of cardiovascular morbidity and mortality than those who do not; however, many US adults do not consume healthy diets or engage in physical activity at recommended levels.</li> <li>• Important disparities in diet and physical activity exist across the US population. Social determinants of health and systemic racism contribute to differences in healthy diet and physical activity by influencing healthy food availability and physical activity barriers and opportunities.</li> </ul>
<b>What are other relevant USPSTF recommendations?</b>	<ul style="list-style-type: none"> <li>• Behavioral counseling interventions to promote a healthy diet and physical activity for CVD prevention in adults with cardiovascular risk factors.</li> <li>• Behavioral weight loss interventions to prevent obesity-related morbidity and mortality in adults.</li> <li>• Information on additional recommendations related to cardiovascular health is available at <a href="https://www.uspreventiveservicestaskforce.org/uspstf/">https://www.uspreventiveservicestaskforce.org/uspstf/</a></li> </ul>
<b>What are additional tools and resources?</b>	<ul style="list-style-type: none"> <li>• The US Department of Health and Human Services and the US Department of Agriculture have developed dietary guidelines (<a href="https://www.dietaryguidelines.gov/resources/2020-2025-dietary-guidelines-online-materials">https://www.dietaryguidelines.gov/resources/2020-2025-dietary-guidelines-online-materials</a>), physical activity guidelines (<a href="https://health.gov/sites/default/files/2019-09/Physical_Activity_Guidelines_2nd_edition.pdf">https://health.gov/sites/default/files/2019-09/Physical_Activity_Guidelines_2nd_edition.pdf</a>), and additional physical activity resources for clinicians (<a href="https://health.gov/our-work/physical-activity/move-your-way-campaign">https://health.gov/our-work/physical-activity/move-your-way-campaign</a>).</li> <li>• Visit the USPSTF website (<a href="https://www.uspreventiveservicestaskforce.org/uspstf/">https://www.uspreventiveservicestaskforce.org/uspstf/</a>) for related tools and resources that may help clinicians implement this recommendation and assist with uptake of behavioral counseling in specific communities.</li> </ul>
<b>Where to read the full recommendation statement?</b>	<p>Visit the USPSTF website (<a href="https://www.uspreventiveservicestaskforce.org/uspstf/">https://www.uspreventiveservicestaskforce.org/uspstf/</a>) or the JAMA website (<a href="https://jamanetwork.com/collections/44068/united-states-preventive-services-task-force">https://jamanetwork.com/collections/44068/united-states-preventive-services-task-force</a>) to read the full recommendation statement. This includes more details on the rationale of the recommendation, including benefits and harms; supporting evidence; and recommendations of others.</p>

*The USPSTF recognizes that clinical decisions involve more considerations than evidence alone. Clinicians should understand the evidence but individualize decision-making to the specific patient or situation.*

**Table 2. Summary of Current and Related USPSTF Recommendations on Prevention of Cardiovascular Disease**

Risk factors	Normal weight (BMI 18.5 to <25) <sup>a</sup>	Overweight (BMI 25 to <30) <sup>a</sup>	Obese (BMI ≥30) <sup>a</sup>
No hypertension, dyslipidemia, or abnormal blood glucose levels	Individualize the decision to provide or refer to behavioral counseling <sup>b</sup>	Individualize the decision to provide or refer to behavioral counseling <sup>b</sup>	Provide or refer to intensive, multicomponent behavioral counseling <sup>20</sup>
Hypertension, dyslipidemia, or both	Provide or refer to intensive behavioral counseling <sup>21</sup>	Provide or refer to intensive behavioral counseling <sup>21</sup>	Provide or refer to intensive, multicomponent behavioral counseling <sup>20</sup>
Prediabetes or diabetes	Provide or refer to effective behavioral counseling <sup>22c</sup>	Provide or refer to effective behavioral counseling <sup>22</sup>	Provide or refer to effective behavioral counseling <sup>22</sup>

Abbreviations: BMI, body mass index; USPSTF, US Preventive Services Task Force.

