Lifestyle Medicine and Heart Disease: Meals, Movement, and Meditation

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1

Disclosure

Consultant: Amgen; Esperion Therapeutics; Medtronic (Renal Denervation Program); Novartis

Speaker Bureau: Esperion Therapeutics

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2

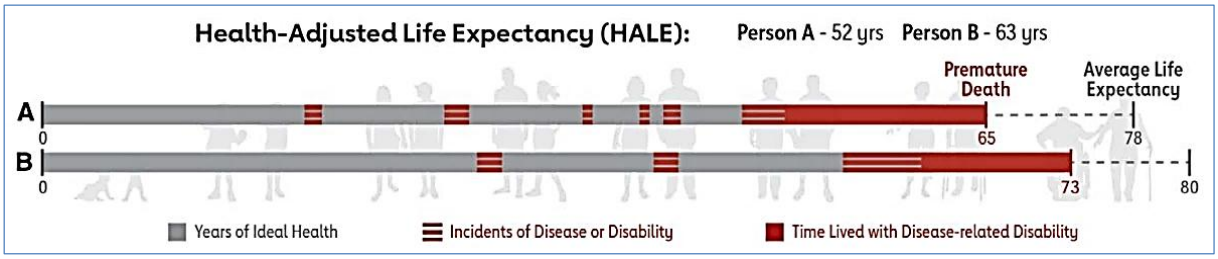
Learning Objectives

1. To discuss the relationship of ideal cardiovascular health metrics and cardiovascular disease.
2. To describe components of diet, physical activity, and psychological well-being that support cardiovascular health.
3. To identify clinical strategies to provide efficient and effective behavioral change counseling.

AHA PRESIDENTIAL ADVISORY

The American Heart Association 2030 Impact Goal

- Healthy-Adjusted Life Expectancy (HALE)
- "Number of years living in good health"



Goal: Increase US HALE from 66 to at least 68 by 2030

Angell SY, et al. Circulation. 2020;141:e120–e138

Life's Essential 8

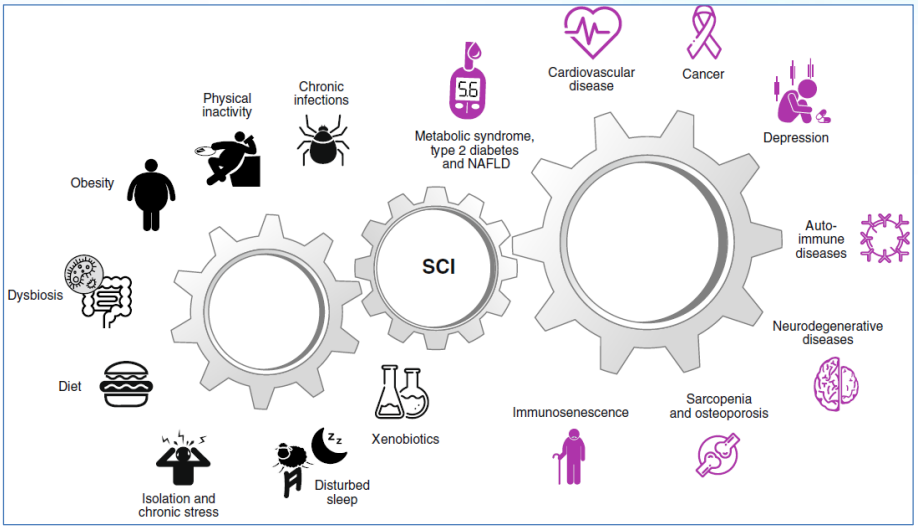
8 components of cardiovascular health:

- Healthy diet, physical activity, avoid nicotine, healthy sleep, healthy weight
- Healthy levels of lipids, glucose, blood pressure

Lloyd-Jones DM, Circulation. 2022;146:e18–e43

5

Lifestyle and Inflammation



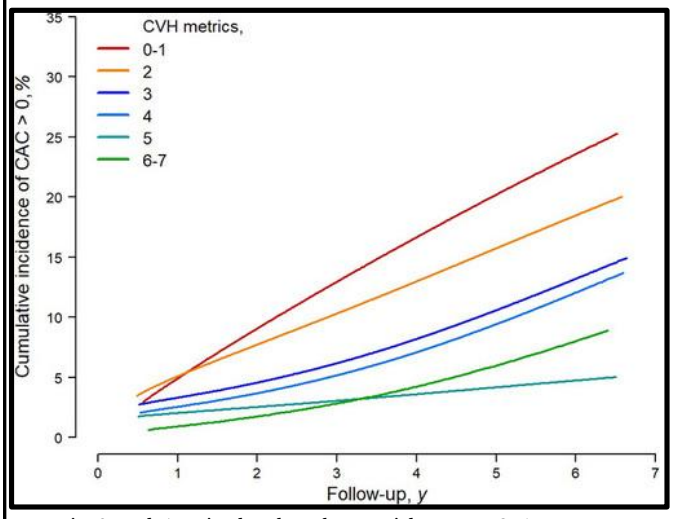
- Social, environmental, and lifestyle factors promote low-grade systemic chronic inflammation

- Chronic disease, morbidity, mortality

Furman D, et al., Nature Med., Dec 2019; 25: 1822-32

6

Ideal Cardiovascular Health and CAC



Kim S, et al. Arterioscler Thromb Vasc Biol. 2019;39:826

- N=65,494; age: 41.3 (7.4) yrs; 78% M
- 7 Metrics: smoking (never/former), physical activity (≥150 min/week or ≥75 min/week), BMI (<23 kg/m²), blood pressure (<120/80 mmHg), total cholesterol (<200 mg/dL), fasting glucose (<100mg/dL), diet (fish, grains, sodium, sugar beverage, fruit/veg)
- Inverse association between CVH scores and progression of CAC, with and without CAC at baseline

7

Lifestyle Medicine: Healthy Lifestyle

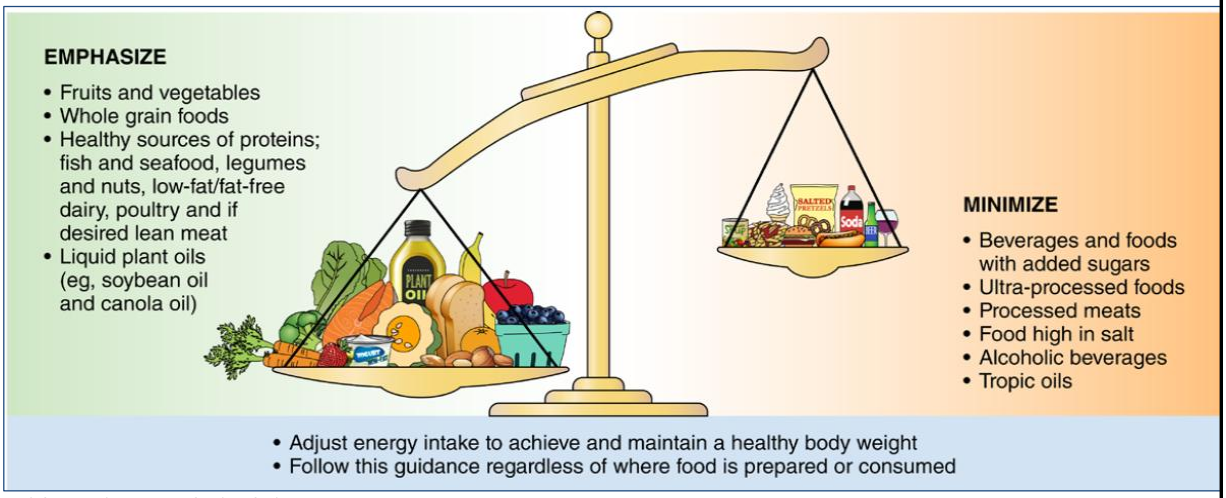
Healthy Lifestyle Definition:

