

Behavioral Counseling Interventions to Promote a Healthy Diet and Physical Activity for Cardiovascular Disease Prevention in Adults With Cardiovascular Risk Factors

US Preventive Services Task Force Recommendation Statement

US Preventive Services Task Force

IMPORTANCE Cardiovascular disease (CVD) is a leading cause of death in the US. Known modifiable risk factors for CVD include smoking, overweight and 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 cardiovascular morbidity and mortality than those who do not. All persons, regardless of their CVD risk status, benefit from healthy eating behaviors and appropriate physical activity.

OBJECTIVE To update its 2014 recommendation, the USPSTF commissioned a review of the evidence on behavioral counseling to promote a healthy diet and physical activity for CVD prevention in adults with cardiovascular risk factors.

POPULATION This recommendation statement applies to adults 18 years or older with known hypertension or elevated blood pressure, those with dyslipidemia, or those who have mixed or multiple risk factors such as metabolic syndrome or an estimated 10-year CVD risk of 7.5% or greater. Adults with other known modifiable cardiovascular risk factors such as abnormal blood glucose levels, obesity, and smoking are not included in this recommendation.

EVIDENCE ASSESSMENT The USPSTF concludes with moderate certainty that behavioral counseling interventions have a moderate net benefit on CVD risk in adults at increased risk for CVD.

RECOMMENDATION The USPSTF recommends offering or referring adults with CVD risk factors to behavioral counseling interventions to promote a healthy diet and physical activity. (B recommendation)

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Group Information: The US Preventive Services Task Force (USPSTF) members are listed at the end of this article.

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Summary of Recommendation

The USPSTF recommends offering or referring adults with cardiovascular disease (CVD) risk factors to behavioral counseling interventions to promote a healthy diet and physical activity.

B

See the Figure for a more detailed summary of the recommendations for clinicians. USPSTF indicates US Preventive Services Task Force.

Importance

Cardiovascular disease (CVD) is the leading cause of death in the US.¹ Known modifiable risk factors for CVD include smoking, overweight and obesity, diabetes, elevated blood pressure or hypertension, dyslipidemia, lack of physical activity, and unhealthy diet. Adults who adhere to national guidelines for a healthy diet² and physical activity³ have lower cardiovascular morbidity and mortality than those who do not. All persons, regardless of their CVD risk status, can gain health benefits from healthy eating behaviors and appropriate physical activity.

USPSTF Assessment of Magnitude of Net Benefit

The US Preventive Services Task Force (USPSTF) concludes with moderate certainty that behavioral counseling interventions have a **moderate net benefit** on CVD risk in adults at increased risk for CVD.

See the **Figure** and **Table 1** for more information on the USPSTF recommendation rationale and assessment. For more de-

tails on the methods the USPSTF uses to determine the net benefit, see the USPSTF Procedure Manual.⁴

Practice Considerations

Patient Population Under Consideration

This recommendation applies to adults 18 years or older with known hypertension or elevated blood pressure, those with dyslipidemia,