<sup>a</sup> BMI calculated as weight in kilograms divided by the square of height in meters.

<sup>b</sup> The evidence review that supports this recommendation statement did include studies that enrolled persons with overweight or obesity. A separate recommendation statement addresses individuals with a BMI of 30 or greater.

<sup>c</sup> The USPSTF recommends screening for prediabetes and diabetes as part of cardiovascular risk assessment in adults aged 35 to 70 years who have

overweight or obesity. Clinicians should consider screening at an earlier age in persons from groups with disproportionately high incidence and prevalence of diabetes (American Indian/Alaska Native, Asian American, Black, Hispanic/Latino, or Native Hawaiian/Pacific Islander persons) or in persons who have a family history of diabetes, a history of gestational diabetes, or a history of polycystic ovarian syndrome, and at a lower BMI in Asian American persons.

are often used.<sup>1</sup> Physical activity counseling often encourages patients to gradually increase aerobic activity (walking is often emphasized) to achieve at least 150 minutes (2 hours and 30 minutes) per week of equivalent moderate-intensity activity.<sup>1</sup> Reducing sedentary time aims to limit time spent engaging in low-energy behaviors while awake such as sitting or reclining while watching television or using a computer.<sup>1</sup>

Primary care clinicians can deliver in-person behavioral counseling interventions or refer patients to other settings. Interventions can be delivered individually, in a group, or both, with or without follow-up (telephone calls or emails), or delivered remotely through a combination of print materials, telephone calls, technology-based activities, or some combination thereof. Typical counseling techniques include behavioral change techniques such as goal setting, problem solving, and self-monitoring; approaches including motivational interviewing principles or portions of the “5 A’s” model (assess, advise, agree, assist, and arrange) are common. A wide range of specially trained professionals, including but not limited to physicians, nurses, registered dietitians, nutritionists, exercise specialists, physical therapists, master’s- and doctoral-level counselors trained in behavioral methods (eg, psychologists), lifestyle coaches, and community health workers can deliver these interventions. Intensity or interaction time with a clinician may range from 30 minutes to 6 hours over 6 months or longer.<sup>1</sup>

In determining whether behavioral counseling interventions are appropriate, patients and clinicians should consider the following.

- Persons who are interested and ready to make behavioral changes may be most likely to benefit from behavioral counseling.
- Higher-intensity counseling interventions may vary in availability and feasibility in clinical settings.
- Adoption of healthy behavior advice may be increased by tailoring behavioral counseling to consider patient motivations and goals, activity level and ability, circumstances, preferences, and overall health status,<sup>23</sup> as well as availability of healthy eating establishments, grocery stores, parks, sidewalks, bicycle trails, safe/pleasant walking paths close to home or workplace; traffic; public transportation; crime; and pollution levels.<sup>7,8,10-13,16,24</sup>

### Additional Tools and Resources

Several related tools and resources may help clinicians implement this recommendation and assist with uptake of behavioral counseling in specific communities.

