Hypertension

AHA SCIENTIFIC STATEMENT

Physical Activity as a Critical Component of First-Line Treatment for Elevated Blood Pressure or Cholesterol: Who, What, and How?

A Scientific Statement From the American Heart Association

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ABSTRACT: Current guidelines published by the American Heart Association and the American College of Cardiology broadly recommend lifestyle approaches to prevent and treat elevated blood pressure and cholesterol. For patients with mildly or moderately elevated blood pressure and blood cholesterol, lifestyle-only approaches are the first line of therapy. The purpose of this scientific statement is to: (1) highlight the mild-moderate–risk patient groups indicated for lifestyle-only treatment for elevated blood pressure or cholesterol; (2) describe recommendations, average effects, and additional considerations when prescribing lifestyle treatment with physical activity; and (3) provide guidance and resources for clinicians to assess, prescribe, counsel, and refer to support increased physical activity in their patients. An estimated 21% and 28% to 37% of US adults, respectively, have mild-moderate–risk blood pressure and cholesterol and should receive lifestyle-only as first-line treatment. Of the recommended lifestyle changes, increasing physical activity has extensive benefits, including improving both blood pressure and blood cholesterol, that are comparable, superior, or complementary to other healthy lifestyle changes. Physical activity assessment and prescription are an excellent lifestyle behavior treatment option for all patients, including for the large population of mild-moderate–risk patients with elevated blood pressure and blood cholesterol.

Key Words: AHA Scientific Statements ■ blood pressure ■ exercise ■ hypertension ■ lifestyle ■ risk reduction behavior

All adults should strive to adopt and maintain optimal lifestyle behaviors to improve and sustain health, including cardiovascular health.[1] Lifestyle interventions are a key component of primordial and primary prevention in low-risk groups and serve as an important adjunct to pharmacotherapy in higher-risk groups, but for mild-moderate–risk groups, current blood pressure (2017)[2] and blood cholesterol (2018)[3] management guidelines published by the American Heart Association (AHA) and the American College of Cardiology (ACC) recommend lifestyle-only approaches as the first line of therapy. Lifestyle treatment options include physical activity and weight loss, dietary modification, smoking cessation, and alcohol moderation, as well. The purpose of this scientific statement is to (1) highlight the mild-moderate–risk patient groups indicated for lifestyle-only treatment for elevated blood pressure or cholesterol; (2) describe recommendations, average effects, and special considerations when prescribing physical activity, including in comparison to, or in combination with, other lifestyle treatment options; and (3) provide guidance and resources for clinicians to assess, prescribe, counsel, and refer to support increased physical activity in their patients.

WHO ARE THE INDIVIDUALS WITH ELEVATED BLOOD PRESSURE OR CHOLESTEROL INDICATED FOR FIRST-LINE TREATMENT WITH LIFESTYLE APPROACHES?

The 2017 ACC/AHA Hypertension Clinical Practice Guidelines[2] updated the 2003 Seventh Report of the Joint