Figure. Clinician Summary

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What does the USPSTF recommend?	For adults 18 years or older at increased risk of cardiovascular disease (CVD): Provide behavioral counseling to promote a healthy diet and physical activity. <u>Grade: B</u>
To whom does this recommendation apply?	Adults 18 years or older at increased risk of CVD, defined as those with 1 or more of the following: (1) Hypertension or elevated blood pressure (2) Dyslipidemia (3) Mixed or multiple risk factors such as the metabolic syndrome or an estimated 10-year CVD risk of $\geq 7.5\%$ This recommendation does not apply to adults with other known modifiable cardiovascular risk factors such as abnormal blood glucose levels, obesity, and smoking; these populations are incorporated in other USPSTF recommendations.
What's new?	This recommendation is consistent with the 2014 USPSTF recommendation statement; however, it no longer includes adults with impaired glucose tolerance or type 2 diabetes mellitus. This population is included in a separate USPSTF recommendation.
How to implement this recommendation?	1. Assess risk. Determine if the adult is at increased risk of CVD. This can be done by a. Assessing whether a single risk factor or multiple risk factors are present. Risk factors include: dyslipidemia, elevated blood pressure or hypertension, or multiple or mixed risk factors such as the metabolic syndrome or an estimated 10-year CVD risk of $\geq 7.5\%$. b. Using a risk tool such as the Pooled Cohort Equations or the Framingham Risk Score. 2. Provide behavioral counseling to adults at increased risk for CVD. While effective behavioral counseling interventions vary, they often include a. Combination of counseling on a healthy diet and physical activity, which is usually intensive, with multiple contacts that include either individual or group counseling sessions over extended periods. i. Dietary counseling advice includes reductions in saturated fats, sodium, and sweets/sugars and increased consumption of fruits, vegetables, and whole grains. ii. Physical activity counseling focuses on patients achieving 90 to 180 minutes per week of moderate to vigorous activity. b. A median of 12 contacts, with an estimated 6 hours of contact over 12 months. c. Some one-on-one time with an interventionist, and motivational interviewing and behavioral change techniques such as goal setting, active use of self-monitoring, and addressing barriers related to diet, physical activity, or weight change. d. Counseling that is done in person, referred to outside counseling services, or informed about media-based interventions. e. Interventions carried out by nonphysicians, including nurses, registered dietitians, nutritionists, exercise specialists, physical therapists, masters- and doctoral-level counselors trained in behavioral methods, and lifestyle coaches. f. Family members as well as the individual with CVD risk factors.
What are other relevant USPSTF recommendations?	The USPSTF has issued other recommendation statements about cardiovascular health at http://www.uspreventiveservicestaskforce.org , including <ul style="list-style-type: none"> Behavioral counseling interventions to promote a healthy diet and physical activity for CVD prevention in adults without cardiovascular risk factors (C recommendation). Behavioral weight loss interventions to prevent obesity-related morbidity and mortality in adults (B recommendation) Behavioral and pharmacotherapy interventions for tobacco smoking cessation in adults, including pregnant women (B recommendation) Screening for abnormal blood glucose and type 2 diabetes mellitus (B recommendation)
Where to read the full recommendation statement?	Visit the USPSTF website (https://www.uspreventiveservicestaskforce.org) 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.

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.

USPSTF indicates US Preventive Services Task Force.

Table 1. Summary of USPSTF Rationale

	Adults with known CVD risk factors ^a
Benefits of counseling interventions to promote a healthy diet and physical activity	<ul style="list-style-type: none"> There is adequate evidence that counseling interventions reduce overall CVD events (eg, myocardial infarction and stroke). There is convincing evidence that counseling interventions improve blood pressure, lipid and fasting blood glucose levels, and body weight/adiposity. There is adequate evidence that counseling interventions improve healthy eating habits.
Harms of counseling interventions to promote a healthy diet and physical activity	There is inadequate direct evidence to determine the harms of counseling interventions, although they can be bound as no greater than small in magnitude based on the nature of the interventions.
USPSTF assessment	The USPSTF concludes with moderate certainty that intensive counseling interventions to promote a healthy diet and physical activity in adults with CVD risk factors has a moderate net benefit.

Abbreviations: CVD, cardiovascular disease; USPSTF, US Preventive Services Task Force.

^a Hypertension or elevated blood pressure, dyslipidemia, or mixed risk factors (eg, metabolic syndrome or 10-year CVD risk $\geq 7.5\%$).

or those who have mixed or multiple risk factors such as metabolic syndrome or an estimated 10-year CVD risk of 7.5% or greater. Adults with other known modifiable cardiovascular risk factors such as abnormal blood glucose levels, obesity, and smoking are not included in this recommendation.⁵⁻⁷ Interventions to reduce CVD risk in those adults are covered in other USPSTF recommendations.

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, support health, and prevent disease. Dietary counseling to promote a healthy diet focuses on increasing consumption of fruits, vegetables, whole grains, fat-free or low-fat dairy, lean proteins, and oils and decreasing consumption of foods with high sodium levels, saturated or *trans* fats, and added sugars, as recommended by the US Department of Agriculture and the US Food and Drug Administration.¹

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.^{1,8}

Assessment of Risk

Cardiovascular risk can be characterized as the elevation of a single risk factor or multiple risk factors (eg, metabolic syndrome). Cardiovascular risk can be estimated through the use of CVD risk tools such as the Pooled Cohort Equations and Framingham Risk Score.^{9,10} Cardiovascular disease risk factors covered in this recommendation include dyslipidemia, elevated blood pressure or hypertension, and multiple or mixed risk factors.