- The Centers for Disease Control and Prevention (CDC) leads Active People, Healthy Nation, a national initiative with a goal of increasing physical activity for 27 million Americans by 2027; resources include strategies to increase physical activity for all, including considerations in persons with disabilities, and tools for action (<https://www.cdc.gov/physicalactivity/activepeoplehealthynation/index.html>).<sup>25</sup>
- The CDC and the Centers for Medicare & Medicaid Services co-lead Million Hearts, a national initiative aimed toward preventing 1 million heart attacks and strokes within 5 years (<https://millionhearts.hhs.gov/index.html>).<sup>26</sup>
- The Health Equity Resource Toolkit for State Practitioners Addressing Obesity Disparities, provided by the CDC, is available at <https://www.cdc.gov/nccdphp/dnpao/health-equity/state-health-equity-toolkit/pdf/toolkit.pdf>. A separate website provides information about planning, implementing, and evaluating programs to narrow obesity disparities (<https://www.cdc.gov/nccdphp/dnpao/health-equity/state-health-equity-toolkit/index.html>).<sup>27</sup>
- The Community Preventive Services Task Force recommends several community-based interventions to promote a healthy diet (<https://www.thecommunityguide.org/topic/nutrition>)<sup>28</sup> and physical activity (<https://www.thecommunityguide.org/topic/physical-activity>),<sup>29</sup> including community-wide campaigns, social support interventions, school-based interventions, and environmental and policy approaches.
- The Agency for Healthcare Research and Quality Health Literacy Universal Precautions Toolkit contains general guidance to assist primary care settings with linking patients to non-medical support (<https://www.ahrq.gov/health-literacy/improve/precautions/tool18.html>)<sup>30</sup> and making referrals (<https://www.ahrq.gov/health-literacy/improve/precautions/tool21.html>).<sup>31</sup>
- The US Department of Health and Human Services and the US Department of Agriculture have developed dietary guidelines (<https://www.dietaryguidelines.gov/resources/2020-2025-dietary-guidelines-online-materials>)<sup>5</sup> and physical activity guidelines (<https://health.gov/our-work/physical-activity/current-guidelines>).<sup>6</sup> Additional resources to promote the physical activity guidelines are available at <https://health.gov/our-work/nutrition-physical-activity/move-your-way-community-resources>.<sup>32</sup>

### Other Related USPSTF Recommendations

The USPSTF has several recommendations for promoting cardiovascular health in adults.

- Behavioral counseling interventions to promote a healthy diet and physical activity for cardiovascular disease prevention in adults *with* cardiovascular risk factors<sup>21</sup>
- Behavioral weight loss interventions to prevent obesity-related morbidity and mortality in adults<sup>20</sup>
- Screening for high blood pressure in adults<sup>33</sup>
- Interventions for tobacco smoking cessation in adults, including pregnant persons<sup>34</sup>
- Aspirin use for the prevention of CVD<sup>35</sup>
- Statin use for the primary prevention of CVD in adults<sup>36</sup>
- Screening for prediabetes and type 2 diabetes in adults<sup>22</sup>
- Current versions of these and other related USPSTF recommendations are available at <https://www.uspreventiveservicestaskforce.org/uspstf/>.

### Update of Previous USPSTF Recommendation

In 2017, the USPSTF recommended that primary care professionals individualize the decision to offer or refer adults without obesity who do not have hypertension, dyslipidemia, abnormal blood glucose levels, or diabetes to behavioral counseling to promote a healthful diet and physical activity (C recommendation).<sup>37</sup> This updated recommendation is consistent with the 2017 recommendation.

### Supporting Evidence

#### Scope of Review

The USPSTF commissioned a systematic evidence review<sup>1,38</sup> to update its 2017 recommendation on behavioral counseling to promote a healthy diet and physical activity for CVD prevention in adults without cardiovascular risk factors. The review evaluated the benefits and harms of behavioral counseling interventions to promote healthy behaviors in adults without CVD risk factors. The scope was similar to that of the prior systematic review.

#### Benefits of Counseling to Change Behavior and Outcomes

The USPSTF included 113 randomized clinical trials in its review (n = 129 993), most of which were conducted in the US (60 trials).<sup>1,38</sup> All trials reported at least 6 months of follow-up, and many (63 trials) reported 12 months or longer.<sup>1,38</sup> Most trials (73 trials) included men and women.<sup>1,38</sup> The mean age of participants ranged widely, from 18.5 to 79.5 years.<sup>1,38</sup> The mean BMI of trial participants across studies was in the overweight range (27.8).<sup>1,38</sup> Sixty-nine trials reported participant race and ethnicity.<sup>1,38</sup> Of these, most participants were White persons; in 17 trials, Asian persons, Black persons, Hispanic/Latino persons, or Native American/American Indian persons comprised more than two-thirds of participants.<sup>1,38</sup> Most intervention groups focused on physical activity (48.1%), healthy diet (19.1%), or both (32.5%). Delivery mode varied widely; 52.9% of trials included at least 1 in-person counseling session, whereas 42.7% of trials involved sessions delivered completely remotely.