1. Healthy dietary pattern
2. Engaging in regular physical activity
3. Avoiding exposure to tobacco products
4. Attaining adequate sleep
5. Managing stress

Kris-Etherton PM, et al., *Circulation*. 2021;144:e495; Shehata M and Thurston E, InnovAiT, 2020, Vol. 13(11), 642–649

8

2021 Dietary Guidance to Improve Cardiovascular Health: A Scientific Statement From the American Heart Association



Lichtenstein AH, et al. Circulation. 2021;144:e472–e487

9

Popular Dietary Patterns: Alignment With American Heart Association 2021 Dietary Guidance: A Scientific Statement From the American Heart Association

Diet categories	Common/popular diet names	Defining features		
		Emphasize	Include	Limit/avoid
DASH style[12–18]	DASH, Nordic, Baltic	Vegetables, fruits, whole grains, legumes, nuts and seeds, low-fat dairy	Lean meats and poultry, fish, nontropical oils	Limit: saturated fat, sodium, fatty meats, refined grains, added sugars, alcohol
Mediterranean style[19–24]	Mediterranean diet	Vegetables, fruits, whole grains, legumes, nuts and seeds, poultry, fish and seafood (fatty), extra-virgin olive oil	Red wine (moderation)*	Limit: dairy, meat, sugar-sweetened beverages, commercial bakery goods, sweets, and pastries
Vegetarian style[25–28]	Pescetarian[26]	Vegetables, fruits, whole grains, legumes, nuts and seeds	Fish and seafood, dairy, eggs	Limit: added sugars, refined grains, solid fats, alcohol Avoid: meat and poultry
	Lacto/ovo/lacto-ovo-vegetarian[6,25–27]		Dairy (lacto/lacto-ovo only) Eggs (ovo/lacto-ovo only)	Limit: refined grains, solid fats, alcohol Avoid: meat, poultry, fish and seafood dairy (ovo only), eggs (lacto only)
	Vegan[25,28]			Limit: added sugars, refined grains, solid fats, alcohol Avoid: meat, poultry, fish and seafood, dairy, eggs
Low fat[20,29–36]	Low fat, TLC, volumetrics	Vegetables, fruits, whole grains, legumes	Low-fat dairy, lean meats, poultry, and fish	Limit: fat <30% kcal, nuts, oils, fatty meat, poultry, fish, alcohol
Very low fat[37–41]	Ornish, Esselstyn, Pritikin, McDougal, PCRM	Vegetables, fruits, whole grains, legumes		Limit: fat <10% kcal, sodium, refined grains, alcohol Avoid: oils, nuts and seeds, meats, poultry, fish, dairy, eggs
Low carbohydrate[29,35,36,42,43]	Zone, South Beach, low glycemic load	Vegetables, fruits (nonstarchy), nuts and seeds, fish and seafood, nontropical oils		Limit: carbohydrate 30%–40% kcal, whole and refined grains, legumes, dairy, alcohol Avoid: added sugars, fatty meat
Paleolithic[44–48]	Paleo	Vegetables, fruits, nuts, lean meat, fish	Eggs	Limit: sodium Avoid: added sugars, whole and refined grains, legumes, oils, dairy, alcohol
Very Low Carbohydrate[29,49–53]	Atkins, ketogenic, well-formulated ketogenic diet	Nuts and seeds, red meat, poultry, fish and seafood, eggs, full-fat dairy, oils	Vegetables (nonstarchy), berries Ketogenic: 3000–5000 mg/d sodium[54]	Limit: carbohydrate <10% kcal, alcohol Avoid: fruits (except berries), grains, legumes, added sugars

Gardner CG, et al. *Circ.* 2023;147:1715

10

Aligning with AHA Guidelines

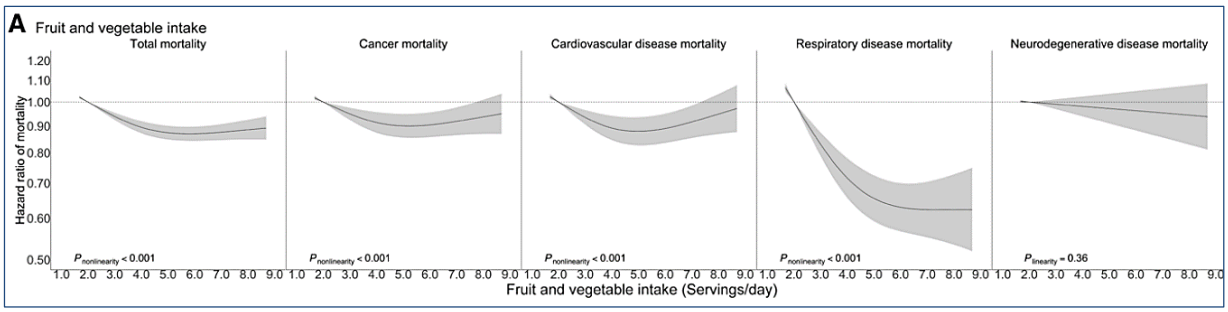
- Dietary patterns aligned with 2021 Guidelines
  - DASH
  - Mediterranean
  - Pescetarian
  - Vegetarian
- Adapt to lifestyle, budget, cultural preferences

Gardner CD, et al. Circulation. 2023;147:1715–1730

			Vegetarian							
AHA Features*	DASH-style (Nordic, Baltic)	Mediterranean	Pescetarian	Ovo, Lacto, Ovo-Lacto	Vegan >10% fat	Low-fat, (TLC, Volumetrics)	Very low-fat <10% fat (often vegan)	Low-carb (Zone, South Beach, Low-Glycemic Index)	Paleo	Very low-carb (Atkins, Ketogenic, WFKD)
1 Energy balance needed to maintain a healthy weight	Not Scored									
2 Eat plenty of vegetables and fruits, a wide variety†										
3 Choose mostly whole grains rather than refined grains‡										
4 Adequate Healthy Plant-Based and Other Protein Sources§										
Mostly protein from plants (legumes and nuts)§										
Fish and Seafood§										
Low-Fat or fat-free dairy products instead of full-fat dairy§										
If consuming meat or poultry, choose lean cuts§										
5 Use liquid plant oils rather than tropical oils‖										
6 Minimize intake of beverages and foods with added sugars¶										
7 Choose and prepare foods with little or no salt#										
8 If you do not drink alcohol don't start, if you choose to drink alcohol, limit intake**										
9 Choose minimally processed foods instead of ultraprocessed foods††										
10 Adhere to this guidance wherever food is prepared or consumed‡‡										
Points	9	8	8.25	7.75	7	7	6.5	5.75	4.75	2.75
Score normalized to 100% (Range 0-100)§§	100	89	92	86	78	78	72	64	53	31
Tiers	Tier 1				Tier 2		Tier 3		Tier 4	

11

5-a-day: Fruits/Vegetables and Mortality in US Populations



- Lower mortality with higher fruit/vegetables: nonlinear pattern
- Lowest risk of mortality: ≈5 servings per day of fruit/vegetable intake
- 2 servings/day for fruit; 3 servings/day for vegetables
- All cause mortality: 0.89 (0.86-0.93, p<0.001)