Behavioral Counseling Interventions

Behavioral counseling interventions usually combine counseling on a healthy diet and physical activity and are usually intensive, with multiple contacts that include either individual or group counseling sessions over extended periods. Interventions usually involve a median of 12 contacts, with an estimated 6 hours of contact time over 6 to 18 months. Interventions typically involve some 1-on-1 time with an interventionist and include motivational interviewing and behavioral change techniques such as goal setting, problem solving, and self-monitoring. Primary care clinicians as well as a wide range of specially trained professionals, including nurses, registered dietitians, nutritionists, exercise specialists, physical therapists, masters- and doctoral-level counselors trained in behavioral methods, and lifestyle coaches, can deliver these interventions.

Common dietary counseling advice includes reductions in saturated fats, sodium, and sweets/sugars and increased consumption of fruits, vegetables, and whole grains. The Dietary Approaches to Stop Hypertension (DASH) diet, low-sodium diet, and the Mediterranean diet are commonly recommended diets. Physical activity counseling focuses on patients achieving 90 to 180 minutes per week of moderate to vigorous activity.¹¹

Implementation

Primary care clinicians can deliver in-person behavioral counseling interventions, refer patients to behavioral counseling interventions in other settings, or inform patients about media-based interventions. For more information about risk assessment methods and behavioral counseling interventions, see the Additional Tools and Resources section and Table 2.

Additional Tools and Resources

- The Community Preventive Services Task Force recommends several community-based interventions to promote a healthy diet (<https://www.thecommunityguide.org/topic/nutrition>) and physical activity (<https://www.thecommunityguide.org/topic/physical-activity>), including community-wide campaigns, social support interventions, school-based interventions, and environmental and policy approaches.
- The US Department of Health and Human Services and the US Department of Agriculture have developed dietary (<https://health.gov/our-work/food-nutrition/2015-2020-dietary-guidelines>) and physical activity (<https://health.gov/our-work/physical-activity/current-guidelines>) guidelines. Resources for clinicians can be found at <https://health.gov/dietaryguidelines/2015/resources> and <https://health.gov/our-work/physical-activity/move-your-way-campaign>.

Other Related USPSTF Recommendations

The USPSTF has several recommendations related to behavioral counseling interventions and the prevention of CVD. These include recommendations on behavioral counseling to promote a healthy diet and physical activity for CVD prevention in adults without cardiovascular risk factors (C recommendation)¹⁴; behavioral weight loss interventions to prevent obesity-related morbidity and mortality in adults (B recommendation)⁶; behavioral and pharmacotherapy interventions for tobacco smoking cessation in adults, including pregnant women (B recommendation)⁷; and screening for abnormal blood glucose levels and type 2 diabetes mellitus (B recommendation).⁵

Update of Previous USPSTF Recommendation

This recommendation replaces the 2014 USPSTF recommendation on behavioral counseling to promote a healthy diet and physical activity for CVD prevention in adults with cardiovascular risk factors. At that time, the USPSTF recommended intensive behavioral counseling interventions for overweight and obese adult patients with known CVD risk factors, including hypertension, dyslipidemia, impaired fasting glucose or glucose intolerance, and metabolic syndrome.¹⁵ This new recommendation targets adults with known hypertension or elevated blood pressure, elevated lipid levels or dyslipidemia, and mixed or multiple risk factors (eg, metabolic syndrome or estimated 10-year CVD risk of $\geq 7.5\%$). In contrast to the previous statement, the current recommendation does not cover adults with impaired glucose tolerance or type 2 diabetes mellitus. This population is covered in a separate recommendation.