The USPSTF found sufficient evidence that behavioral counseling interventions for a healthy diet, physical activity, or both were

associated with modest increases in physical activity levels and some improvements in dietary health behaviors.<sup>1,38</sup> The analysis included 109 trials (n = 125 878) that reported the effect of behavioral counseling interventions on diet, physical activity, or sedentary health behaviors.<sup>1,38</sup> On average, participants of physical activity interventions (87 trials) increased physical activity by approximately 33 minutes per week (95% CI, 21.9 to 44.2) and had higher odds of meeting physical activity recommendations after 6 to 12 months (pooled odds ratio, 1.41 [95% CI, 1.18 to 1.67]) compared with participants in the control group.<sup>1,38</sup> Participants of healthy diet interventions (45 trials) increased fruit and vegetable intake (mean difference, 1.11 servings per day [95% CI, 0.41 to 1.81]) and fiber intake (standardized mean difference, 0.24 [95% CI, 0.05 to 0.43]) and decreased saturated fat intake (standardized mean difference, -0.53 [95% CI, -0.78 to -0.27]) compared with participants in the control group.<sup>1,38</sup> The USPSTF found little evidence of the effectiveness of sedentary behavior interventions.<sup>1,38</sup> Overall, sedentary behavior interventions did not demonstrate statistically significant differences in sedentary behaviors in participants compared with control groups.<sup>1,38</sup>

The USPSTF found sufficient evidence that behavioral counseling interventions for a healthy diet, physical activity, or both were associated with lower blood pressure, low-density lipoprotein cholesterol (LDL-C), and adiposity measures (BMI, weight, and waist circumference) after 6 to 12 months.<sup>1,38</sup> The analysis included 43 trials (n = 77 965) reporting the effect of healthy diet and physical activity behavioral counseling interventions on intermediate outcomes such as blood pressure or adiposity measures.<sup>1,38</sup> Diet and physical activity interventions were associated with lower systolic blood pressure (-0.8 mm Hg [95% CI, -1.30 to -0.31]), diastolic blood pressure (-0.42 mm Hg [95% CI, -0.80 to -0.04]), LDL-C level (-2.20 mg/dL [95% CI, -3.80 to -0.60]), and adiposity-related outcomes such as weight (-1.07 kg [95% CI, -1.62 to -0.52]), BMI (-0.32 [95% CI, -0.51 to -0.13]), and waist circumference (-0.81 cm [95% CI, -1.32 to -0.30]).<sup>1,38</sup> Generally, high-intensity interventions (>360 minutes) were associated with greater changes in intermediate outcomes, specifically lower LDL-C and adiposity measures.<sup>1,38</sup>

Observational evidence from large prospective studies and individual participant data meta-analysis of prospective cohort studies demonstrates that small changes in intermediate outcomes (ie, lower blood pressure) were associated with small reductions in risk of cardiovascular-related mortality and all-cause mortality.<sup>39,40</sup>

The USPSTF found little direct evidence on the effectiveness of behavioral counseling interventions on all-cause mortality, CVD-related mortality, CVD events (such as myocardial infarction or stroke), or quality of life.<sup>1,38</sup> In studies, CVD-related fatal and non-fatal events were rare, limiting robust analysis, with few group differences.<sup>1,38</sup> A variety of self-reported quality of life measures were reported in 15 trials; group differences were generally very small and of unclear clinical significance.<sup>1,38</sup>

#### Harms of Counseling to Change Behavior

Of the 113 trials reviewed by the USPSTF, only 23 (n = 12 452) specifically reported on harms or lack of harms of behavioral counseling interventions.<sup>1,38</sup> Overall, harms were rare, and there were no statistically significant differences reported between intervention participants and control groups on any adverse events, serious adverse events, musculoskeletal injuries, or falls.<sup>1,38</sup>