Wang DD, et al. Circulation. 2021;143:1642–16

12

Dietary Pattern and Morbidity, Morality

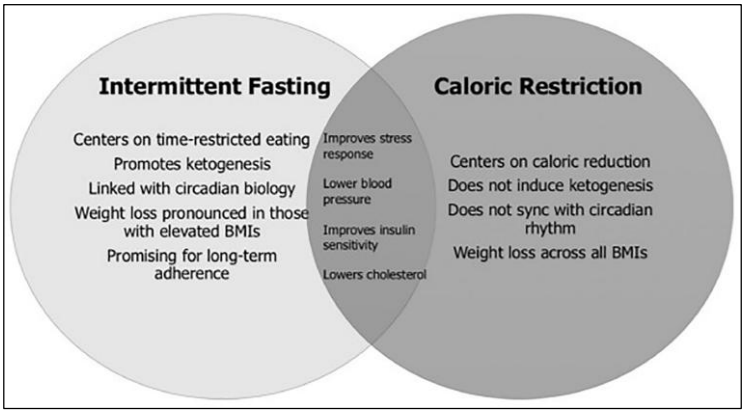
Dietary pattern	Includes	Restricts	Health benefits	Key differences
Dietary Approaches to Stop Hypertension (the DASH diet)[35,36]	Vegetables, fruits, low-fat dairy products, wholegrains, lean meats, fish, poultry, fish, beans, and nuts	Sodium intake ⩽ 2300 mg or ⩽ 1500 mg per day	• Lower blood pressure • Lower LDL-C level • Reduced CVD risk	- More emphasis on restricting sodium intake than other diets
The Mediterranean Diet[39–41]	Vegetables, fruits, nuts, legumes, wholegrains, and extra-virgin olive oil, lean meats, fish, and poultry	Limited red meat, processed meats, and sweets intake	• Primary and secondary prevention of CVD • Reduced risk of CVD mortality • Reduced risk of MI and stroke • Reduced risk of all-cause mortality	- More emphasis on nuts, fish, and olive oil than other diets - Less emphasis on dairy than the other diets
Healthy Vegetarian Eating Pattern[34,44,45]	Vegetables, fruits, wholegrains, legumes, soy products, nuts, low-fat dairy products, and seeds	All meats, poultries, and sea food	• Lower blood pressure • Lower LDL-C level • Reduced CVD risk	- More emphasis on soy products, legumes, and dairy products compared to other diets - Lean protein is entirely plant-based

CVD, cardiovascular disease; LDL-C, low-density lipoprotein cholesterol; MI, myocardial infarction.

Fischer MN, et al. Vascular Medicine. 2020; 25(2) 184–193

13

Intermittent Fasting vs. Caloric Restriction



Syncing eating periods to the circadian rhythm improves glucose/fat utilization; Ketogenesis decreases blood pressure and adipose tissue

- Time-restricted eating: caloric consumption limited to 6 to 10-hour period in active day
- Shares common pathway of reducing stress response, and improving risk factors
- Mixed results in RCT

Bays HE, et al. American Journal of Preventive Cardiology. 2021; 5: 100149; Dong TA, et al. Am J Med. 2020 August ; 133(8): 901

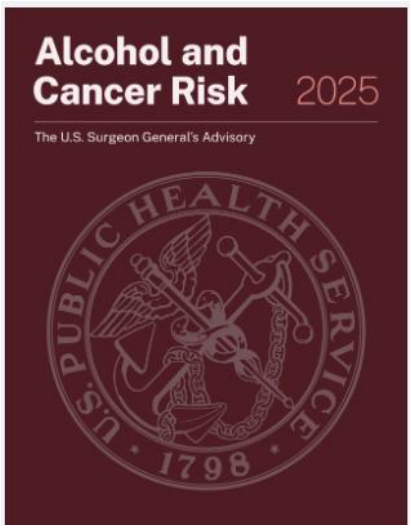
14

Alcohol Volume

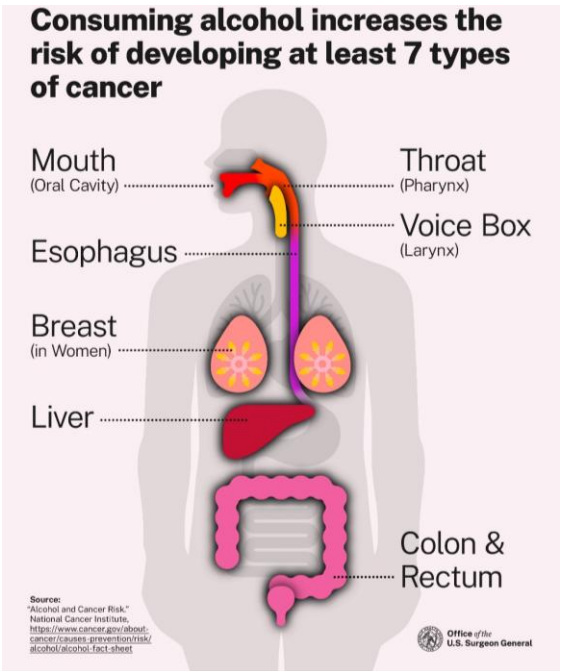
https://www.cdc.gov/alcohol/fact-sheets/alcohol-use.htm (last accessed 3/22/21). Division of Population Health , National Center for Chronic Disease Prevention and Health Promotion , Centers for Disease Control and Prevention

15

Alcohol and Cancer Risk

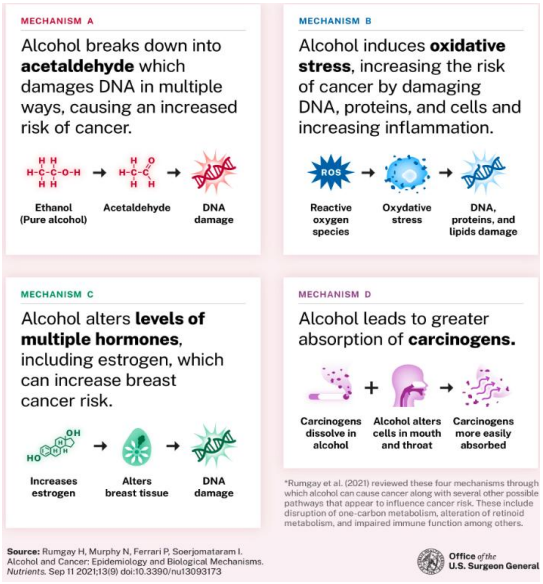


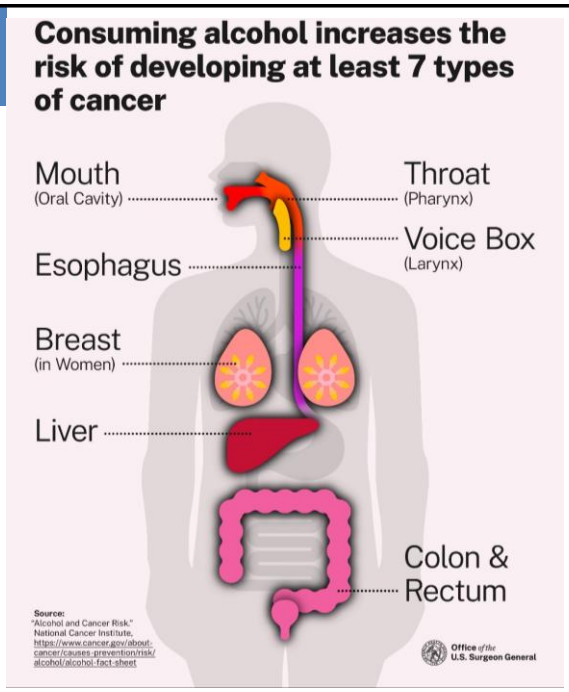
https://www.hhs.gov/surgeongeneral/priorities/alcohol-cancer/index.html



