

# Healthy Living Guide 2023 /2024

A DIGEST ON HEALTHY EATING AND HEALTHY LIVING

From the Department of Nutrition at the Harvard T.H. Chan School of Public Health



## EAT

- Your plate and the planet
- Spotlight on sweeteners
- What should I drink?



## MOVE

- Mindful movement
- Zumba dance fitness



## SLEEP

- Tips to calm a busy mind



## PLUS

Exploring health benefits of green spaces and immersing oneself in nature.



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**HEALTHY LIVING GUIDE**  
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## A Note From the Editorial Team

“The apple in your hand is the body of the cosmos.” - Thich Nhat Hanh

Happy New Year, and welcome to the fourth edition of the Healthy Living Guide! 2023 was an exciting year in the Department of Nutrition, as we celebrated the launch of the Thich Nhat Hanh Center for Mindfulness in Public Health. Aligned with its name and location, the Center is committed to researching ways to apply mindfulness to improve well-being at the population level—not just for individuals, but across large groups globally. Mindful eating and its impact on both personal and planetary health is a core focus of the Center—a theme you’ll find integrated throughout this year’s Guide.

You’ll also see research highlights and tips related to our annual categories of nutrition, physical activity, and sleep, including the latest findings on ultra-processed foods and mental health, turning up the tunes and moving with Zumba, and evidence on different sleep “chronotypes” and health.

Wishing you a healthy, fulfilling, and mindful 2024.

Explore The Nutrition Source website for more evidence-based guidance for healthy eating and healthy living:  
[hsph.me/nut23](https://hsph.me/nut23)



click on the link

scan QR code with smartphone camera

### ACCESS ADDITIONAL CONTENT

Throughout the guide you will find these callouts to related content on *The Nutrition Source* website. If you’re already reading digitally, simply click the hyperlink. If you have a printed copy, point your smartphone’s camera at the QR code until the prompt appears to access the webpage.

# Nutrition News & Research Features

## MENTAL AND EMOTIONAL WELL-BEING AND FOOD CHOICE

A 2023 U.S. consumer survey<sup>1</sup> highlighted a strong connection between mental and emotional well-being and food choice:

- Nearly 75% of Americans surveyed believed the foods and beverages they consume have a significant or moderate impact on their overall well-being. Conversely, 61% believed their overall well-being has a significant or moderate impact on their food choices.
- As a result of stress, 51% reported consuming less healthy food and beverages over the past six months compared to their typical consumption.
- In general, 60% reported being somewhat or very stressed in 2023, a slight increase over 2022. Gen Z and Millennial respondents were more likely to report stress than their older counterparts.

Learn more about how stress can affect our eating patterns: [hsph.me/str23](https://hsph.me/str23)



## UNPACKING WHO GUIDELINES ON NON-SUGAR SWEETENERS

The World Health Organization (WHO) released a new guideline on non-sugar sweeteners (NSS)—often referred to as artificial or low-calorie sweeteners—that advises against use of NSS to control body weight or reduce the risk of noncommunicable diseases.<sup>2</sup> After conducting a research review, they concluded that replacing sugar sweeteners with NSS did not promote weight loss in the long term in adults and children. However, clinical trial data showed that higher intakes of NSS resulted in lower calorie intake when they replaced sugar and sugar-sweetened foods/beverages. There was no significant effect of NSS on hunger or satiety levels. Some trials showed less hunger with use of NSS, but others showed a stronger appetite in participants with higher intakes of NSS-containing beverages.

When looking at observational cohort studies, long-term use of NSS-containing beverages was associated with an increased risk of cardiovascular disease and early death in adults. A higher intake of NSS, either in beverages or added to foods, was also associated with increased risk of developing type 2 diabetes. The WHO noted that “reverse causation” may have contributed to the positive association: participants with the highest intakes of NSS tended to have a higher body mass index and obesity or metabolic risk factors, and therefore may have already been predisposed to chronic disease (for which they were choosing NSS as a health measure). No

association was found with intakes of NSS-containing beverages and cancer or cancer deaths. Based on these findings, WHO advised that people work to lower the overall sweetness in the diet starting early in life, as NSS do not provide nutritional value.

Harvard Chan School experts agreed with the WHO recommendation to tame our sweet tooth, but had some criticisms that the meta-analysis excluded certain large studies.<sup>3-5</sup> The omitted cohort studies—which included more than 100,000 people—found that increasing consumption of artificially sweetened beverages at the expense of sugar-sweetened beverages was associated with less weight gain over time, consistent with findings from small, short-term randomized controlled trials. Based on statistical modeling, it was estimated that replacing one serving of sugar-sweetened beverage with an artificially sweetened beverage was associated with a 4% lower risk of total mortality, 5% lower risk of cardiovascular disease-related mortality, and 4% lower risk of cancer-related mortality.

Of course, when it comes to optimal beverages for long-term health, we should look to other options. Frank Hu, Chair of the Department of Nutrition at the Harvard T.H. Chan School of Public Health, explains that “for habitual consumers of sugar-sweetened beverages, artificially sweetened beverages can be used as a temporary replacement, although the best choices would be water and unsweetened coffee or tea.”

For more information on artificial or low-calorie sweeteners and choosing healthier beverages, see pages 18-21.