Table 2. Behavioral Counseling Interventions to Promote a Healthy Diet and Physical Activity for CVD Prevention in Adults With Cardiovascular Risk Factors

	Intervention type	
	Dietary counseling	Physical activity counseling
Behavior change goals	<ul style="list-style-type: none"> Reduce consumption of saturated fat, sodium, sweets, and added sugar. Increase consumption of vegetables, fruits, whole grains, healthy fats (eg, omega-3 fats), and fish. Promote specific diets such as the DASH and Mediterranean diets. 	Physical activity counseling typically advised 90 to 180 min/wk of moderate to vigorous activity.
Materials for practice	<ul style="list-style-type: none"> DHHS/USDA dietary guidelines and resources (https://health.gov/our-work/food-nutrition/2015-2020-dietary-guidelines) ChooseMyPlate Nutritional Guide (https://www.choosemyplate.gov/) Community Guide resources on nutrition (https://www.thecommunityguide.org/topic/nutrition) DASH Eating plan (https://www.nhlbi.nih.gov/health-topics/dash-eating-plan)¹² Mediterranean diet (https://www.nejm.org/doi/10.1056/NEJMoa1800389)¹³ 	<ul style="list-style-type: none"> DHHS physical activity guidelines and resources (https://health.gov/our-work/physical-activity/move-your-way-campaign) Community Guide resources on promoting physical activity (https://www.thecommunityguide.org/topic/physical-activity)
Behavior change techniques	Behavior change techniques included goal setting, active use of self-monitoring, and addressing barriers related to diet, physical activity, or weight change. Motivational interviewing was commonly used. A small number of trials included family members as well as the individual with CVD risk factors.	
Intervention modality	Face-to-face sessions with or without additional telephone- or web-based or other technology-enhanced components. Group sessions typically included an additional individual meeting for each person.	
Intervention intensity	The median number of contacts was 12 (range, 5-27 contacts), with an estimated 6 h (range, 2.1-16.5 h) of contact over 12 mo (range, 6-18 mo). ¹¹	
Intervention recipient	Adults with hypertension, prehypertension, dyslipidemia, or any of multiple CVD risk factors; most participants were overweight or obese (mean BMI, 29.8). The mean age of study participants was 56 y.	
Intervention settings	Most interventions took place in primary care settings.	
Person delivering intervention	<ul style="list-style-type: none"> Most were nonclinicians, including nurses, registered dietitians, nutritionists, exercise specialists, physical therapists, masters- and doctoral-level counselors trained in behavioral methods, and lifestyle coaches. Brief (60-90 min) training was typically provided to primary care clinicians and their staff when they were involved in the delivery of the intervention. 	
Demonstrated benefit	<ul style="list-style-type: none"> Overall, persons receiving behavioral interventions had fewer cardiovascular events (eg, myocardial infarction, stroke, or incidence of peripheral artery disease) at 1 to 16 y of follow-up (pooled RR, 0.81 [95% CI, 0.74 to 0.88]). At 12 to 24 mo, the intervention groups showed greater reductions in blood pressure (systolic blood pressure, -1.8 mm Hg [95% CI, -2.5 to -1.2]; diastolic blood pressure, -1.2 mm Hg [95% CI, -1.6 to -0.7]), total cholesterol (-3.7 mg/dL [95% CI, -5.9 to -1.5]), low-density lipoprotein cholesterol (-2.3 mg/dL [95% CI, -4.3 to -0.2]), BMI (-0.4 [95% CI, -0.7 to -0.2]), weight (-1.5 kg [95% CI, -2.1 to -1.1]), and waist circumference (-1.6 cm [95% CI, -2.3 to -0.9]).¹¹ No difference in effectiveness based on intensity of the intervention, duration of the intervention, whether there was in-person support, whether individual in-person or telephone sessions were offered, whether medication management was offered, or whether blood pressure monitors or pedometers were provided. Larger weight loss effects were evident in weight loss trials.¹¹ 	

Abbreviations: BMI, body mass index; CVD, cardiovascular disease; DASH, Dietary Approaches to Stop Hypertension; DHHS, US Department of Health and Human Services; RR, relative risk; USDA, US Department of Agriculture.