16

Alcohol and Cancer Risk

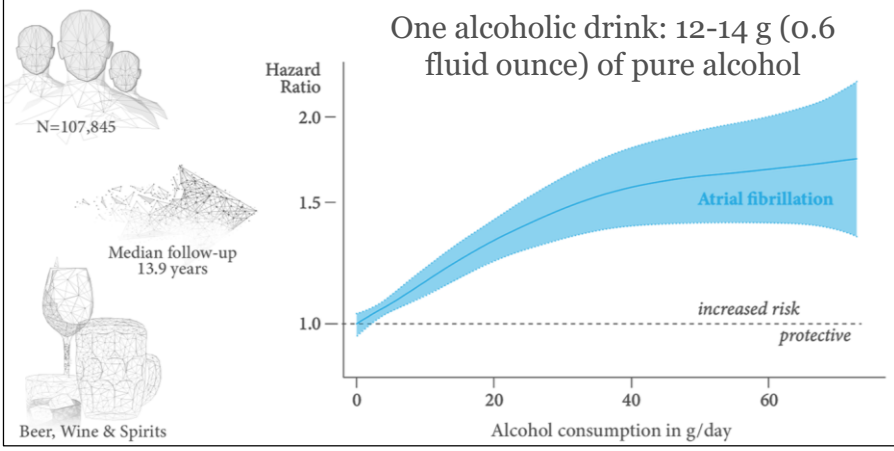


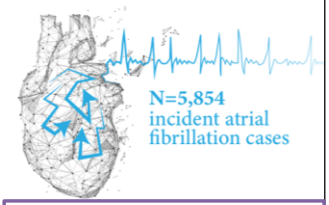


17

Alcohol consumption and incident atrial fibrillation

One alcoholic drink: 12-14 g (0.6 fluid ounce) of pure alcohol



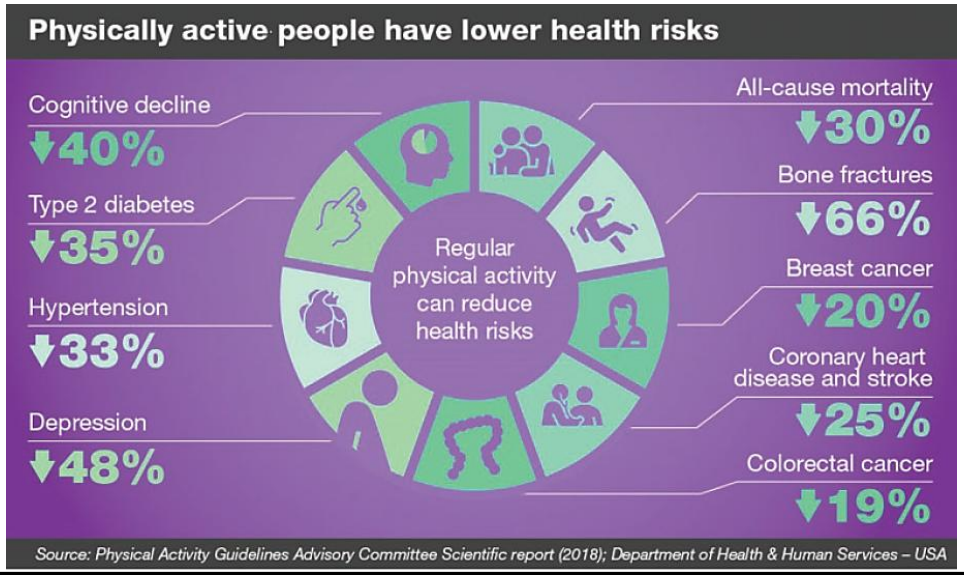


The association was neither fully explained by cardiac biomarker concentrations nor by the occurrence of HF.

Csengeri D, et al. European Heart Journal, Volume 42, Issue 12, 21 March 2021, Pages 1170–1177.

18

Health Benefits of Physical Activity

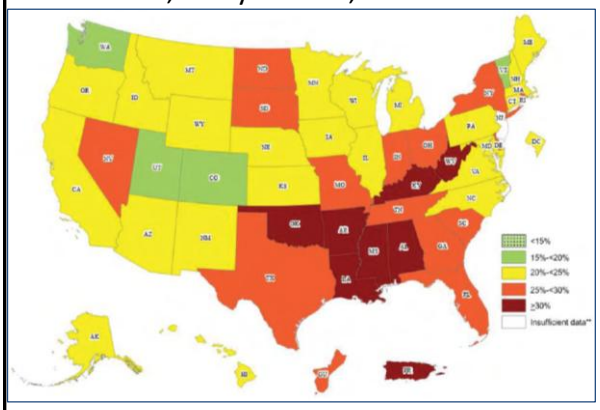


Shehata M and Thurston E. InnovAiT, 2020, Vol. 13: 642

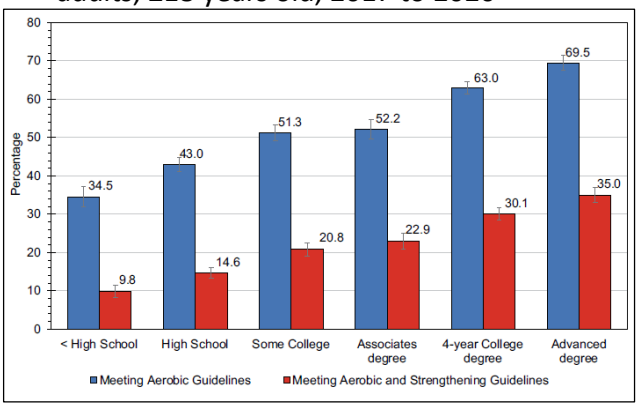
19

Variation in Physical Activity/Inactivity

Self-reported physical inactivity among US adults, ≥18 years old, 2017 to 2020



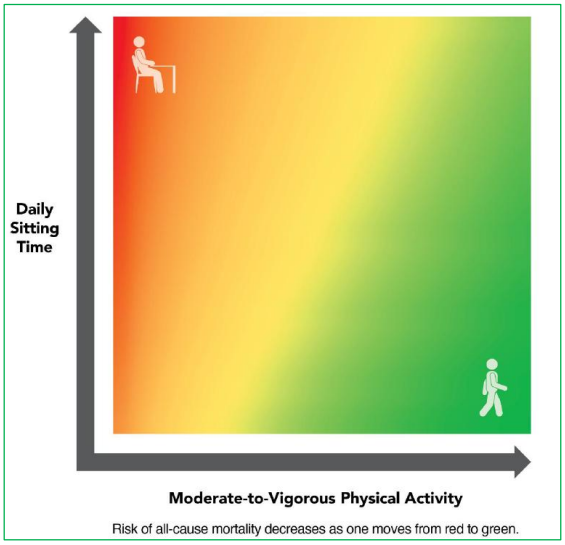
Activity Level by Education, US adults, ≥18 years old, 2017 to 2020



Tsao CW, et al. AHA Heart and Stroke Statistics 2023: Circ. 2023;147:e93–e621

20

Sedentary Behavior and Mortality

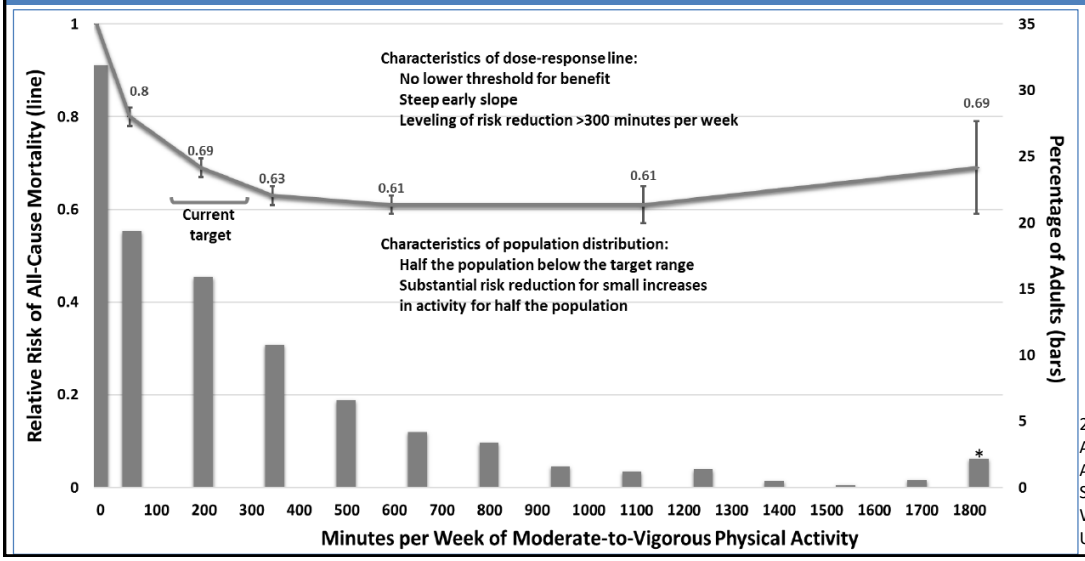


- Higher sedentary behavior: higher all-cause and CVD morbidity and mortality
- Replacing sitting time with light-intensity PA reduces risk of all-cause mortality
  - walking at 2 miles per hour, light dusting, or light gardening