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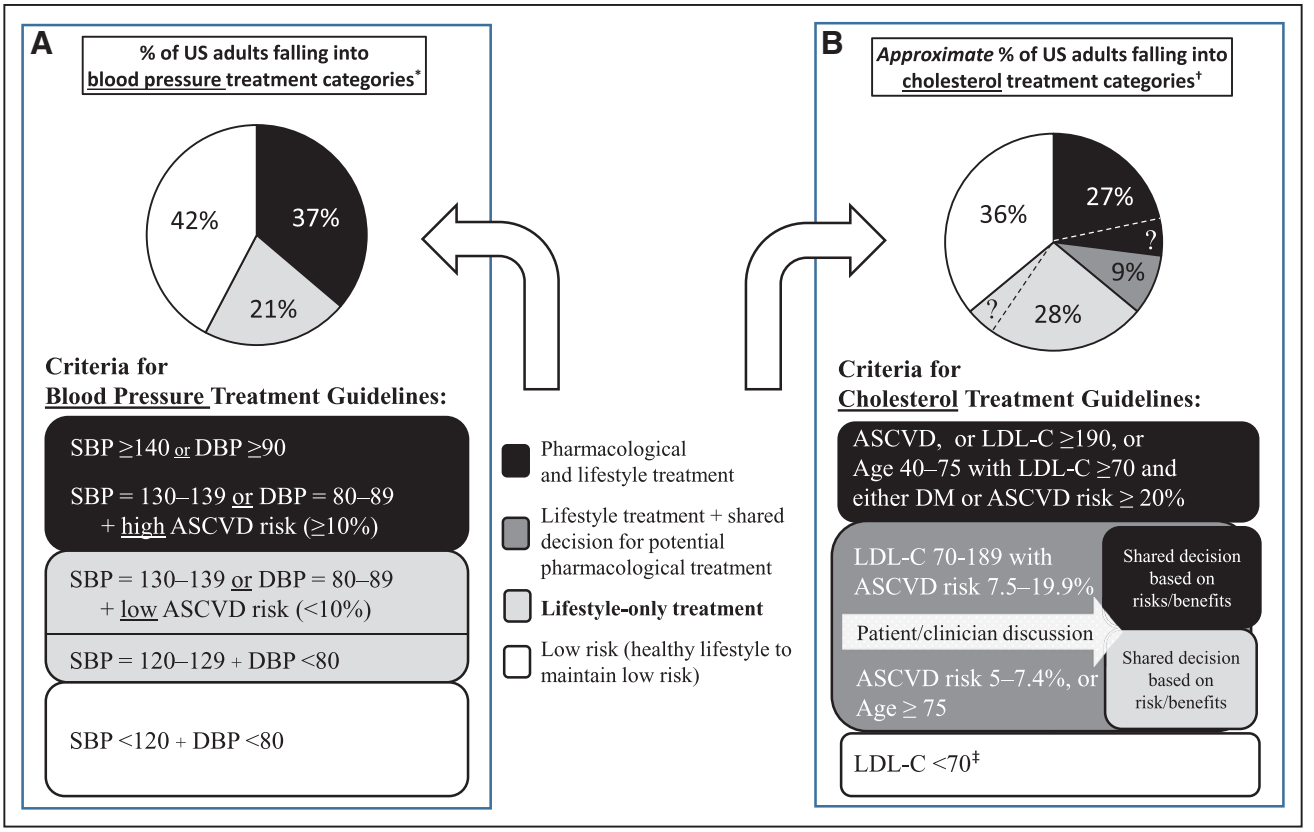

Figure. Blood pressure and cholesterol treatment guidelines and the US population burden.
Blood pressure units are mm Hg and blood cholesterol units are mg/dL. *Population burden based on 2017 ACC/AHA Blood Pressure Treatment Guidelines[2]: estimates reported in Muntner et al[5] in 2018 using NHANES 2011–2014 data. †Population burden based on 2013 and 2018 AHA/ACC cholesterol treatment guidelines[3]: estimated based on population burden reported in Pencina et al in 2014 (based on 2013 ACC/AHA cholesterol treatment guidelines, using NHANES 2005–2010 data)[6,7] and estimated age categories for 2018 from US census 2010,[8] with acknowledged uncertainty (----- and?) for changes in burden based on 2018 guidelines. ‡We did not account for individuals in low risk based on LDL-C <70 in our population burden estimates because we could not locate a source to estimate the number of individuals falling into this category who were not also receiving a cholesterol-lowering therapy. ASCVD indicates atherosclerotic cardiovascular disease; DBP, diastolic blood pressure in mm Hg; DM, diabetes; LDL, low-density lipoprotein; LDL-C, low-density lipoprotein cholesterol in mg/dL; and SBP, systolic blood pressure in mm Hg.

National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure.[4] The 2017 guidelines removed the classification of "prehypertension," added diagnoses of "elevated blood pressure" for systolic blood pressure (SBP)=120 to 129 mm Hg with diastolic blood pressure (DBP) <80 mm Hg, and reduced the threshold for diagnosing stage I hypertension to SBP=130 to 139 mm Hg or DBP=80 to 89 mm Hg. The treatment recommendation for elevated blood pressure and stage I hypertension, with Atherosclerotic Cardiovascular Disease (ASCVD) risk score <10%, is nonpharmacological, lifestyle-only treatment (see Figure A). An estimated 21% of US adults (≈53 million) meet the 2017 guidelines criteria for lifestyle-only treatment, including 12% of adults with elevated blood pressure and 9% who are diagnosed with stage I hypertension but have an ASCVD risk score of <10% (see Figure A, light gray box).[5]

The 2018 AHA/ACC Guideline on the Management of Blood Cholesterol[3] updated the 2013 guidelines.[6] This update continues to advocate lifestyle-only approaches for adults 40 to 75 years of age with low-density lipoprotein cholesterol (LDL-C) >70 mg/dL and low ASCVD risk scores (<7.5%). The update also clarifies that for similarly aged adults with LDL-C >70 mg/dL, intermediate ASCVD risk scores (7.5%–20%), low coronary artery calcium score (<100 Agatston units), and a low burden of other risk factors (eg, LDL-C <160 mg/dL; free from metabolic syndrome, chronic kidney disease, inflammatory diseases, etc), lifestyle-only treatment is an option during the clinician/patient shared decision-making management approach.[9] Although an exact figure is not available, we conservatively estimate that ≈28% of US adults (≈71 million) would meet the 2018 Cholesterol Clinical Practice Guideline criteria for lifestyle-only treatment using current US Census data and a report of statin eligibility based on the 2013 cholesterol guidelines.[7,8] This approximation includes adults 40 to 75 years of age with LDL-C >70 mg/dL and ASCVD risk score <7.5% (see Figure B). This estimate is conservative because it does not include the 9% of US adults (≈23 million) 40 to 75 years of age with LDL-C >70 g/dL but intermediate ASCVD risk scores. These