Supporting Evidence

Scope of Review

The USPSTF commissioned a systematic evidence review^{11,16} to update its 2014 recommendation¹⁵ on behavioral counseling to promote a healthy diet and physical activity for CVD prevention in adults with cardiovascular risk factors. The scope of this review is similar to that of the prior systematic review, except in the current review the USPSTF excluded studies limited to or predominantly conducted in persons with diabetes or prediabetes. The evidence review did not include interventions specifically focused on weight loss in general populations; however, weight loss trials that targeted adults with relevant CVD risk factors were included in this review.

Benefits of Behavioral Counseling Interventions

The USPSTF considered 94 trials (n = 52 174) in its review.^{11,16} Interventions that combined a healthy diet and physical activity were evaluated in 81 trial groups, diet-only interventions were

evaluated in 33 trial groups, and interventions involving physical activity only were evaluated in 6 trial groups. Of the interventions reviewed, 6% were considered low-intensity, 49% medium-intensity, and 45% high-intensity. Interventions were defined as low-, medium-, or high-intensity based on the amount of interaction with a clinician (≤ 30 , 31-360, and >360 minutes, respectively). Risk factors targeted in the interventions included abnormal lipid levels (16 trials), elevated blood pressure (32 trials), and multiple or mixed risk factors (46 trials). Most participants in the included trials were overweight or obese, with a mean body mass index of 29.8 (calculated as weight in kilograms divided by height in meters squared) across all trials.^{11,16}

Twenty-nine trials reported on patient health outcomes such as CVD events, mortality, or quality of life.^{11,16} Twelve of these trials reported cardiovascular events, and among the trials with a composite outcome of any CVD event (eg, myocardial infarction, stroke, and incidence of peripheral artery disease), the pooled effect showed lower risk among patients receiving behavioral health counseling (pooled relative risk [RR], 0.80 [95% CI, 0.73 to 0.87]; 9 randomized controlled trials; n = 12 551; $I^2 = 0\%$).

Intervention groups also demonstrated lower event rates for both myocardial infarction (pooled RR, 0.85 [95% CI, 0.70 to 1.02]; 6 trials; $n = 10\,375$; $I^2 = 0\%$) and stroke (pooled RR, 0.52 [95% CI, 0.25 to 1.10]; 4 trials; $n = 9800$; $I^2 = 0\%$); however, results were not statistically significant for either outcome.

Eighteen trials of medium- to high-intensity interventions reported on all-cause mortality. The pooled effect did not demonstrate a statistically significant benefit (pooled RR, 0.89 [95% CI, 0.71 to 1.11]; 18 trials; $n = 17\,939$; $I^2 = 0\%$), although many of these studies were not adequately powered to assess this outcome.^{11,16}

A variety of self-reported quality-of-life measures were reported in 11 trials. Most findings favored the intervention group; however, group differences were generally very small and statistically nonsignificant.^{11,16} The USPSTF considered 91 trials ($n = 47\,951$) that reported intermediate health outcomes.^{11,16} Commonly reported intermediate outcomes included objective measures of blood pressure, lipid levels, weight/adiposity, glucose level, and composite cardiovascular risk score. Overall, interventions involving counseling on diet and physical activity led to statistically significant improvements in systolic blood pressure (-1.8 mm Hg [95% CI, -2.5 to -1.1]), diastolic blood pressure (-1.2 mm Hg [95% CI, -1.6 to -0.8]), total cholesterol level (-3.5 mg/dL [95% CI, -5.6 to -1.4]), low-density lipoprotein cholesterol level (-2.1 mg/dL [95% CI, -4.1 to -0.2]), fasting glucose level (-2.3 mg/dL [95% CI, -3.6 to -1.0]), and adiposity-related outcomes such as weight (-1.6 kg [95% CI, -2.1 to -1.1]) and body mass index (-0.5 [95% CI, -0.7 to -0.3]). For all outcomes, improvements were seen at 12 to 24 months of follow-up. The data showed no clear effect modifiers, including intervention intensity, for most outcomes, although weight loss interventions were associated with greater weight loss.