### **VARIOUS HEALTHY EATING PATTERNS MAY LOWER RISK OF PREMATURE DEATH**

Men and women from the Nurses' Health Study and Health Professionals Follow-up Study who scored highly in following at least one of four healthy eating patterns were less likely to die from any cause during the 36-year study period compared with those who scored the lowest. Participants were free of cancer and cardiovascular and lung diseases at the start of the study. The different dietary patterns used were the Healthy Eating Index, Alternate Mediterranean Diet, Healthful Plant-based Diet Index, and Alternate Healthy Eating Index, all of which included the core components of fruits, vegetables, legumes, whole grains, and nuts.<sup>6</sup>



Learn more about healthy eating patterns: [hsph.me/dst23](https://hsph.me/dst23)



### **EATING RED MEAT OF ANY TYPE IS ASSOCIATED WITH AN INCREASED RISK OF TYPE 2 DIABETES**

Two servings of red meat weekly (including unprocessed and processed types) may increase the risk of developing type 2 diabetes, and eating more than that may further the risk. Men and women from the Nurses' Health Study I and II and the Health Professionals Follow-up Study were followed for up to 36 years, during which 10% of the group developed type 2 diabetes. Those with the highest meat intakes had a 62% higher risk of developing diabetes than those who ate the least. Swapping out red meat for plant proteins such as legumes or nuts lowered diabetes risk by 30%, and swapping red meat with dairy lowered the risk by 22%.<sup>7</sup>



Learn more about preventing type 2 diabetes: [hsph.me/dia23](https://hsph.me/dia23)



### **ULTRA-PROCESSED FOODS AND DEPRESSION**

Ultra-processed foods are food products that have undergone extensive industrial processing with multiple added ingredients such as fats, sugar and sodium and additives. A high intake of ultra-processed foods and artificially sweetened ultra-processed foods was associated with increased risk of developing depression, as found in women ages 42 to 62 from the Nurses' Health Study II who were followed for 14 years, none of whom had depression at the start of the study. Those who ate the most ultra-processed foods (nine or more servings daily) had an almost 50% higher risk of developing depression compared with the least consumers (four or fewer servings daily). Within the category of ultra-processed foods, artificially sweetened foods and beverages were associated with a 26% and 37% higher risk of depression, respectively, when comparing the highest and lowest consumers. These findings need to be replicated in further studies and further research is needed to understand the biological mechanisms underlying the observed associations.<sup>8</sup>



Learn more about food processing and health: [hsph.me/pro23](https://hsph.me/pro23)

#### REFERENCES

1. IFIC, Food & Health Survey, 2023.
2. WHO, Health effects of the use of NNS, 2023.
3. Mozaffarian et al., NEJM, 2011.
4. Pan et al., Int J Obes, 2013.
5. Malik et al., Circulation, 2019.
6. Shan et al., JAMA Intern Med, 2023.
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# Mindful Breathing

*Conscious breathing is simple, yet its effects are profound. It can be done anywhere, at any time. All it takes is focus.*



Watch an animated clip about breathing mindfully and learn other mindful living techniques: [hsph.me/tnh23](https://hsph.me/tnh23)



Start by letting go of all distractions.

Feel the air flowing into your lungs.  
Feel the air flowing out of your mouth.

Inhale.  
Exhale.

Conscious breathing helps you return to yourself after a scattered day.

You are centered.  
You are calm.

*Breathing in, I am aware of my body in this moment. Breathing out, I am aware of my body in this moment.*

*I am here.  
I am now.  
I am at peace.*



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# Benefits of Green Spaces

*Regular exposure to green spaces is linked with a range of health benefits, from lower blood pressure to improved sleep.*



You may have already committed to a healthier diet and weekly exercise. How about adding a new healthy habit of immersing yourself in nature? Research shows that exposing yourself regularly to green spaces such as local parks, arboretums, farms, and forests offers a range of health benefits.

Being in nature means getting outside and moving more. It provides sunlight exposure, reduced air pollution, and possibly more social interactions. These spaces may also offer a quiet, calm reprieve from noise pollution.

### FOREST BATHING

In Japan in the 1980s, the term *Shinrin-yoku* was introduced, meaning forest bathing or soaking in nature such as exploring a forest and connecting to it through our five senses:<sup>1</sup>

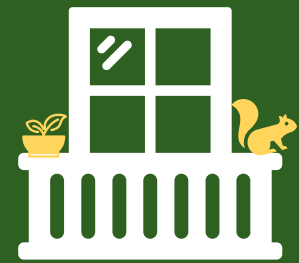
- **Seeing** the forest landscape, wild animals, and green, yellow, and red colors
- **Smelling** the fragrance from trees, grass, flowers, and fresh air
- **Hearing** the forest sounds, birds singing, and breezes rustling the leaves of the trees
- **Touching** the trees and leaves, feeling the earth and grass beneath your feet
- **Tasting** the fresh air

Shinrin-yoku may also include breathing, meditation, or yoga stretches that promote relaxation and stress reduction.<sup>2</sup> Research has shown that it can support cardiovascular and respiratory health, as well as boost immune activity by increasing natural killer cells.<sup>1</sup> Forest bathing, though relaxing, can also increase concentration and focus through the practice of “effortless

### HOW TO INCREASE NATURE EXPOSURE IF YOU ARE STUCK INDOORS

If you live in an urban environment without access to a safe park or cannot get outside regularly, try these tips even if for just a few minutes a day:

- ☛ Sit in a sunlit patio or near an open window to view and hear nature, such as viewing cloud patterns in the sky, listening to birds chirp, or watching squirrels scurry across tree branches.
- ☛ Grow herbs or houseplants with which you can watch grow and touch the soil and leaves.
- ☛ Pay closer attention to a tree in your yard or outside your window; observe the leaves change with the season and listen to and watch breezes blow through its branches.
- ☛ Take time to observe and appreciate seasonal changes in nature: the first blooms of daffodils in the spring, the grass turning greener in early summer, the first few leaves falling in autumn, and the first snowflakes of winter.



attention” to one’s surroundings in nature. Immersing oneself in nature may stimulate the parasympathetic nervous system (calms the body) while quieting the sympathetic nervous system (activates the stress response). Studies on Shinrin-yoku have shown: Cardiovascular benefits such as lower blood pressure;<sup>3,4</sup> improved sleep;<sup>1</sup> lower cortisol levels in the short term and mental relaxation;<sup>5</sup> decreased risk of type 2 diabetes and premature death;<sup>6,7</sup> and, improved mental health such as decreased anxiety and depression.<sup>8,9</sup>