## Response to Public Comment

A draft version of this recommendation statement was posted for public comment on the USPSTF website from January 18, 2022, to February 14, 2022. Several respondents requested additional tools to aid clinicians and patients; in response, the USPSTF added materials containing strategies to encourage healthy lifestyles and updated language in the recommendation statement. The recommendation statement includes links to resources (eg, The Community Guide) that may assist primary care linkages needed to implement this recommendation. In addition, the USPSTF calls for additional research into effective primary care–community connections and clinical training to support delivering in-person behavioral counseling and referring patients for behavior counseling in other settings.

Comments requested additional detail to identify patients who could benefit from behavioral counseling; the USPSTF recommends that professional judgment and patient preference guide clinician decision-making for behavioral counseling interventions in persons without known risk factors. The role of risk assessment in the delivery of behavioral counseling is addressed in a separate recommendation for persons with known CVD risk.<sup>21</sup> Comments requested clarification on which types of professionals could provide behavioral counseling. The USPSTF recognizes and clarified that multiple types of professionals, both medical and nonmedical, can deliver behavioral counseling interventions. Comments also requested more detail to identify barriers to healthy lifestyle engagement in certain populations; the USPSTF calls for more research on evidenced-based interventions that can benefit all potential users.

## Research Needs and Gaps

The USPSTF identified several gaps in the evidence where more research is needed.

- Studies should enroll enough participants from populations disproportionately affected by CVD to understand the benefit of physical activity and dietary behavioral counseling interventions in these populations. Culturally appropriate and tailored intervention research may help reduce disparities related to cardiovascular health.
- Future research should elucidate best practices for clinicians and patients to navigate known environmental and structural barriers

to healthy diet and physical activity toward effective interventions that support persons of all ages and abilities. Primary care–feasible interventions with strong linkages between clinical and community settings may help effectively implement healthy behavior interventions.

- Future research should identify best practices to improve clinician skills in delivering in-person behavioral counseling and referring patients to other settings for behavioral counseling.
- Future research should ensure that patient-reported quality of life outcomes related to cardiovascular health are consistently measured and reported.
- Future research should validate and standardize dietary intake and physical activity instruments in collection and reporting. Additionally, standardization of digital interventions, apps, and supports could benefit implementation of remote or in-person behavioral counseling interventions.
- Future research should design and test interventions to reduce sedentary behavior. The recent increase in working from home during the COVID-19 pandemic may present an opportunity to perform research on effective interventions that reduce sedentary time.
- Future research that is adequately powered and of sufficient follow-up duration is needed in patients without known CVD risk.

## Recommendations of Others

The American College of Cardiology and the American Heart Association (AHA) guidelines to prevent CVD emphasize a team-based approach, with consideration of the social determinants of health that affect patients to guide clinical decisions. The guidelines recommend healthy diet consumption along with 150 minutes per week of moderate-intensity or 75 minutes per week of vigorous-intensity physical activity.<sup>41</sup> The American College of Sports Medicine and the AHA recommend that clinicians provide behavioral counseling on physical activity to all adults regardless of chronic conditions or risk factors. In 2018, they co-launched the Exercise is Medicine initiative, calling for clinicians to assess and promote physical activity for all patients.<sup>42</sup> The American Academy of Family Physicians supports the 2017 USPSTF recommendation on this topic.<sup>43</sup> The AHA recommends physical activity assessment and promotion in health care settings for all adult patients to prevent CVD.<sup>44</sup>

### ARTICLE INFORMATION

**Accepted for Publication:** June 13, 2022.

#### The US Preventive Services Task Force (USPSTF)

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members contributed equally to the recommendation statement.

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**Disclaimer:** Recommendations made by the USPSTF are independent of the US government. They should not be construed as an official position of AHRQ or the US Department of Health and Human Services.

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