individuals might not initiate pharmacotherapy after clinician/patient shared decision making that considers other cardiovascular disease (CVD) risk factor burdens, side effects, costs, and patient preferences (see Figure B).[7–9] It should be noted that a small proportion of patients whom we have classified as elevated risk might be low risk based on LDL-C <70 mg/dL, although previous estimates indicate this proportion is probably trivial.[10]

These estimates underscore the sizable patient population indicated for lifestyle-only treatment for elevated blood pressure and cholesterol, risk factors that are likely to co-occur. Moreover, individuals with socioeconomic risk factors such as low family income, low educational level, and underrepresented racial and ethnic groups are disproportionately affected by these risk factors and are less likely to achieve healthy lifestyle behaviors like physical activity.[11] Lifestyle-only treatment with physical activity is one strategy to target both elevated blood pressure and cholesterol that may also help address these disparities.

WHAT PHYSICAL ACTIVITY PRESCRIPTION IS RECOMMENDED FOR THE TREATMENT OF ELEVATED BLOOD PRESSURE OR BLOOD CHOLESTEROL?

Although most health care professionals and patients are aware that physical activity is recommended for good health, the abundance of scientific and lay recommendations for activity can be difficult to distill. To help with this, we review current physical activity recommendations, describe the average effects of achieving these recommendations on blood pressure and cholesterol, review special considerations when prescribing physical activity to patients with mildly to moderately elevated blood pressure and cholesterol, and compare physical activity with other recommended lifestyle treatments.

Physical Activity Guidelines

The Physical Activity Guidelines for Americans, updated in 2018 by the country's leading experts in physical activity, are the authoritative source for physical activity recommendations.[1] These guidelines make clinically useful general recommendations for all Americans, such as encouraging individuals to "move more and sit less throughout the day" and indicating that some physical activity (even below recommendations) is better than none. Quantitative recommendations for aerobic and muscle-strengthening (ie, resistance) exercise are summarized in Table 1. Achieving this level of physical activity is also one of the components of the American Heart Association's Life's Simple 7[12] and is endorsed by the 2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease.[13]

Table 1. Summary of the Physical Activity Recommendations for Americans*

Aerobic exercise	Muscle-strengthening (resistance) exercise
For substantial health benefits*	Should be performed:
150–300 min/wk of moderate-intensity physical activity,† or	≥2 times/wk
75–150 min/wk of vigorous-intensity physical activity,‡ or	Involving all major muscle groups
An equivalent combination of moderate- and vigorous-intensity physical activity	At moderate intensity or greater

*Even greater health benefits are realized by exceeding these recommendations (eg, moderate-intensity activity >300 minutes per week or vigorous-intensity physical activity >150 minutes per week).

†Moderate intensity corresponds to 3.0 to 5.9 metabolic equivalents and can be described to patients as any activity that begins to increase your breathing and heart rate, such as brisk walking.

‡Vigorous intensity corresponds to ≥6.0 metabolic equivalents and can be described to patients as more intense exercise that results in larger increases in breathing and heart rate, such as jogging or brisk walking uphill.

The blood pressure and cholesterol guidelines recommend treatment with similar, although not identical, physical activity prescriptions. Comparable to the federal guidelines, the 2017 Hypertension Clinical Practice Guidelines recommend 90 to 150 minutes per week of moderate-to-vigorous intensity aerobic exercise and 90 to 150 minutes per week (6 exercises × 3 sets × 10 repetitions) of dynamic resistance exercise.[2] The 2018 Cholesterol Clinical Practice Guideline recommends 3 to 4 forty-minute sessions of moderate-to-vigorous–intensity aerobic exercise per week, with no specific recommendation for resistance exercise.[3] Although these guidelines are all largely consistent, we recommend the federal Physical Activity Guidelines for Americans (Table 1) for clinical use, because they are the product of the most extensive, expert review specifically addressing physical activity and health outcomes.