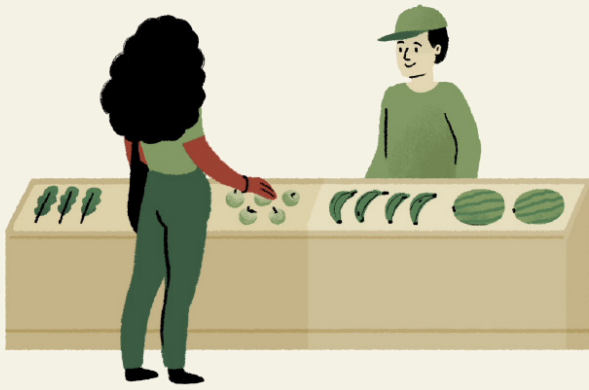
### NATURE AND HEALTHSPAN?

Being exposed regularly to nature may also support longevity and improved cognition.

- Researchers from the Cardiovascular Health Study followed 1,260 adults ages 65 and older, and found that those with a combination of

less exposure to green space and living in lower income neighborhoods were more likely to show white matter damage over five years, compared with those who had higher exposure to green space and lived in higher-income residences.<sup>10</sup> The authors did not find that lower incomes or less green space alone were associated with worsening white matter. Decreased white matter is associated with increased risk of stroke and dementia.

- Greater exposure to green space in one’s neighborhood has been associated with longer telomere lengths, which may increase longevity. Telomeres are protein structures of our DNA that shorten with aging, disease, or stress, and their length can serve as a biological clock determining one’s lifespan.<sup>11</sup>



# Mindful Eating



*Each bite we take is an opportunity to support our own health, as well as the health of our planet.*



Watch an animated clip about eating mindfully and learn other mindful living techniques: [hsph.me/tnh23](https://hsph.me/tnh23)



Mindful eating starts with being conscious of every bite you take. But it's so much more.

Mindful eating is about sustaining your health and the health of the planet.

Pick up an apple. Observe the color, the texture, the shape, the scent.

See the sunshine that warmed the apple seedling. The soil that sheltered it. The rain that nurtured it. The workers who tended it.

Feel how the apple connects to the world. It contains the universe.



Eat the apple slowly.  
Savor each bite.  
Recognize all it contains.



Being conscious of where each bite comes from will prompt us to eat local, sustainable, plant-based foods. And it will prompt us to savor and enjoy our meals. To live fully in the moment.

Mindful eating takes practice. Start small, with a single apple. Then a meal.

Focus.

Savor.

Soon, it will become habit.

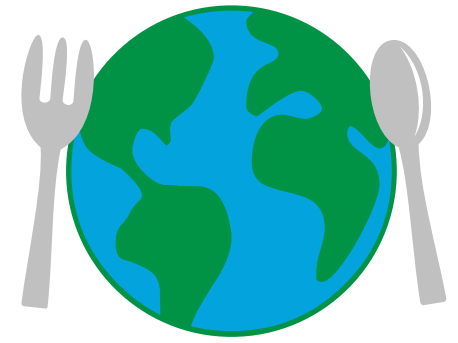
*This food is the gift of the universe.*

*I receive it with gratitude.*

*I am mindful of my health and the health of the planet.*







# Plate and the Planet

Learn how shifting towards a “planetary health diet” can nurture both people and our environment.

Human diets inextricably link health and environmental sustainability, and have the potential to nurture both.<sup>1</sup> Increased food production over the past 50 years has helped improve life expectancy and reduce hunger, infant and child mortality rates, and global poverty. However, such benefits are now being offset by shifts towards unhealthy diets.

Globally, as nations have urbanized and citizen incomes have increased, traditional diets (typically higher in quality plant-based foods), have transitioned to a “Western-style dietary pattern,” characterized by high consumption of calories, highly processed foods (refined carbohydrates, added sugars, sodium, and unhealthy fats), and high amounts of animal products.<sup>2</sup> Along with the negative human health impacts associated with this nutrition transition, this dietary pattern is also unsustainable. Current food production is already driving climate change, biodiversity loss, pollution, and drastic changes in land and water use.

Transitioning towards healthy diets from sustainable food systems—especially with our global population slated to reach 10 billion by 2050—poses an unprecedented challenge. However, research by an international working group of

scientists shows this “Great Food Transformation” could be achievable through a combination of dramatic reductions in food losses and waste, major improvements in food production practices, and substantial dietary shifts toward mostly plant-based dietary patterns.<sup>1</sup>

## SUSTAINABLE DIET TARGETS

In 2019, the EAT-Lancet Commission developed the world’s first scientific targets for healthy and sustainable food systems, including a “planetary health diet” with defined daily consumption ranges for each food group. This dietary pattern—characterized by a variety of high-quality plant-based foods and low amounts of animal-based foods, refined grains,

added sugars, and unhealthy fats—is designed to be flexible to accommodate local and individual situations, traditions, and dietary preferences.