2018 Physical Activity Guidelines Advisory Committee Scientific Report. Washington, DC: U.S. DHHS, 2018.

21

All-Cause Mortality and Physical Activity



2018 Physical Activity Guidelines Advisory Committee Scientific Report. Washington, DC: U.S. DHHS, 2018.

22

Recommended Physical Activity

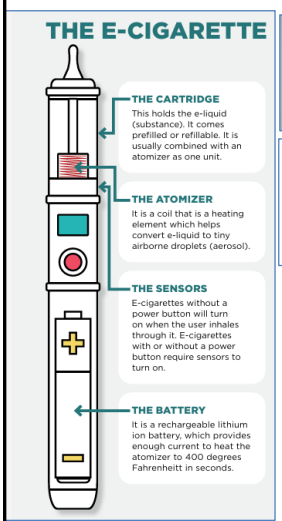
At least 150 minutes per week

Example 1	Example 2
Moderate-intensity aerobic activity	Vigorous-intensity aerobic activity
(such as brisk walking) for 150 minutes every week (for example, 30 minutes a day, 5 days a week)	(such as jogging or running) for 75 minutes (1 hour and 15 minutes) every week
AND	AND
Muscle-strengthening activities	Muscle-strengthening activities
on 2 or more days a week that work all major muscle groups (legs, hips, back, abdomen, chest, shoulders, and arms).	on 2 or more days a week that work all major muscle groups (legs, hips, back, abdomen, chest, shoulders, and arms).

https://www.cdc.gov/physicalactivity/basics/adults/index.htm; Division of Nutrition, Physical Activity, and Obesity, National Center for Chronic Disease Prevention and Health Promotion

23

Just Say No To Vaping (& All Nicotine)



Study Links E-Cigarette Use with Higher Risk of Heart Failure

Large study adds to growing body of evidence that vaping may harm the heart

Apr 02, 2024

Vaping Concerns: Heart Attack & Stroke

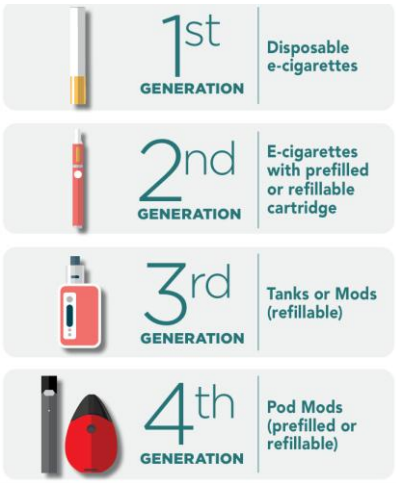
"Vaping is bad for your heart. The truth is people who vape are 56% more likely to have a heart attack than non-smokers and 30% more likely to suffer a stroke," Dr. Sharaf says.

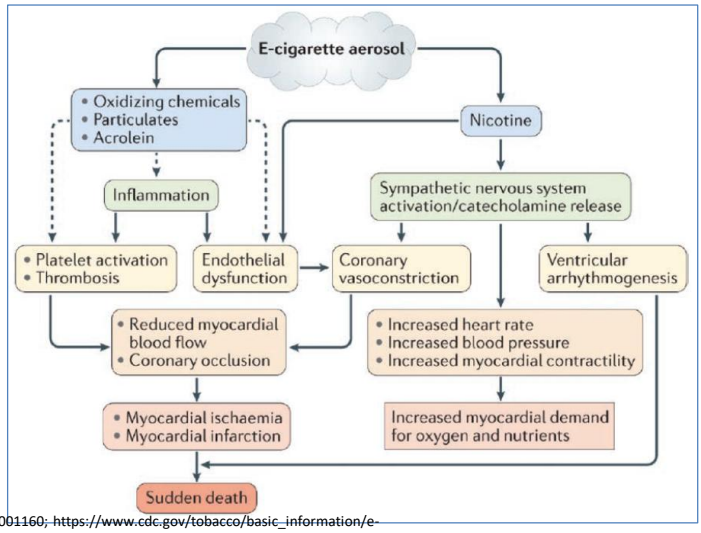
E-cigarette, or Vaping Product, Use Associated Lung Injury (EVALI)

https://www.acc.org/About-ACC/Press-Releases/2024/04/01/21/51/study-links-e-cigarette-use-with-higher-risk-of-heart-failure
https://www.unitypoint.org/news-and-articles/is-vaping-bad-for-your-heart
https://www.yalemedicine.org/conditions/evali;
https://www.cdc.gov/tobacco/basic_information/e-cigarettes/pdfs/ecigarette-or-vaping-products-visual-dictionary-508.pdf

24

Just Say No To Vaping (& All Nicotine)





Rose JJ, et al. Circulation. 2023;148:703–728. DOI: 10.1161/CIR.0000000000001160; https://www.cdc.gov/tobacco/basic_information/e-cigarettes/pdfs/ecigarette-or-vaping-products-visual-dictionary-508.pdf

25

AHA SCIENCE ADVISORY

Strategies for Promotion of a Healthy Lifestyle in Clinical Settings: Pillars of Ideal Cardiovascular Health

Barriers to Lifestyle Counseling:

1. Time/need to focus on more medically urgent issues
2. Inadequate clinical training, supportive resources
3. Low perceived patient demand for counseling
4. Lack of perceived efficacy

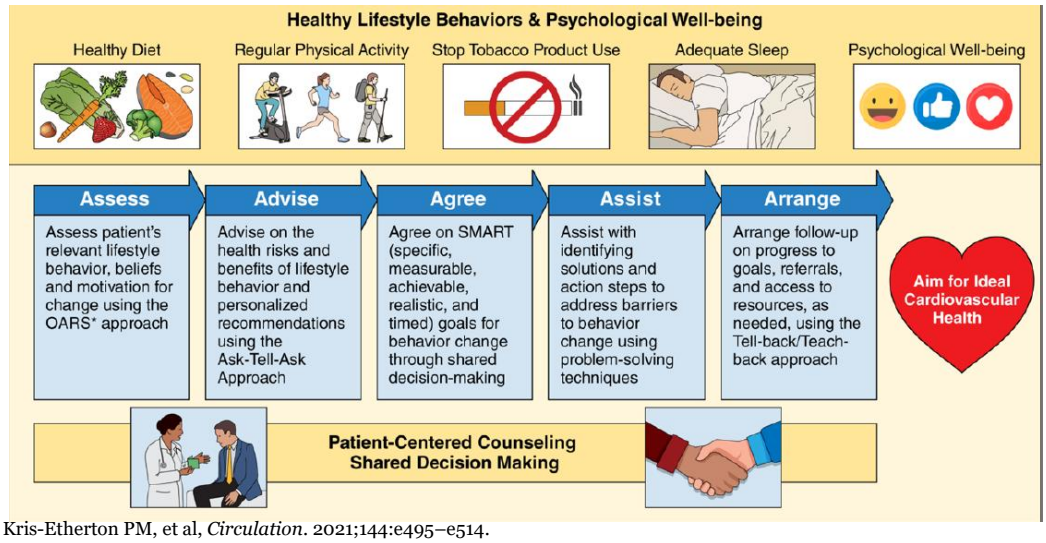
Delivering Solutions:

1. Brief, focused intervention to guide the *process* of behavior change
2. Feasible in clinical care
3. Reinforce and build across multiple office visits

Kris-Etherton PM, et al, *Circulation*. 2021;144:e495–e514

26

5 As Model



Kris-Etherton PM, et al, *Circulation*. 2021;144:e495–e514.