Average Effects of Increasing Physical Activity

Strong evidence supports a blood pressure–lowering effect of physical activity, as determined by the 2018 Physical Activity Guidelines Advisory Committee's systematic review including 15 meta-analyses of clinical trials.[14] According to meta-analyses including all populations (normotensive and hypertensive), engaging in aerobic, dynamic, or combined exercise training has significant average effects on SBP and DBP (Table 2).[15,19] For aerobic training,[15] a 2013 meta-analysis pooled 150 clinical trial estimates to find average effects (95% CI) for SBP of −4 (−5 to −2) mm Hg and DBP of −3 (−3 to −2) mm Hg. For resistance training,[15] the same report pooled 29 clinical trial estimates and reported average effects (95% CI) for SBP of −2 (−4 to 0) mm Hg and DBP of −3 (−5 to −2) mm Hg. For combined (aerobic+resistance) training, a 2016 meta-analysis of 68 randomized trials

Table 2. Average Effect Sizes of Physical Activity and Other Lifestyle-Only Treatments on Blood Pressure and Blood Cholesterol

	Average effect on blood pressure		Average effect on blood cholesterol and triglycerides		
Lifestyle modification	SBP (mm Hg)	DBP (mm Hg)	LDL-C (mg/dL)	HDL-C (mg/dL)	TG (mg/dL)
Physical activity					
Aerobic[15–17]	−4	−3	−3 to −4	+1 to +2	−4 to −12
Dynamic resistance[15,18]	−2	−3	−6	–	−8
Combined[19]	−3	−3	–	–	–
Weight loss[20]	−3	−2	−5	+2 to +3	−15
Dietary modifications					
DASH and DASH-style diets[21]	−5	−3	−4	–	–
Mediterranean diet[22]	−3	−2	–	–	–
Smoking cessation[23,24]	–	–	–	+4	–
Alcohol moderation (≤2 drinks/d)[25,26]	−3	−3	–	–	–

– indicates nonsignificant effect, not recommended, or insufficient evidence to draw conclusions; DASH, Dietary Approach to Stop Hypertension; DBP, diastolic blood pressure; HDL-C, high-density lipoprotein cholesterol; LDL-C, low-density lipoprotein cholesterol; SBP, systolic blood pressure; and TG, triglyceride.

estimated pooled effects (95% CI) on SBP of −3 (−4 to −2) mm Hg and DBP of −3 (−3 to 0) mm Hg.[19]

The effects of exercise training on blood cholesterol have also been studied extensively. For aerobic exercise, numerous meta-analyses exist across types of exercise (eg, walking, aerobic, and aquatic) and patient populations (healthy adults, older adults, and clinical populations). In general, aerobic exercise tends to increase high-density lipoprotein cholesterol (HDL-C) and decrease triglycerides. Effects of aerobic exercise on LDL-C are less consistent, with recent reviews concluding that the beneficial effect is small or possibly null.[27,28] Table 2 reports pooled average effects from 2 meta-analyses: 1 including 67 clinical trial estimates among men[16] and 1 including 56 clinical trial estimates among women.[17] In general, the effects of aerobic training were similar by sex, yet men had greater reductions in triglycerides (TG; −12 mg/dL [95% CI, −16 to −8 mg/dL]) versus women (−4 mg/dL [95% CI, −8 to 0]). For resistance training, a 2009 meta-analysis of 29 studies found significantly reduced LDL-C by 6 (95% CI, −11 to −1) mg/dL and TG by 8 (95% CI, −15 to −2) mg/dL, with no effect on HDL-C (Table 2).[18] Although insufficient data from meta-analyses are available to estimate the effects of combined aerobic and resistance training on blood cholesterol, a recent review of the few available trials concluded that adding resistance to aerobic training could "supplement and possibly enhance" effects.[28] Furthermore, although beyond the scope of this statement, recent research suggests that exercise programs have favorable effects on lipoprotein subclass profiles beyond HDL-C, LDL-C, and TG.[29]

Treatment Effect of Physical Activity Among Patients With Baseline Values in the Mild to Moderate Range of Elevated Blood Pressure and Blood Cholesterol

For mild-moderate–risk patients who might be prescribed lifestyle-only treatment, it is important to consider potential floor effects where lower baseline values result in smaller treatment effects. This phenomenon is well documented for blood pressure. The 2018 Physical Activity Guidelines Committee[14] summarized meta-analyses by baseline blood pressure classification and reported that the pooled effects of physical activity on SBP were −2 mm Hg in normotensive patients, −4 mm Hg in patients classified as prehypertensive based on the previous guidelines (elevated/stage 1 hypertension by current guidelines), and −5 to −9 mm Hg in hypertensive patients (stage 2 or higher). For dynamic resistance training, pooled effects on SBP were 0 to −3 mm Hg in normotensive patients, −3 to −5 mm Hg in prehypertensive patients, and −2 to −9 mm Hg in hypertensive patients.[14] Thus, although smaller effects are expected with lower baseline blood pressures, the expected average reductions in mild-moderate–risk groups (similar to those reported in Table 2) are still clinically meaningful.