Created to meet nutritional requirements and promote health, all while staying within “planetary boundaries,” the Commission found that global adoption of this planetary health diet would provide major health benefits. Modeling studies show that between 10.9 to 11.6 million early deaths could be averted each year—a 19% to 23.6% reduction from current adult mortality rates.<sup>1</sup>

Compared with current diets, this shift will require global consumption of foods such as red meat and sugar to decrease by 50%, while consumption of fruits, nuts, vegetables, and



*“Transformation to healthy diets by 2050 will require substantial dietary shifts. Global consumption of fruits, vegetables, nuts and legumes will have to double, and consumption of foods such as red meat and sugar will have to be reduced by more than 50%. A diet rich in plant-based foods and with fewer animal source foods confers both improved health and environmental benefits.”<sup>3</sup>*

- Dr. Walter Willett, Professor, Harvard T.H. Chan School of Public Health, and Co-Chair, EAT-Lancet Commission

## LEARN: SIMPLE STEPS TO OPTIMIZE PERSONAL AND PLANETARY HEALTH

In just 10 minutes, this interactive learning program shows how key food choices can impact your health—and that of the planet. Learn why certain foods deserve special attention and discover a flexible approach that can work for everyone. This mini course is a collaboration between the educational nonprofit Gaples Institute and the Department of Nutrition at Harvard T.H. Chan School of Public Health.



[hsph.me/gap23](https://hsph.me/gap23)

## IMPACTS OF ANIMAL-BASED FOODS VS. PLANT-BASED FOODS:

Along with varying impacts on human health, different foods also have a range of impacts on the environment. The production of animal-based foods tends to have higher greenhouse gas emissions than producing plant-based foods—and red meat (especially beef) stands out for its disproportionate impact. Beyond emissions, it's also important to note that food production places an enormous demand upon our natural resources, as agriculture is a major contributor to deforestation, species extinction, and freshwater depletion and contamination.



legumes must double. That said, the Commission emphasizes the importance of tailoring these targets to local situations. For example, while North American countries currently consume almost 6.5 times the recommended amount of red meat, countries in South Asia eat only half the recommended amount.<sup>1</sup>

Undoubtedly, making such a radical shift to the global food system is unprecedented, and will depend on widespread, multi-sector, multi-level action. Alongside dramatic reductions in food waste and major improvements in food production practices, the Commission's report calls for "international and national commitment" through a range of policy measures and actions needed to make healthy and sustainable foods more available, accessible, and affordable.

From governments and policymakers to marketers, industry, the media, educational institutions, farmers, chefs, physicians, and consumers—everyone has an important role to play in this Great Food Transformation.

## PREPARING A PLANETARY HEALTH PLATE

It's clear that what we put on our plates has a major impact on the environment. Eating more healthfully and more sustainably go hand-in-hand, meaning we can develop sustainable eating practices that improve our own health while also benefiting the health of the planet. If you're interested in practicing a planetary health diet,<sup>3</sup> here are some tips that may help:

- First of all, be sure to note that the diet's target ranges are based on daily energy intake of 2,500 calories for an average adult. That means your individual optimal intake will depend on age, body size, and level of physical activity. (The Commission's report includes special considerations for young children, adolescents, and pregnant and breastfeeding women.)
- This dietary pattern is also intended to be flexible enough to accommodate individual situations, traditions, and dietary preferences. Animal products are minimized, not completely excluded, so there is a range of options for omnivores as well as those who follow vegetarian or vegan diets.

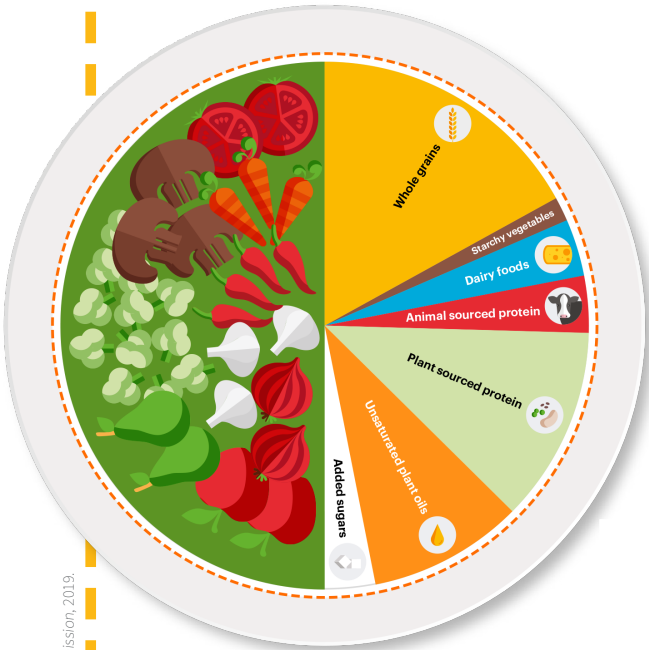
Seeing certain foods listed in grams per day may be unfamiliar. For exam-

Learn more about the different environmental impacts of the foods we put on our plate:  
[hsph.me/eat23](https://hsph.me/eat23)



## TARGETS FOR A PLANETARY HEALTH DIET:

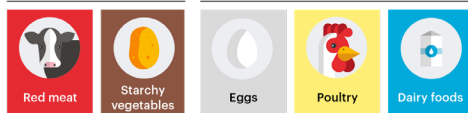
The table below features scientific targets for a planetary health diet, with possible ranges, for an intake of 2500 kcal/day.<sup>3</sup> On the left these targets are visualized on a plate, where half is filled with fruits and vegetables (starchy vegetables like potatoes are limited), and the other half primarily whole grains and plant-based protein foods, with unsaturated oils and modest amounts of animal-based protein foods, if any. Look familiar? This guidance is closely aligned with Harvard's Healthy Eating Plate!