27

5 As Model

5As*	Clinician action/aim*	Clinician communication skills†	Patient-centered care‡
Assess	To seek to understand what patient knows about a lifestyle behavior(s), why it matters to their health, and their intention to change their behavior	OARS approach O: Open-ended question A: Affirm what patient says R: Reflect what patient says S: Summarize	Support for patient autonomy by building on what they know and what they would like to change
Advise	To discuss health risks and benefits of behavior change, including offering information that corrects patient's misunderstanding and gaps in knowledge without being judgmental or confrontational	Ask-Tell-Ask: Ask patient for permission to offer more information Give clear, specific, personalized (or general) advice to change Determine what the patient wishes to do based on information discussed	Support for patient autonomy and relatedness by engaging them in a discussion of personalized recommendations for behavior change
Agree	To collaboratively set SMART goals§ for behavior change	Shared decision-making: Discuss with patient and agree on goals that are specific, measurable, achievable, realistic, and timed	Support for patient competence and relatedness by accounting for their preference and confidence
Assist	To encourage patient-selected solutions and action steps for addressing personal barriers to behavior change	5-step problem-solving counseling: Identifying personal barriers Brainstorm solutions Analyze pros and cons of the solutions (cost-benefit analysis) Choose the desired solution Develop an action plan	Support for autonomy, competence, and relatedness through solutions and motivation-focused problem solving and action planning
Arrange	To specify the next step (visit, call, reminder) to follow up on progress, provide referrals and access to resources based on patient preference	Tell-back/Teach-back: Ask patient to summarize their understanding of the next steps to ensure common understanding and enhance patient recall and accountability	Support for competence and relatedness through frequent follow-up to closely monitor patient's progress and support gradual steps toward their goal

Kris-Etherton PM, et al. Circulation. 2021;144:e495–e514.

28

Small Changes Towards a Healthy Lifestyle

Starting the conversation: diet screener component*	Reasonable target change†	Example of realistic small substitutions‡
1. Fast food meals or snacks/mo	↓ 1 fast food meal/wk	Replace with a prepared food from a supermarket or a homemade meal
2. Servings of fruit/d	↑ 1 serving/d	Eat fresh, frozen, or canned fruit (without added sugar) as a snack
3. Servings of vegetables/d	↑ 1 serving/d	Add fresh, frozen, or canned vegetables (without added salt) to a main meal
4. Regular sodas, juices, or other sugary beverages/d	↓ 1 sugary beverage/d	Replace a regular soda with water, seltzer, tea, or coffee
5. Servings of beans, nuts, chicken, or fish/wk	↑ Fish/seafood by 1 serving/wk	Replace fast food entrée or processed meat (eg, ham) sandwich with tuna fish sandwich
6. Regular snack chips or crackers/wk	↓ 1 serving/wk	Replace 1 serving of chips or crackers with unsalted nuts
7. Desserts and other sweets/wk	↓ 1 serving/wk	Replace 1 sugary sweet or dessert with fruit or a handful of unsalted nuts
8. Use of butter and/or intake of animal fat	Decrease use as a seasoning	Replace butter with vegetable oil and herbs and spices
	Reduce intake of visible animal fat	Choose lean cuts of meat or remove visible fat before eating
9. Use of salt in cooking or at the table	Decrease use as a seasoning	Replace with herbs and spices
10. Alcoholic beverages	Men: ≤2 drinks/d Women: ≤1 drink/d[56]	Replace with noncaloric beverages, eg, sparkling water, seltzer

Kris-Etherton PM, et al, *Circulation*. 2021;144:e495–e514

29

Exercise Prescription

Variable formats

5 components
- Frequency
- Type/Activity
- Intensity
- Duration
- Progression

Example:

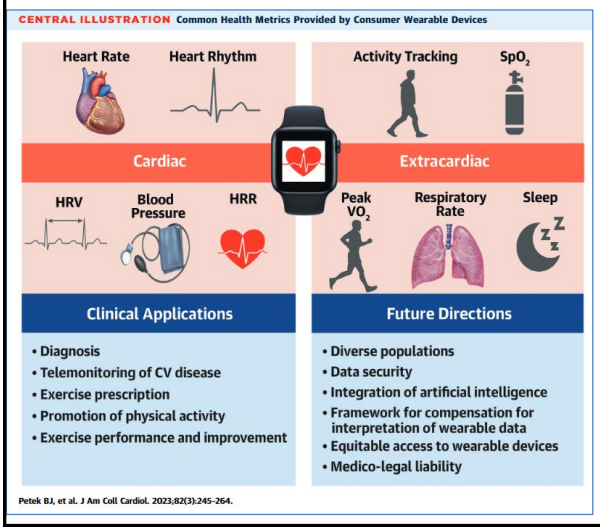
- For 3 days per week (Frequency), walk briskly on your treadmill (activity, intensity) for 15 minutes (duration) each day
- Progression After 4 weeks: 20 minutes

Lee PG, et al. Am Fam Physician. 2017;95(7):425-432

30

Consumer Wearable Health and Fitness Technology in Cardiovascular Medicine

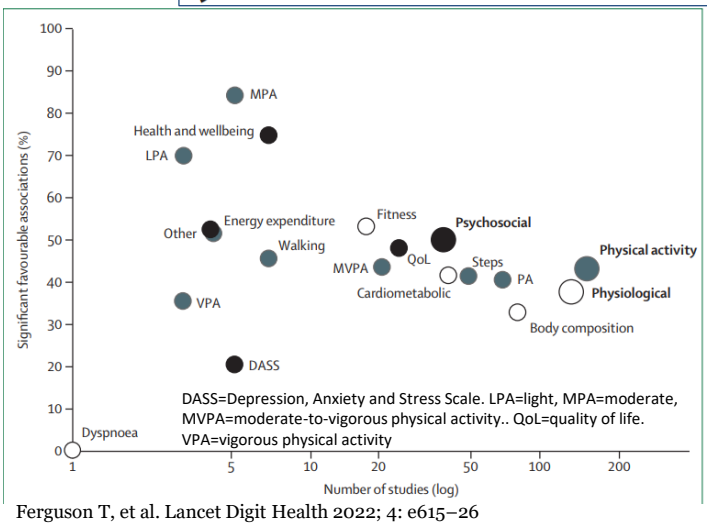
JACC State-of-the-Art Review



Factors Affecting Accuracy of Photoplethysmography Signals	
Obesity	Cold body temperature
Darker skin tone	Wrist location; Inadequate Skin Contact
Tattoos	Ambient light
Decreased skin Perfusion	Motion

31

Effectiveness of wearable activity trackers to increase physical activity and improve health: a systematic review of systematic reviews and meta-analyses

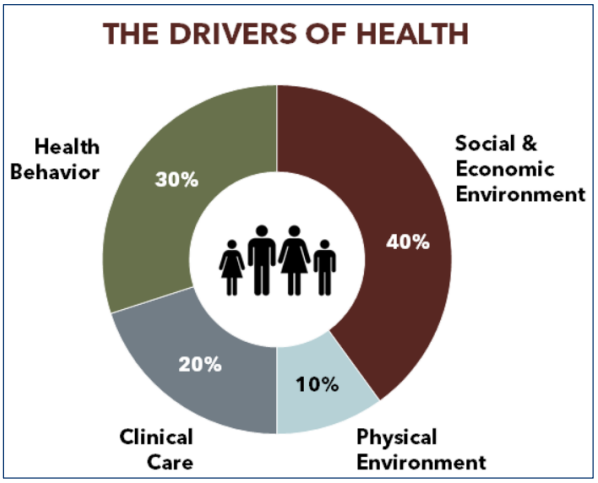


Ferguson T, et al. Lancet Digit Health 2022; 4: e615–26

- 1800 extra steps/day
- 40 min/day more walking
- Reductions of approximately 1 kg in bodyweight
- Small, non-significant findings: blood pressure, cholesterol, HgbA1C, quality of life, pain