The effects of exercise training across baseline levels of blood cholesterol are less consistent. In a 2006 meta-regression across 49 aerobic exercise trials in men, greater improvements were observed with lower baseline levels of HDL-C (r=0.45, P<0.001), higher LDL-C (r=0.38, P=0.03), and higher TG (r=0.39, P=0.003).[16] A 1999 meta-analysis of 31 aerobic exercise trials also indicated that improvements in HDL-C and TG had larger effects with baseline dyslipidemia versus normolipidemia: HDL-C (2.7 versus 1.5 mg/dL) and TG (−13.3 versus −2.7 mg/dL).[30] Conversely, significant LDL-C improvements were only observed in normolipidemic participants (−3.5 mg/dL) and not hyperlipidemic participants (−1.9 mg/dL, P>0.05). For resistance exercise, a meta-analysis of 29 studies found that lower baseline HDL-C was associated with greater increases with training, although effects were similar across baseline levels of LDL-C or TG.[18] Overall, it appears that floor effects of exercise training on blood cholesterol are most apparent for HDL-C, with some evidence for TG, and limited evidence for LDL-C.

Dose-Response of Physical Activity on Blood Pressure and Blood Cholesterol

Because the effects of physical activity may be attenuated in mild-moderate–risk patients, it is of clinical importance to know whether increasing the dose could yield greater improvements in blood pressure and blood cholesterol. Recent reviews conclude that insufficient evidence is available to determine whether associations between physical activity and blood pressure vary by frequency, intensity, time, or duration.[14,31] Despite these expert conclusions, more frequent physical activity might be advantageous because engaging in a single bout of aerobic physical activity has a transient hypotensive effect (−2 to −12 mm Hg) that lasts 4 to 16 hours.[31,32] Furthermore, greater volumes of physical activity are associated with greater risk reduction for incident hypertension.[33] Taken together, although patients might not realize greater blood pressure reductions in single measurements, a more frequent and higher volume of physical activity could be recommended to improve 24-hour blood pressure and risk of progression in mild-moderate–risk patients.

Dose-response effects have also been documented for blood lipids. A scoping review concluded that a higher total volume of aerobic exercise was associated with greater improvements in HDL-C, whereas higher-intensity aerobic exercise might be necessary to decrease LDL-C.[28] Resistance training intensity, on the other hand, does not seem to have a dose-response relationship with blood cholesterol or TG.[28] Similar to blood pressure, there is evidence that a single acute bout of exercise acutely increases HDL-C and decreases TG, suggesting that more frequent exercise could be helpful for accumulating benefits.[34,35] Overall, it appears that greater benefits in blood cholesterol and TG can be achieved with higher intensity, frequency, or volume of aerobic training.

Variable and Adverse Responses to Exercise

Another important consideration is the well-documented variability in individual blood pressure and cholesterol responses to physical activity. Along with those who respond more favorably than expected, this variability includes ≈10% who are nonresponders or have adverse/paradoxical responses.[36] Despite recent advances, predictors of nonresponse to exercise are not fully understood and are a priority for precision medicine research. Similar to pharmacological interventions, clinicians should be aware that some patients may not respond as favorably to exercise on selected risk factors.

Comparison of Physical Activity With Other Lifestyle Treatments

Lifestyle recommendations highlighted in the blood pressure and cholesterol guidelines also include weight loss, dietary modification, smoking cessation, and alcohol moderation.[2,3] Next, we describe recommendations and average effects for other lifestyle treatments and provide context and benchmarking with respect to treatment with physical activity.

Weight Loss

A weight loss of at least 5% is recommended to reduce blood pressure and improve blood cholesterol, according to the 2013 AHA/ACC/TOS Guideline for the Management of Overweight and Obesity in Adults.[20] A more modest weight loss of 3% to 5% can improve TG. Average effects for this modest level of weight loss are reported in Table 2.[20] A 2016 meta-analysis of randomized weight loss trials using diet, exercise, and pharmacotherapy indicated that dose-response effects where trials achieving >5% weight loss resulted in more pronounced reductions in SBP, DBP, and LDL-C, but not HDL-C or TG.[37]

The 2017 Hypertension Clinical Practice Guidelines recommend ideal body weight if possible, but a minimum of 1 kg weight loss among most individuals who are overweight or obese.[2] The 2018 Cholesterol Clinical Practice Guideline more generally recommends caloric restriction that promotes weight loss among individuals who are overweight or obese.[3] Collectively, recommending weight loss of at least 5% is within the scope of each guideline. Furthermore, the beneficial effects of this weight loss are comparable to those achieved through physical activity for both blood pressure and cholesterol.