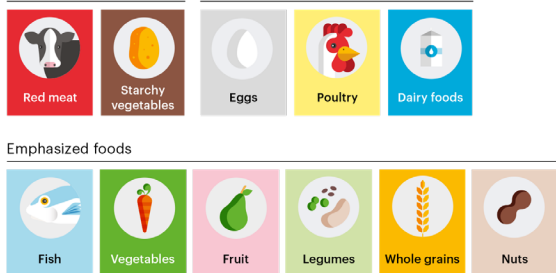
	Macronutrient intake grams per day (possible range)	Caloric intake kcal per day
Whole grains <b>Rice, wheat, corn and other</b>	<b>232</b>	<b>811</b>
Tubers or starchy vegetables <b>Potatoes and cassava</b>	<b>50</b> (0–100)	<b>39</b>
Vegetables <b>All vegetables</b>	<b>300</b> (200–600)	<b>78</b>
Fruits <b>All fruits</b>	<b>200</b> (100–300)	<b>126</b>
Dairy foods <b>Whole milk or equivalents</b>	<b>250</b> (0–500)	<b>153</b>
Protein sources <b>Beef, lamb and pork</b>	<b>14</b> (0–28)	<b>30</b>
<b>Chicken and other poultry</b>	<b>29</b> (0–58)	<b>62</b>
<b>Eggs</b>	<b>13</b> (0–25)	<b>19</b>
<b>Fish</b>	<b>28</b> (0–100)	<b>40</b>
<b>Legumes</b>	<b>75</b> (0–100)	<b>284</b>
<b>Nuts</b>	<b>50</b> (0–75)	<b>291</b>
Added fats <b>Unsaturated oils</b>	<b>40</b> (20–80)	<b>354</b>
<b>Saturated oils</b>	<b>11.8</b> (0–11.8)	<b>96</b>
Added sugars <b>All sugars</b>	<b>31</b> (0–31)	<b>120</b>

Graphics source: Summary Report of the EAT-Lancet Commission, 2019

### Limited intake



### Optional foods



### Emphasized foods

ple, how to eat only 13 grams of eggs per day when a single large egg is about 50 grams? You might be able to stick to this amount if you scramble a single egg into a stir-fry serving for multiple people, however it's easier to think about your egg consumption on a weekly basis, where this equates to around 2 eggs.

The same goes for other animal products. Eating even the upper-limit of 14 grams per day of red meat (a fraction of a single hamburger patty) may not be as realistic as thinking about saving this daily amount for one day during the week (e.g. eating one whole hamburger patty). Aim to consume no more than 98 grams of

red meat (pork, beef or lamb), 203 grams of poultry, and 196 grams of fish per week.

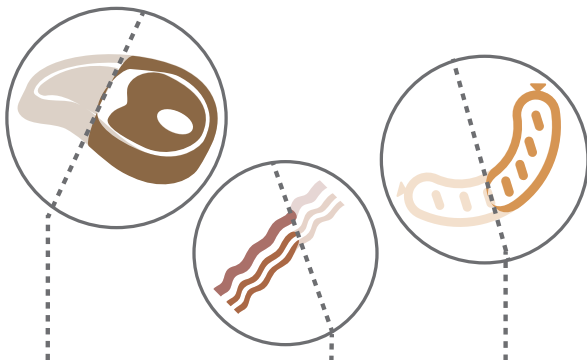
If you're looking to reduce your current meat consumption but aren't sure where to start, see the next page for four key approaches to cutting back the red meat while keeping your meals filling and flavorful.

**SPOTLIGHT ON LEGUMES:** Legumes (such as lentils, peas, beans, and peanuts) have a range of characteristics that make them a relatively sustainable crop. For example, legumes release up to seven times less greenhouse gas emissions per area compared to other crops, and can sequester carbon in soils. They can also make their own nitrogen from the atmosphere, thus reducing the application of nitrogen fertilizers. This leaves nitrogen-rich residues in the soil after harvesting; a benefit for the next crop planted in its place.



### REFERENCES

1. Willett et al., *The Lancet*, 2019.
2. Popkin, Adair, & Ng, *Nutr Rev*, 2012.
3. EAT, *Summary Report of the EAT-Lancet Commission*, 2019.



## Eat a little less red meat, any way you can

Try eating less of at least one type of red meat:

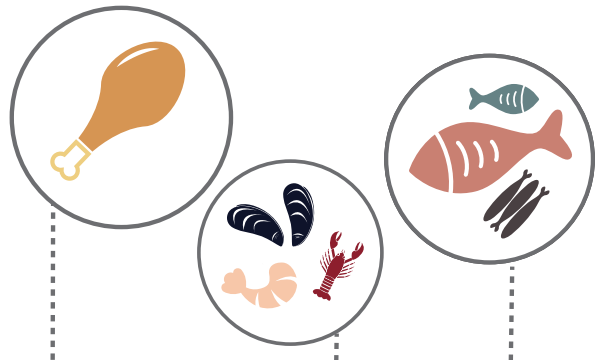
- For your health, perhaps start by reducing the processed meats in your diet like bacon, sausages, and cold cuts.
- Then move onto the red meat you consume most often, like beef, pork, and lamb. For your health and the health of the planet, try focusing on reducing your consumption of lamb and beef especially. Beef is one of the most impactful animal foods to produce. In the U.S. alone, beef accounts for 36% of all food-related greenhouse gas emissions—a key contributor to climate change.

If you often eat red meat multiple times a day—breakfast sausages, a ham sandwich for lunch, and steak at dinner—try cutting down your consumption to once a day.

If you eat red meat once a day, see if you're able to reduce the portion size a bit. A single instead of a double hamburger? A few fewer slices of bacon? Or, if a recipe calls for a pound of beef, maybe buy just a half pound and increase a few other ingredients.

From there, how about eating red meat fewer times per week? Or only eating it on the weekends? Once a week? Once every other week? A few times each month? Only when you're dining out? You could also try saving red meat only for special occasions, like a holiday or birthday.

It's important to remember when you're cutting out red meat to replace it with healthy options—not refined grains or ultra-processed foods of low nutritional value.



## Swap out red meat for healthier “meats”

People have varying perceptions of what they consider to be “meat.” Although technically defined as any animal flesh consumed for food, some may only think of red and processed animal products as “meats,” while poultry and fish are viewed as separate categories. This may be a helpful approach, since the variety of meats and other animal products can have different effects on our own health, and the health of the planet.