The USPSTF considered 70 trials ($n = 43\,243$) reporting outcomes related to health behaviors such as healthy eating habits and increased physical activity. There was substantial variability in the measures reported, and most outcomes were reported in fewer than 15 trials.^{11,16} Most trials included medium- or high-intensity interventions. Overall, behavioral counseling resulted in small, statistically significant improvements in saturated fat consumption (percentage of calories from saturated fat) (pooled mean difference, -1.5% [95% CI, -1.9 to -1.1]), increased consumption of fruits and vegetables (pooled mean difference, 0.7 servings/d [95% CI, 0.1 to 1.3]), and increased fiber intake (pooled mean difference, 1.3 g/d [95% CI, 0.1 to 2.6]). Nine trials among adults with hypertension or elevated blood pressure who were counseled to reduce sodium intake showed reduced urinary sodium levels (pooled mean difference, -18.0 mmol/L [95% CI, -34.8 to -1.2]).^{11,16}

Fifty trials of behavioral counseling interventions reported some type of physical activity outcome ($n = 34\,028$); however, there was no consistent evidence of benefit.^{11,16} Outcome reporting was highly variable for the type of measurement reported (eg, any activity or moderate to vigorous activity) and the unit of measurement (eg, minutes per week or kJ per kg per day). The pooled effect of continuous outcomes was not statistically significant (pooled standardized mean difference, 0.06 [95% CI, -0.03 to 0.14]). However, among trials in which there was a study-defined physical activity goal (usually 90 to 180 min/wk of mod-

erate to vigorous physical activity), intervention groups had a higher likelihood of meeting that goal (pooled RR, 1.22 [95% CI, 1.00 to 1.50]; 11 trials; $n = 5887$; $I^2 = 91\%$).^{11,16}

Harms of Behavioral Counseling Interventions

Of the 94 trials reviewed by the USPSTF, only 20 specifically reported on harms, and 8 of these specifically reported no adverse events.^{11,16}

Few trials reported details about the adverse events, but most were minor. In trials evaluating physical activity interventions, a few participants reported minor musculoskeletal injuries. Serious adverse events were rare.^{11,16} There was no consistent evidence that behavioral counseling interventions led to paradoxical changes in intermediate or behavioral outcomes.

Response to Public Comments

A draft version of this Recommendation Statement was posted for public comment on the USPSTF web site from May 12, 2020, to June 8, 2020. Several comments noted that the interventions in studies were mainly provided by nonmedical professionals and requested clarification on which types of professionals could provide these services. The USPSTF recognizes that many of the studied interventions were carried out by nonphysicians and that multiple types of professionals, both medical and nonmedical, can deliver them. Language was added to clarify this point. Respondents also suggested that the recommendation highlight certain interventions such as low-carbohydrate and plant-based diets, intermittent fasting, telehealth, and wearable technologies. The USPSTF reviewed studies that included a wide range of healthy dietary advice; however, only the DASH and Mediterranean diets were examined in more than 1 study. Additionally, recommendations from plant-based and low-carbohydrate diets are included in most recommendations for a healthy diet. There were limited studies on telemedicine-based interventions and wearable technology. The USPSTF calls for more research in these areas.

Several comments noted the disparities among patient populations in access to healthy food and requested more information on how to provide behavioral counseling services to diverse populations. The USPSTF recognizes that there are large disparities in access to resources that support a healthy diet and increased physical activity. The recommendation statement includes links to resources (eg, The Community Guide) that may help address these issues. Additionally, the USPSTF calls for more research on low-intensity approaches that work best in lower-resource settings.

Research Needs and Gaps

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

- Very few trials had sufficient sample size and follow-up to assess the effect on CVD events such as myocardial infarction or stroke and mortality. Larger studies with longer-term follow-up would be valuable to assess the effect of interventions on these outcomes.
- Reporting of behavioral outcomes was highly variable and often incomplete. Greater consistency and standardization of outcomes, specifically those for physical activity and diet, are needed to better understand the range of effects and interpret the pooled effects.

- There was little literature on the use of technologies such as wearable activity trackers. These may be useful tools to increase engagement in physical activity as well as for providing objective data on physical activity outcomes. In addition, more studies are needed that include online resources such as daily caloric intake applications or other low-intensity approaches that may be valuable in low-resource settings.
- Despite the large number of included trials reviewed by the USPSTF, there were few replication studies. Large replication studies of interventions showing reductions in CVD events are urgently needed.