Of relevance for lifestyle-only treatment is that physical activity is often included along with dietary restriction and behavioral therapy as part of a comprehensive lifestyle approach for achieving weight loss.[20] Weight loss interventions with and without physical activity result in similar effects on blood pressure[38] and lipid profile.[39] Yet, adding physical activity to caloric restriction is associated with better short-term weight loss and long-term weight maintenance,[40] supporting physical activity as part of the weight loss prescription for treating elevated blood pressure and cholesterol.

Dietary Modifications

The 2015 Dietary Guidelines Advisory Committee[41] recommended a focus on overall dietary patterns rather than on individual nutrient-focused recommendations for CVD prevention. The recommended dietary patterns were those with higher intakes of fruits and vegetables, whole grains, low-fat dairy, and seafood; regular consumption of legumes and nuts; and reduced consumption of red and processed meat, refined grains, and sugar-sweetened foods and beverages. Similarly, dietary patterns lower in saturated fat and sodium, and higher in unsaturated fats were recommended to reduce cardiovascular risk. Dietary Approach to Stop Hypertension (DASH)/DASH-style diets and Mediterranean diets were specifically mentioned and are discussed here because they are associated with a 10% and 20% CVD

risk reduction, respectively.[42] Table 2 reports the average effects on blood pressure and cholesterol of DASH/DASH-style diets from a 2015 meta-analysis including 20 clinical trials[21] and with a Mediterranean diet from a 2019 Cochrane review.[22] Of note, a Mediterranean diet was not associated with decreased blood lipids across all populations (Table 2), although beneficial effects were observed in higher-risk groups.[42]

The 2017 Hypertension Clinical Practice Guidelines[2] and 2018 Cholesterol Clinical Practice Guideline[3] agree that patients should consume a dietary pattern consistent with the 2015 dietary guidelines, including DASH/DASH-style and Mediterranean diets.[43] Furthermore, the blood pressure guidelines indicate that sodium is an important individual nutrient. These guidelines align well with the new sodium dietary reference intakes of ≤2400 mg of sodium per day to control blood pressure, with potentially greater benefits at <1500 mg per day.[2,44] When not meeting these absolute targets, reducing sodium by 1000 mg per day can lower blood pressure.[44] Greater CVD risk reduction from sodium reduction likely occurs alongside increased potassium intake in adults with hypertension and in salt-sensitive population subgroups (>50% of US adults).[2]

Smoking Cessation

Smoking is a major risk factor for CVD.[12] Smoking cessation is not mentioned as a best proven lifestyle treatment in the 2017 Hypertension Clinical Practice Guidelines,[2] consistent with current data suggesting that the long-term effects of smoking cessation on blood pressure are unclear.[23] Yet, smoking cessation is still prudent because smoking has well-documented adverse cardiovascular effects, including an interaction with high blood pressure that increases the risk of cardiovascular events (eg, stroke).[23] Similarly, the primary reason for promoting smoking cessation in the 2018 Cholesterol Clinical Practice Guideline was to reduce overall cardiovascular risk, rather than blood lipids specifically.[2] For lipids, a meta-analysis of 27 studies found that smoking cessation increased HDL-C by 4 mg/dL[24] (Table 2). Thus, the evidence for smoking cessation to decrease blood pressure and improve blood lipids is weaker than that for physical activity, although smoking cessation remains important for cardiovascular health.

Alcohol Moderation

Although moderate alcohol consumption (≤2 drinks per day) is associated with ≈25% to 30% reduction in CVD risk,[45] heavier drinking is a major cause of reversible hypertension and is associated with other adverse outcomes including stroke and all-cause mortality.[46] For individuals consuming ≥3 drinks per day, the 2017 Hypertension Clinical Practice Guidelines recommend reducing alcohol consumption to ≤2 drinks per day.[2] This recommendation reflects a 2017 meta-analysis of 36 trials where individuals consuming ≥3 drinks a day benefitted from moderation, although blood pressure was not decreased with moderation among individuals consuming ≤2 drinks per day (Table 2).[25] In contrast, alcohol moderation is not a recommended lifestyle treatment for high blood cholesterol. One 2017 meta-analysis of experimental studies of alcohol consumption among healthy adults found that increasing alcohol consumption did not have adverse effects on blood cholesterol.[26] In sum, alcohol moderation for heavier drinkers appears to be beneficial for reducing blood pressure.