While a key goal should be getting more veggies and other quality plant-based foods in your diet, this step towards reducing red meat is pretty straightforward: incorporate a reasonable amount of poultry (like chicken and turkey) and a variety of aquatic foods (from fish to mollusks).

If you were planning to make a dish with red meat as the featured ingredient, consider fish or poultry. Trying new recipes is a great approach; but here are some simple swaps that will come in handy for a range of preparations:

- Marinate and pan-fry chicken or fish instead of grilling burgers and ribs
- Swap in ground turkey for ground beef
- Think sliced fresh chicken or canned tuna in place of cold cuts
- Bake/sauté a chicken breast or some white fish, instead of frying a steak
- Roast a turkey, chicken, or salmon rather than beef, lamb, or ham



# ↑ Elevate Your Plate

We know reducing red meat can benefit our own health and the health of the planet. However, if you've grown up (or have grown accustomed to) having beef, pork, and other red meats on your plate at most meals—such a change may seem daunting. But you don't have to completely cut it out to make a difference. If you're not quite sure where to start, here are four approaches to cutting back while keeping your meals filling and flavorful. Find your personal “starting point” and move forward with the strategies that work for you.



## Consume less meat, enjoy more variety

This approach boosts healthy plant-based foods, while still providing ways to incorporate some of your favorite animal-based foods. First, build a filling and satisfying foundation for your meal with creative combinations of:

- Legumes (beans, soybeans, peas, lentils), nuts (almonds, walnuts, and pecans), and seeds (chia, hemp) can provide plenty of protein. Nuts and seeds also contain healthy fats, while legumes are full of fiber.
- Minimally processed whole grains can also be a source of protein and satiety. Brown rice is one option, but try a variety of grains for new textures and flavors: quinoa, farro, bulgur, buckwheat, and more.
- Fill half or more of your plate with vegetables and fruits, and incorporate a rainbow of colors.

Consider eggs beyond breakfast: hardboiled and chopped into salad; soft boiled and added to soup; scrambled into a stir-fry; or fried sunny-side up to top off roasted veggies, grains, and legumes.

If you enjoy dairy foods, include them in moderation (although not as much as beef, producing dairy foods also has a considerable environmental impact). For example, incorporate a bit of sharp cheese into a dish—parmesan grated over minestrone soup or cubed feta in a Greek salad. Try mixing a spoonful of yogurt with herbs, spices, and olive oil for a quick and creamy dressing on warm whole grains.

Get more “mileage” out of higher-priced meats by cutting/slicing/shredding and using them in small amounts (rather than a single large piece per person).

- Chicken and turkey can go further when: used as a topping over a scoop of lentils and crunchy green beans, and drizzled with zippy mustard dressing; mixed into a veggie-packed stir-fry; or rolled into a wrap with hummus, sundried tomatoes, cucumbers, and olives. Leftover fish also works great as an addition to salads, paired with veggies for a fish taco filling, or scrambled with eggs and placed atop some whole grain toast for a savory breakfast.
- This approach can even make some room for red meats on occasion, with processed meats used sparingly. Rather than a whole burger patty of beef, you can blend-in “meaty” and umami-packed chopped mushrooms. Or, if you particularly enjoy the taste of bacon, consider using a slice to flavor the base of a soup where beans, grains, and vegetables provide the bulk of the protein.

**WHAT ABOUT PLANT-BASED MEAT ALTERNATIVES?** Marketed as a way to accelerate the shift from industrial animal agriculture, popular plant-based meat alternatives have become widely available to consumers. Although these products are often considered healthier alternatives to their red meat counterparts, and have less impact on greenhouse gas emissions, the bottom line is that these novel products are not a substitute for minimally processed plant-based foods and eating patterns.



## Prioritize hearty and savory plant-based preparations



Variety is a smart approach—but a meal doesn’t have to include meat or other animal-based foods in order to be tasty and satisfying. You might think a plate devoid of meat is incomplete—questioning whether it will fill you up, be too expensive, give you enough protein, or be lacking in flavor or texture. If that’s been your experience, don’t be discouraged. Visit the link for simple strategies to create filling, delicious, and even budget-friendly meals using only plant-based ingredients.



# Stuffed Pepper Recipe Upgrades



**WHAT IS A “BASIC” STUFFED PEPPER?** If you aren’t familiar with this recipe, one serving typically packs about a quarter-pound of ground beef (sautéed with onion and mixed with white rice, tomato sauce, and mozzarella cheese) into a bell pepper. Not necessarily an optimal recipe for frequent consumption. Beyond the refined rice, this quantity of red meat combined with cheese serves up quite a bit of saturated fat—around 18 grams worth.

If you grew up in the United States, a bell pepper, stuffed with ground beef, rice, tomatoes, and cheese is likely a familiar dish. It’s a recipe that goes way back, with two types of “stuffed peppers” even featured in Fannie Farmer’s 1896 *Boston Cooking-School Cook Book*.

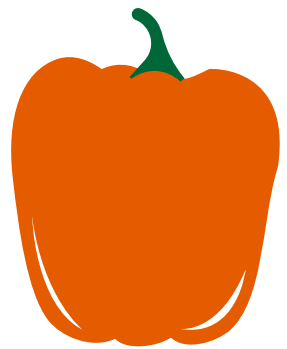
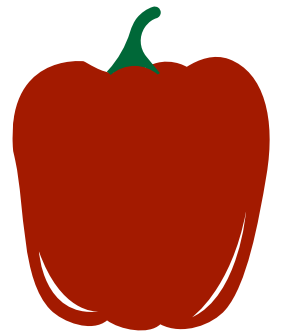
Of course, the idea of stuffing a bell pepper (or other pepper varieties) undoubtedly precedes this 19th-century culinary text. Recipes for stuffed peppers can be found in cuisines all over the world—from Denmark’s “fyldte peberfrugter” (stuffed with bulgur, kale, and mushrooms) to India’s “bharwa shimla mich” (stuffed with a mixture of spiced vegetables).