Recommendations of Others

Numerous organizations, including the American Heart Association/American College of Cardiology, the Academy of Nutrition and Dietetics, and the US Department of Veterans Affairs/Department of Defense have recommendations on behavioral counseling for adults with CVD risk factors.¹⁷⁻¹⁹ Most recommend that adults adhere to a healthy diet that includes a balanced diet low in sodium and saturated fats and engage in regular physical activity. For example, the American Heart Association and the American College of Cardiology recommend that clinicians use

counseling interventions to promote a healthy diet and physical activity (consistent with US Food and Drug Administration/Department of Health and Human Services guidelines) for all adults.¹⁷ For adults with elevated blood pressure or hypertension, these organizations specifically recommend weight loss, a heart-healthy dietary pattern, sodium reduction, dietary potassium supplementation, increased physical activity with a structured exercise program, and limited alcohol consumption.

The American Association of Clinical Endocrinologists and the American College of Endocrinology have recommendations for adults with dyslipidemia and metabolic syndrome that include 30 minutes of moderate-intensity aerobic activity 4 to 6 times weekly with strength training 2 times weekly.²⁰ Dietary goals should include a reduced-calorie diet consisting of fruits and vegetables, grains, fish, and lean meats. The intake of saturated fats, *trans* fats, and cholesterol should be limited.²⁰ The Academy of Nutrition and Dietetics recommends nutritional counseling provided by a registered dietitian nutritionist as well as regular aerobic activity to reduce blood pressure in adults with hypertension.¹⁸

The American Academy of Family Physicians refers to and affirms the 2014 USPSTF recommendation on behavioral counseling to prevent CVD.²¹ The American College of Physicians does not currently have a clinical recommendation on behavioral counseling to promote a healthy diet or physical activity in adults.

ARTICLE INFORMATION

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Author Contributions: Dr Krist had full access to all of the data in the study and takes responsibility for

the integrity of the data and the accuracy of the data analysis. The USPSTF 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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Additional Information: The US Preventive Services Task Force (USPSTF) makes recommendations about the effectiveness of specific preventive care services for patients

without obvious related signs or symptoms. It bases its recommendations on the evidence of both the benefits and harms of the service and an assessment of the balance. The USPSTF does not consider the costs of providing a service in this assessment. 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. Similarly, the USPSTF notes that policy and coverage decisions involve considerations in addition to the evidence of clinical benefits and harms.

REFERENCES

1. Heart disease facts. Centers for Disease Control and Prevention. Published 2020. Accessed October 6, 2020. <https://www.cdc.gov/heartdisease/facts.htm>
2. Dietary Guidelines for Americans, 2015-2020. 8th ed. US Department of Health and Human Services, US Department of Agriculture. Published 2020. Accessed October 6, 2020. <https://health.gov/our-work/food-nutrition/2015-2020-dietary-guidelines/guidelines/>
3. Physical Activity Guidelines for Americans. 2nd ed. US Department of Health and Human Services. Published 2018. Accessed October 6, 2020. https://health.gov/sites/default/files/2019-09/Physical_Activity_Guidelines_2nd_edition.pdf
4. US Preventive Services Task Force Procedure Manual. US Preventive Services Task Force. Published 2015. Accessed October 6, 2020. <https://www.uspreventiveservicestaskforce.org/uspstf/procedure-manual>
5. Siu AL; US Preventive Services Task Force. Screening for abnormal blood glucose and type 2 diabetes mellitus: U.S. Preventive Services Task

Force recommendation statement. *Ann Intern Med.* 2015;163(11):861-868. doi:10.7326/M15-2345

6. US Preventive Services Task Force. Behavioral weight loss interventions to prevent obesity-related morbidity and mortality in adults: US Preventive Services Task Force recommendation statement. *JAMA.* 2018;320(11):1163-1171. doi:10.1001/jama.2018.13022