Role of Physical Activity in the Prevention of CVD

High blood pressure and dyslipidemia are major, prevalent risk factors for the development and progression of CVD.[2,3] Although this statement focuses on the effects of physical activity on these risk factors, it is important not to lose sight of the rationale for decreasing blood pressure and optimizing blood cholesterol, to decrease cardiovascular morbidity and mortality. A meta-analysis including 36 studies concluded that physically active individuals have a 21% decreased risk of CVD incidence and a 36% decreased risk of cardiovascular mortality compared with inactive individuals.[47] This long-term benefit on CVD is not attributed to only improvements in blood pressure and cholesterol; physical activity also improves dysglycemia, inflammation, hemostatic factors, body composition, and vascular function.[48,49] Physical activity has further benefits, beyond cardiovascular health, including a decreased risk of some cancers and all-cause mortality, improved bone, brain, and mental health, and better physical function, sleep, and quality of life.[1] Thus, the prescription of physical activity is an excellent choice for patients with mild to moderate elevations in blood pressure or cholesterol because of the multiple and long-term benefits. Identifying patients at these early stages may be the perfect opportunity to have an empowering conversation about initiating or increasing physical activity.

HOW CAN CLINICIANS HELP THEIR PATIENTS ADOPT AND MAINTAIN A PHYSICALLY ACTIVE LIFESTYLE?

Next, we briefly discuss strategies to counsel and support patients becoming more physically active. More importantly, we provide resources for health care professionals and patients. This excellent, brief editorial offers easy tips for promoting exercise in primary care,[50] and the more extensive 10-page Health Care Provider's Action Guide is available for free download from the American College of Sports Medicine's "Exercise is Medicine" website (www.exerciseismedicine.org).[51]

Table 3. Self-Report and Wearable Physical Activity Assessment Tools for Clinical Assessment

Tool	Description
Assessment of physical activity by patient self-report	
Questions 1a and 1b assess aerobic physical activity and have been validated in clinical practice.[53]	Question 1a: On average, how many days per week do you engage in moderate to strenuous exercise (like walking fast, running, jogging, dancing, swimming, biking, or other activities that cause a light or heavy sweat)? Question 1b: On average, how many minutes do you engage in exercise at this level?
Question 2 is from the Behavioral Risk Factor Surveillance System questionnaire[54] and assesses resistance exercise.	Question 2: During the past month, how many times per week did you do physical activities or exercises to STRENGTHEN your muscles? Do NOT count aerobic activities like walking, running, or bicycling. Count activities using your own body weight like yoga, sit-ups, or push-ups and those using weight machines, free weights, or elastic bands.
Wearable activity trackers[52]	
Wearable trackers are available from companies including Fitbit, Garmin, Samsung, Omron, Apple, Misfit, and others.	These can objectively monitor calories, steps, distance, physical activity duration by active minutes for light, moderate, and vigorous activity. They can also alert participants to stand or move after sustained periods of inactivity. Weekly or longer-term trends can be evaluated through patient or interface tracking.

Assessment

A necessary first step for clinicians and health care professionals is the assessment of baseline levels of physical activity to calibrate subsequent counseling and prescription strategies. A recent AHA statement[52] includes a comprehensive summary of physical activity assessment screening tools considered to be feasible, valid, and reliable for clinical settings. These tools (Table 3) include simple self-report questions that, although limited by the susceptibility to overreporting and patient understanding of exercise intensities, can be reliably administered to gauge activity levels.[53,54] Another option is consumer-oriented objective wearable devices that, despite limited available data on the accuracy, can be useful in real-world applications to establish trends over time, assess the impact of interventions, and provide motivation via self-monitoring.

Helping Patients Become More Physically Active

After assessment, patients not meeting guidelines will need a prescription and a comprehensive promotion/referral/behavior change plan to increase and maintain physical activity. During the patient–health care professional discussion of physical activity, determining a patient's behavioral and physical readiness is an important early step. The American College of Sports Medicine preparticipation screening guidelines[55] recommend medical clearance for previously inactive patients with preexisting CVD. For most patients indicated for lifestyle-only treatment because of their low CVD risk, initiating or increasing the intensity of physical activity is considered safe without extensive medical clearance such as an exercise stress test.

Considering the patient's socioecological supports or barriers and starting "where the patient stands" are important in terms of personal preferences and daily reality. Patients with socioeconomic risk factors such as individual- and neighborhood-level poverty may need extra supports to overcome barriers and promote equity.[56] Exploring prior activities that the patient is familiar with and enjoys will help clinicians get to know the patient's preferences and provide ideas for early success. In addition to recreational and leisure time activities, it is highly informative to explore what type of daily life and commuting activities patients engage in. Ideas involving increases in active commuting (walking, biking, public transportation with some walking) can have a substantial, durable impact given that these daily activities may become embedded into everyday routines. Current guidelines set no minimum time or intensity necessary to realize some benefits of physical activity, every little bit of activity is better than none, and this is especially true for inactive people who get no or little physical activity.[1] Thus, although achieving the guidelines is the goal (Table 1), smaller increases in physical activity should be encouraged and celebrated.