Indeed, using a bell pepper as a vessel can yield an endless number of delicious and creative filling combinations. Plus, exploring beyond the basic beef and rice combo is a perfect way to try some strategies to reduce red meat and elevate your plate. Stuffed peppers are also perfect for meal prep, portable for lunchboxes, and generally freeze well too if you want to make a larger batch ahead of time.

**THE UPGRADED BASIC** - Just a few minor tweaks can upgrade the classic recipe without changing the flavor if you’re looking to enjoy red meat on occasion. Using lean ground beef at half the amount (and just a little less cheese) cuts the saturated fat per serving down to about 9 grams. You’re still getting plenty of protein—nearly 22 grams per serving. We also added a bit more rice, but switched to brown rice for a nutritious boost, and swapped out tomato sauce for diced tomatoes to add texture and reduce the sodium.

**THE NEW CLASSIC** - This recipe takes a new approach while sticking to classic flavors. Hearty lentils, savory portabella mushrooms, umami-packed tomatoes, and sautéed onions combine with brown rice to deliver a surprisingly “meaty” filling—but without the red meat. At 12 grams of fiber and virtually no saturated fat per serving, this new classic is a major health upgrade. (Lentils are also known for helping replace nitrogen in the soil—an upgrade for the planet’s health as well!) Even better is that this recipe provides a solid base for further modification. For example:

- If you want to increase the plant-based protein content from 14 grams to 21 grams per serving, mix a half-cup of hemp seeds or hemp hearts into the filling—boosting heart healthy unsaturated fats in the process.
- If you want to incorporate a bit of your favorite animal-based protein, you can sprinkle over some flavorful cheese; or, try cracking an egg on top of the filling before baking.



[hsph.me/pep23](https://hsph.me/pep23)

Get these recipes and other stuffed pepper variations

# HEALTHY EATING PLATE

Use healthy oils (like olive and canola oil) for cooking, on salad, and at the table. Limit butter. Avoid trans fat.

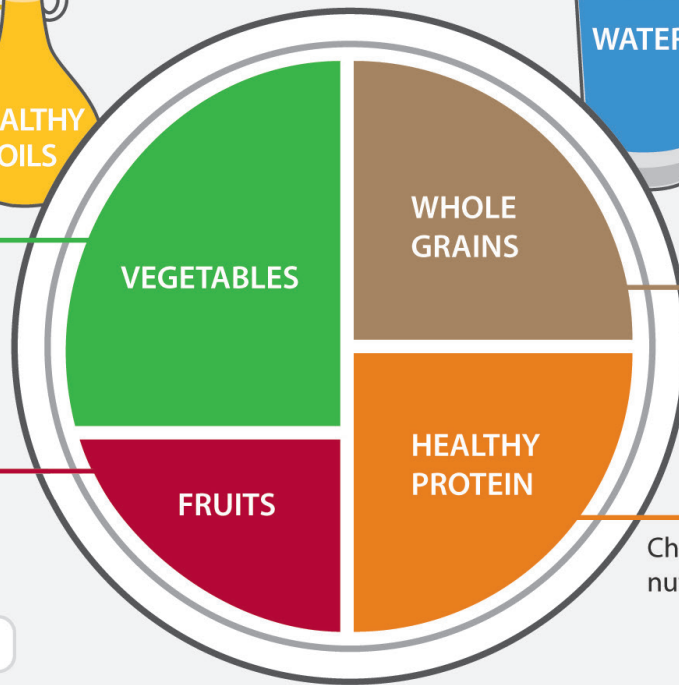


The more veggies – and the greater the variety – the better. Potatoes and French fries don't count.

Eat plenty of fruits of all colors.



© Harvard University



Drink water, tea, or coffee (with little or no sugar). Limit milk/dairy (1-2 servings/day) and juice (1 small glass/day). Avoid sugary drinks.

Eat a variety of whole grains (like whole-wheat bread, whole-grain pasta, and brown rice). Limit refined grains (like white rice and white bread).

Choose fish, poultry, beans, and nuts; limit red meat and cheese; avoid bacon, cold cuts, and other processed meats.

## Build a Healthy Meal

### Kid's Healthy Eating Plate



Eating a variety of foods keeps our meals interesting and flavorful. It's also the key to a balanced diet because each food has a unique mix of nutrients. At a glance, the Healthy Eating Plate and Kid's Healthy Eating Plate provide a blueprint to creating healthy meals—whether served at the table or packed in a lunch box.

Learn more about these resources and access other downloadable tools, including a Kid's Plate coloring page: [hsph.me/hep23](https://hsph.me/hep23)



# Intuitive Eating

*Learn about this alternative eating approach developed in response to traditional restrictive diet plans.*

Intuitive eating (IE) is not so much a diet plan as an approach to eating based on one's internal needs, whether physical, emotional, or other influences. When these needs are recognized, they may determine one's food choices. Because the method is based on an individual's needs at one moment in time, it does not focus on specific foods, a calorie level to reach, or even eating at certain times. It has been used as an approach to lose weight as well as a treatment strategy for those with disordered eating patterns. The term "intuitive eating" was introduced in 1995 as the title of a book authored by registered dietitians Evelyn Tribole and Elyse Resch. However, the concept of eating from an emotional response was described by researchers prior to that date.<sup>1</sup>

## HOW IT WORKS

IE is the antithesis of restrained eating that demands rigid control. Many commercial diets follow a restrained eating model, with meal



plans that include specific foods and/or measured portions. In contrast, IE focuses on body cues such as hunger and fullness, which may be physical hunger and fullness from an empty or filled stomach, or cues caused by emotional or external triggers. IE is flexible, with no restrictions on types of foods to eat, amounts, or specific mealtimes.