32

Multiple Determinants of Health



- Social isolation: lack of social connection
- Loneliness: feeling of being alone, despite social connections (emotional state)
- 50% US adults feel lonely
- 2023 US surgeon general "Loneliness Epidemic"[2]

1.McGovern L, et al. Health Affairs, August 21, 2014; National Academies of Sciences, Engineering, and Medicine. 2020 Social Isolation and Loneliness in Older Adults 2. https://www.hhs.gov/sites/default/files/surgeon-general-social-connection-advisory.pdf

33

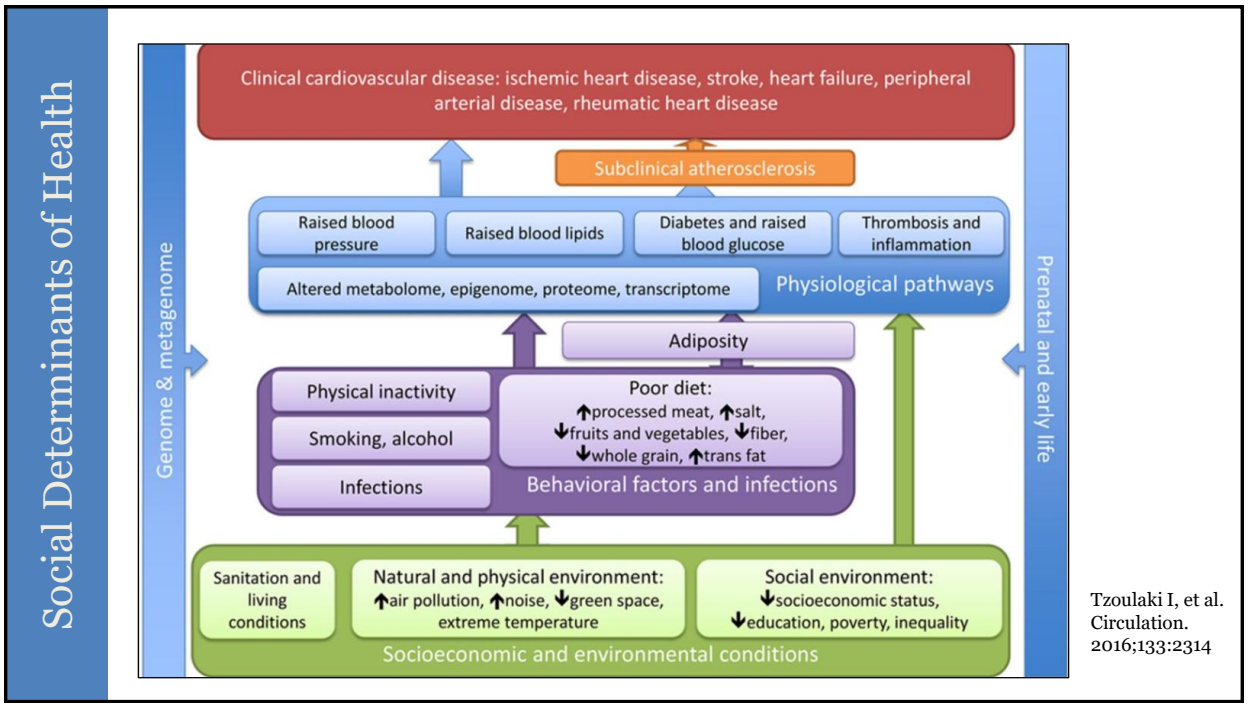
Social Determinants of Health & Lifestyle

Economic Stability	Neighborhood and Physical Environment	Education	Food	Community and Social Context	Health Care System
Employment	Housing	Literacy	Hunger	Social integration	Health coverage
Income	Transportation	Language	Access to healthy options	Support systems	Provider availability
Expenses	Safety	Early childhood education		Community engagement	Provider linguistic and cultural competency
Debt	Parks	Vocational training		Discrimination	
Medical bills	Playgrounds	Higher education		Stress	Quality of care
Support	Walkability				
	Zip code / geography				

Health Outcomes
Mortality, Morbidity, Life Expectancy, Health Care Expenditures, Health Status, Functional Limitations

Artiga S, Hinton E, May 2018 Issue Brief. Kaiser Family Foundation

34



Tzoulaki I, et al. Circulation. 2016;133:2314

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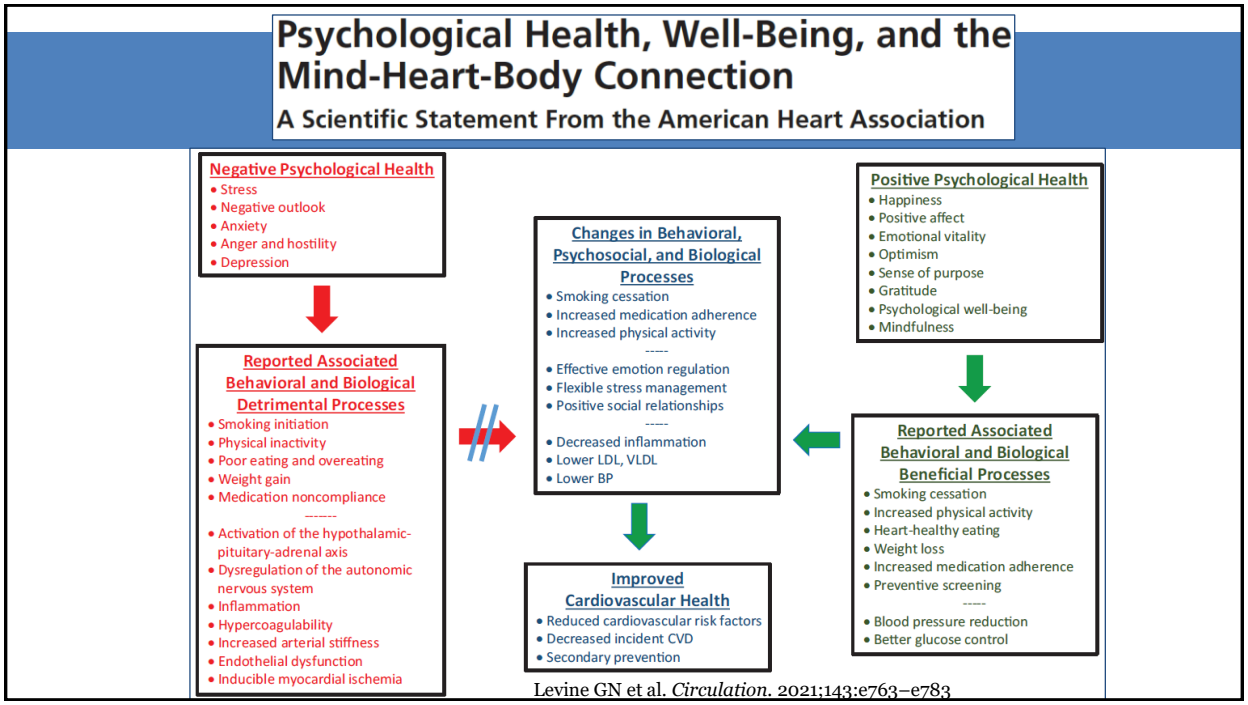


Levine GN et al. *Circulation*. 2021;143:e763–e783

36

Meditation and Cardiovascular Risk Reduction
A Scientific Statement From the American Heart Association