A final important consideration is that the prescription and provision of educational materials alone will be ineffective for most patients. Adequate training for supporting behavior change is necessary at all levels of medical education (eg, pre- and postdoctoral, continuing medical education). In addition, for clinicians with limited time or expertise in behavioral modifications and physical activity promotion, the expanding landscape of certifications and courses in lifestyle medicine and health behavioral support has resulted in many types of professionals (eg, nurse practitioners, physician assistants, certified health coaches) who can offer behavioral support for lifestyle changes and maintenance, including physical activity. Last, in line with the "Exercise is Medicine" campaign, assessment of physical activity as a vital sign, and subsequent prescription/counseling/referral should occur at every patient interaction to promote physical activity long term.[50]

Ideas and Resources for Increasing Physical Activity

In Table 4,[57–63] we present a few ideas and resources for increasing physical activity. This list of ideas is far

Table 4. Tips and Resources for Supporting Physical Activity in Patients

Simple ideas to increase daily physical activity	*Using public transportation?* Try walking to a further stop before you get on or get off 1 stop early. *Always busy at work?* Have a walking meeting with a colleague, get your coffee at a shop that is a little farther than the usual one, or go for a walk on your lunch break. *At work, home, or shopping?* Take the stairs instead of the elevator/escalator every time you have the choice to do so. *Have a pet*? Find a new route that is a little longer for the dog's walk. *Making plans with family or friends*? Rather than a movie, choose walking through a museum, bowling, or mini golf. *In your free time?* Garden, volunteer, or take on a home improvement project, rather than using social media, online shopping, or watching TV.
Talking points for increasing planned exercise	*Never been an athlete or do not like gyms?* Walking is a great place to start. Start slow and build up to 30 minutes or more per day of brisk walking. Recording steps or time spent walking with a paper diary, pedometer, or activity tracker can help you monitor progress! *Bad weather or no access to an exercise facility?* At-home exercise options like yoga, cardio-dance, and circuit training are available online or from your cable provider, often do not require any extra equipment, and many are free! Look for content from a trusted provider, such as the YMCA. *No time or too tired to exercise?* Every minute of exercise counts toward weekly goals, and a little is better than none. If you cannot get 30 minutes on one day, adding a few minutes of dancing to your favorite song, playing tag with kids, or marching/jogging in place during commercials can improve your health and increase your energy. *Like to exercise with others?* Join a softball, ultimate Frisbee, or tennis league, find an accountability buddy like a family member or friend, create a walking group at work or home, or sign up for an exercise class at your local community center, workplace, or place of worship.
Online resources	Department of Health and Human Services "Move Your Way" Platform[57] https://health.gov/moveyourway/ American Heart Association's Healthy Living Fitness Page[58] https://www.heart.org/en/healthy-living/fitness National Institute on Aging's Free Resources on Exercise[59] https://order.nia.nih.gov/ Center for Disease Control and Prevention's Active People, Health Nation Page[60] https://www.cdc.gov/physicalactivity/activepeoplehealthynation/index.html American College of Sports Medicine, Exercise is Medicine Healthcare Provider Resources[61] https://www.exerciseismedicine.org/support_page.php/resources/
Community resources	Centers for Disease Control and Prevention's page of local resources[62] https://www.cdc.gov/nccdphp/dnpao/state-local-programs/physicalactivity.html YMCA[63] https://www.ymca.net/ Local advocacy groups (eg, walking/hiking trail, biking, older adult agencies)

from exhaustive and is presented only to help spark discussions and address barriers. Many national agencies and associations have fantastic online resources to provide ideas for clinicians and patients, help track activities, and promote the many benefits of an active lifestyle. The Centers for Disease Control and Prevention also offers a list of state and local physical activity programs. Local advocacy groups can provide connections to physical activity opportunities for patients. Many community centers offer facilities for physical activity and sometimes programs with professionals supporting health behavior change.

CONCLUSION

A healthy lifestyle is the cornerstone of cardiovascular health. Reflecting changes in the most recent guidelines, an estimated 21% and 28% to 37% of US adults, respectively, have mild-moderate–risk blood pressure and cholesterol and should receive lifestyle-only as first-line treatment. Of the recommended lifestyle changes, increasing physical activity has extensive benefits, including on blood pressure and blood cholesterol, that are comparable, superior, or complementary to other healthy lifestyle changes. Assessment and prescription of physical

activity is an excellent lifestyle-only treatment option for the large population of mild-moderate–risk patients with elevated blood pressure and blood cholesterol.

ARTICLE INFORMATION

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.

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Disclosures

Writing Group Disclosures

Writing group member	Employment	Research grant	Other research support	Speakers' bureau/ honoraria	Expert witness	Ownership interest	Consultant/ advisory board	Other
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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.

†Significant.

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*Modest.

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