7. Siu AL; US Preventive Services Task Force. Behavioral and pharmacotherapy interventions for tobacco smoking cessation in adults, including pregnant women: U.S. Preventive Services Task Force recommendation statement. *Ann Intern Med.* 2015;163(8):622-634. doi:10.7326/M15-2023

8. Piercy KL, Troiano RP, Ballard RM, et al. The Physical Activity Guidelines for Americans. *JAMA.* 2018;320(19):2020-2028. doi:10.1001/jama.2018.14854

9. American Heart Association, American College of Cardiology. 2018 Prevention Guidelines Tool CV Risk Calculator. Published 2018. Accessed October 6, 2020. <http://static.heart.org/riskcalc/app/index.html#!/baseline-risk>

10. Framingham Heart Study. Cardiovascular Disease (10-Year Risk) Calculator. Published 2020. Accessed April 17, 2020. <https://framinghamheartstudy.org/fhs-risk-functions/cardiovascular-disease-10-year-risk/>

11. O'Connor EA, Evans CV, Rushkin MC, Redmond N, Lin JS. *Behavioral Counseling Interventions to Promote a Healthful Diet and Physical Activity for Cardiovascular Disease Prevention in Adults With*

Cardiovascular Risk Factors: Updated Systematic Review for the U.S. Preventive Services Task Force. Evidence Synthesis No. 195. Agency for Healthcare Research and Quality; 2020. AHRQ publication 20-05263-EF-1.

12. National Institutes of Health. DASH Eating Plan. Accessed October 6, 2020. <https://www.nhlbi.nih.gov/health-topics/dash-eating-plan>

13. Estruch R, Ros E, Salas-Salvadó J, et al; PREDIMED Study Investigators. Primary prevention of cardiovascular disease with a Mediterranean diet supplemented with extra-virgin olive oil or nuts. *N Engl J Med.* 2018;378(25):e34. doi:10.1056/NEJMoa1800389

14. US Preventive Services Task Force. Behavioral counseling to promote a healthful diet and physical activity for cardiovascular disease prevention in adults without cardiovascular risk factors: US Preventive Services Task Force recommendation statement. *JAMA.* 2017;318(2):167-174. doi:10.1001/jama.2017.7171

15. LeFevre ML; US Preventive Services Task Force. Behavioral counseling to promote a healthful diet and physical activity for cardiovascular disease prevention in adults with cardiovascular risk factors: U.S. Preventive Services Task Force recommendation statement. *Ann Intern Med.* 2014;161(8):587-593. doi:10.7326/M14-1796

16. O'Connor EA, Evans CV, Rushkin MC, Redmond N, Lin JS. Behavioral counseling to promote healthy diet and physical activity for cardiovascular disease prevention in adults with cardiovascular risk factors: updated evidence report and systematic

review for the US Preventive Services Task Force. *JAMA.* Published November 24, 2020. doi:10.1001/jama.2020.17108

17. Arnett DK, Blumenthal RS, Albert MA, et al. 2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *Circulation.* 2019;140(11):e596-e646. doi:10.1161/CIR.0000000000000678

18. Academy of Nutrition and Dietetics. *Hypertension Evidence-Based Nutrition Practice Guideline.* Academy of Nutrition and Dietetics; 2015.

19. US Department of Veterans Affairs, US Department of Defense. VA/DoD Clinical Practice Guidelines: management of hypertension (HTN) in primary care. Published 2020. Accessed October 6, 2020. <https://www.healthquality.va.gov/guidelines/CD/htn/>

20. Jellinger PS, Handelsman Y, Rosenblit PD, et al. American Association of Clinical Endocrinologists and American College of Endocrinology Guidelines for Management of Dyslipidemia and Prevention of Cardiovascular Disease. *Endocr Pract.* 2017;23(suppl 2):1-87. doi:10.4158/EP171764.APPGL

21. Clinical Preventive Service Recommendation: Healthful Diet and Physical Activity to Prevent Cardiovascular Disease (CVD). American Academy of Family Physicians. Accessed October 6, 2020. <https://www.aafp.org/family-physician/patient-care/clinical-recommendations/all-clinical-recommendations/diet-cvd.html>