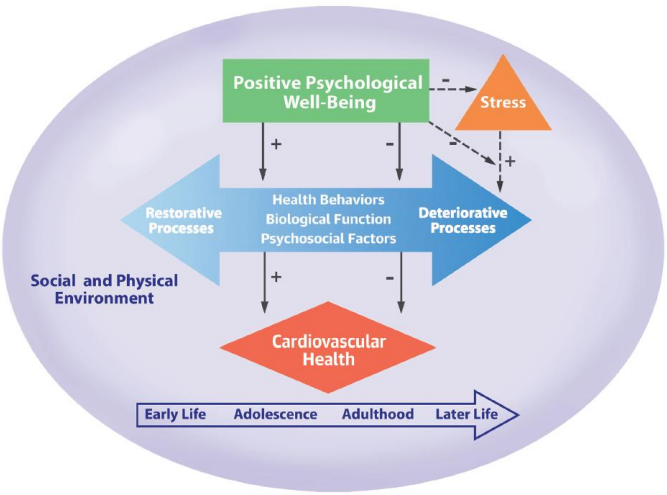
- Mindfulness: purposeful and non-judgmental awareness of one's thoughts, actions, emotions
- Meditation:
  - associated with improved psychological and psychosocial indices
  - various reductions in blood pressure
  - Mixed data: mortality reductions, smoking cessation
- Limitations: small sample size, limited follow-up, variability in effect, methodology

Levine GN, et al., J Am Heart Assoc. 2017;6:e002218

Meditation	Description
Samatha meditation	Samatha is translated to mean "calm" and samatha meditation is often referred to as calm, abiding meditation. Samatha meditation is the practice of calming the mind by practicing single-pointed meditation through mindful concentration focusing on the breath, image, or object.
Vipassana meditation (insight meditation)	Vipassana is translated to mean, "to see things as they really are." Vipassana emphasizes awareness of the breath, tuning into the air passing in and out through the nose. Vipassana teaches one to label thoughts and experiences as they arise, taking mental notes as one identifies objects that grab one's attention. Vipassana meditation is often taught at 10-day retreats.
Mindful meditation	An umbrella term for the category of techniques used to create awareness and insight by practicing focused attention, observing, and accepting all that arises without judgment. This type of meditation is also referred to as "open monitoring," in which one allows one's attention to flow freely without judgment or attachment.
Zen meditation (zazen)	A type of meditation where one focuses one's awareness on one's breath and observes thoughts and experiences as they pass through the mind and environment. In some senses similar to Vipassana meditation, but with an emphasis on a focus of the breath at the level of the belly and on posture while sitting.
Raja yoga meditation	Referred to also as "mental yoga," "yoga of the mind," or Kriya yoga. A practice of concentration to calm the mind and bring it to one point of focus. Includes a combination of mantra, breathing techniques, and meditation on the chakras/spinal cord focus points.
Loving-kindness (metta) meditation	Loving-kindness meditation involves sending loving kindness to oneself, then continuing to send it to a friend or loved one, to someone who is neutral in your life, to a difficult person, and then out to the universe. Through this practice, the meditator cultivates a feeling of benevolence toward oneself and others.
Transcendental Meditation	Mantra-based meditation technique in which each practitioner is given a personal mantra that is used to help settle the mind inward. Transcendental Meditation is taught by certified teachers through a standard 4-day course of instruction. Transcendental Meditation is practiced for 20 minutes twice daily.
Relaxation response	A multifaceted practice that can involve awareness and tracking of breaths or repetition of a word, short phase, or prayer

37

Positive Psychological Well-Being and Cardiovascular Disease
JACC Health Promotion Series



Kubzansky LD, et al. JACC. 2018;72(12):1382

38

Negative and Positive Psychological Factors and CVD

Negative psychological factors	Parameter/ end point	Effect estimates (95% CI)
Depression	Incident MI	RR, 1.30 (1.22–1.40)[42]
	Incident CHD	RR, 1.30 (1.18–1.44)[42]
	Stroke	RR, 1.45 (1.31–1.61)[45]
	Obesity	RR, 1.37 (1.17–1.48)[49]
	Hypertension	RR, 1.42 (1.09–1.86)[51]
	Diabetes	RR, 1.32 (1.18–1.47)[52]
Anxiety	CVD mortality	RR, 1.41 (1.13–1.76)[39]
	Incident CHD	RR, 1.41 (1.23–1.61)[39]
	Coronary artery spasm	RR, 5.20 (4.72–5.40)[40]
	Incident stroke	RR, 1.71 (1.18–2.50)[39]
	Heart failure	RR, 1.35 (1.11–1.64)[39]
Work-related stress	Incident CVD events	RR, 1.4 (1.2–1.8)[18]
Any-cause stress	Incident CHD/CHD mortality	RR, 1.27 (1.12–1.45)[19]
PTSD	Incident CHD	RR, 1.61 (1.46–1.77)[22]
Social isolation and loneliness	Incident CVD events	RR, 1.5 (1.2–1.9)[18]
Pessimism	CHD mortality	OR, 2.17 (1.21–3.89)[50] (highes vs lowest quartile)
Anger and hostility	Incident CHD	HR, 1.19 (1.05–1.35)[33]
	Recurrent CHD	HR, 1.24 (1.08–1.42)[33]

Positive psychological factors	Parameter/ end point	Effect estimates (95% CI)
Optimism	Incident CVD	RR, 0.65 (0.51–0.78)[66]
	Hospital readmission after ACS	HR, 0.92 (0.86–0.98)[68]
	All-cause mortality	RR, 0.86 (0.80–0.92)[66]
Sense of purpose	CVD risk	RR, 0.83 (0.75–0.92)[76]
	All-cause mortality	RR, 0.83 (0.75–0.91)[76]
Happiness/more positive affect*	Incident CHD	HR, 0.78 (0.63–0.96)[93]
Mindfulness†	Good cardiovascular health	PR, 1.83 (1.07–3.13)[86]
	Nonsmoking	PR, 1.37 (1.06–1.76)[86]
	Body mass index <25 kg/m²	PR, 2.17 (1.16–4.07)[86]
	Fasting glucose <100 mg/dL	PR, 1.47 (1.06–2.04)[86]
	High level of physical activity	PR, 1.56 (1.04–2.35)[86]
Higher emotional vitality	Incident CHD	RR, 0.81 (0.69–0.94)[88]
Psychological well-being	Cardiovascular mortality	OR, 0.71 (0.59–0.84)[89]

Levine GN et al. Circulation. 2021;143:e763–e783

39

Health Education Resources

- ACC Cardiosmart: https://www.cardiosmart.org/topics/healthy-living
- AHA Healthy Living: https://www.heart.org/en/healthy-living
- Vasculearn: https://thrombosis.org/
- National lipid association: https://www.lipid.org/patient-tear-sheets

40

Summary

- A variety of diet programs meet AHA Dietary Guidelines and can be tailored
- Move…and move some more
- Social determinants of health and well-being impact lifestyle and CVD risk
- 5As Framework supports brief, longitudinal behavioral counseling, and the *process* of behavior change

41

"If we could give every individual the right amount of nourishment and exercise, not too little and not too much, we would have found the safest way to health."

- Hippocrates

Seth A. Br J Gen Pract. 2014 Jan;64(618):12-3.

42

Which of the Following Dietary Programs Align with the AHA Guidelines?

A. Pescetarian
B. Vegetarian
C. Mediterranean
D. All of the above

What Is Your Primary Barrier to Lifestyle Counseling During Clinical Encounters?

A. Limited time
B. Lack of efficacy/limited patient impact
C. Insufficient resources
D. All of the above

Which of the Following Statements Are False?

A. It is important to set measurable and specific goals to support behavior change.
B. Ideal health behavior metrics are directly related to coronary artery calcium scores.
C. Delivery of clinical care is a greater driver of health than health behavior
D. Excess alcohol intake increases atrial fibrillation and cancer