IE is sometimes described as this basic concept: learning to eat when hungry and stopping when full. Yet, in our society physical hunger is not the only reason we eat. Our appetites and cravings are continuously stimulated by visual cues (cooking shows, food advertisements), emotional cues (feeling sad, lonely, stressed, bored), olfactory cues (smelling freshly baked bread), or social cues (Sunday family dinners, sharing a restaurant meal with friends). IE seeks to identify the specific cause of the "hunger," and to respond with awareness and intention. Eating in response to triggers other than from physiological cues may cause a feeling of lack of self-control, guilt, or self-condemnation. Practicing IE concepts may help to prevent these negative feelings. Intuitive eating encourages self-care

and a positive body image.

Weight loss is not a focus of IE. However, eating excess calories can occur from emotional cues, so if one learns to respond appropriately to emotional eating cues, weight loss may follow naturally.

## THE RESEARCH SO FAR

There is a growing body of research on IE. Small, short-term controlled trials or cross-sectional studies using IE concepts have consistently shown benefits for psychological wellbeing (e.g., reduced depression and anxiety; increased body satisfaction, self-acceptance, and quality of life).<sup>2,3</sup> IE interventions have also shown a decrease in certain behaviors such as binge eating and restrained eating/dieting. A limited number of studies have shown improvements in blood pressure and cholesterol.<sup>4</sup> Randomized trials show conflicting results of IE interventions and weight loss or decreased body mass index; some show no weight changes while others show modest weight reductions. One potential pitfall is that IE may not improve health outcomes related to weight gain or chronic disease. IE concepts encourage self-care and a

Learn more about intuitive eating, including an in-depth review of available research to date:

[hsph.me/int23](https://hsph.me/int23)





### SIGNS OF PHYSICAL HUNGER:

Fatigue, lightheadedness; irritability; headache; stomach is grumbling; hunger gradually intensifies; no specific cravings; any type of food will satisfy.

### SIGNS OF EMOTIONAL HUNGER:

Stomach is quiet; desire for food occurs suddenly (e.g., because of an emotion such as anger or stress, or from external cues such as viewing a television commercial or other food advertising); cravings are for a specific food or flavor, whether salty, sweet, crunchy, creamy, etc.; guilt is associated with eating.

### EXAMPLES OF INTUITIVE EATING STRATEGIES:

- **Acknowledge hunger.** Recognize physical hunger cues and respond to them. These cues will not always occur at consistent times, as true hunger can be influenced by changes in physical activity, lack of sleep, etc. Therefore, eating meals and snacks at the same time every day may not be appropriate according to IE principles, if you are not hungry.
- **Recognize and respond to fullness.** As you identify true hunger, you will also learn to identify a comfortable degree of fullness after eating, and respond by stopping eating. This may require periodic check-ins while eating, noting if you are enjoying the food and reaching a point of having enough.
- **Don't fear negative feelings.** Accept that negative emotions like stress, anger, and boredom will come and go. Learn to cope with these feelings without using food: talk to a friend, go for a walk, take a shower, pray, or meditate.
- **Honor and respect your body regardless of size and ability.** A negative self-image can lead to self-destructive behaviors, whereas nurturing a positive self-image may lead to healthful behaviors.



### HOW IS INTUITIVE EATING DIFFERENT FROM MINDFUL EATING?

Often used interchangeably, many intuitive eating and mindful eating concepts overlap but there are some key differences. Mindful eating focuses on the present eating experience with heightened awareness beyond the self, such as how our food choices affect the health of the planet.

positive response to food, which may or may not cause a change towards healthful eating patterns (consuming more fruits and vegetables, less sweetened beverages and foods, less fried foods, not skipping meals, etc.). An individual has the freedom to choose fast food and soda if desired, so IE will not necessarily lead to a disease-preventive eating pattern or to a reversal of weight gain.

#### BOTTOM LINE

Research has shown that IE can lead to greater psychological wellbeing, increased pleasure when eating, and body satisfaction. However

research also shows that permission to eat all foods with no “food rules” can sometimes lead to unhealthy food choices with more high-calorie palatable foods. Therefore a certain level of restraint and nutrition knowledge may be beneficial when starting an IE plan (if the desired result is to improve overall health and wellness). Still, in the long run, continued dietary restraint increases the risk of ignoring natural physiological signals to eat. Therefore a combination of IE practices with basic nutrition knowledge may lead to more positive outcomes than either approach alone.



Learn about other approaches to eating and access our full series on popular diets: [hsph.me/dir23](https://hsph.me/dir23)

**WHAT ABOUT INTERMITTENT FASTING?** This diet regimen cycles between brief periods of fasting, with either no food or significant calorie reduction, and periods of unrestricted eating. It is promoted to change body composition through loss of fat mass and weight, and to improve markers of health that are associated with disease such as blood pressure and cholesterol levels. However, more high-quality studies are needed to show a direct effect and the possible benefits of intermittent fasting.



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# Which drinks should I choose?

*With so many options, it's easy to be confused about which beverages are best for health.*

In the beginning, there was water—abundant, refreshing, providing everything the body needs to replenish the fluids it loses. Humans relied on it as the only beverage for millions of years. Milk was introduced with the advent of agriculture and the domestication of animals. Then came beer and wine and coffee and tea, all consumed for taste and pleasure as much as for the fluids they provide. The newcomers—sugary beverages including soda, sports drinks, and energy drinks—offer hydration but with a hefty dose of unnecessary calories that the body may have a hard time regulating. Alternatively, “diet” drinks offer sweetness without the calories, but does that make them a healthy choice?

With so many options, it's easy to be confused about which beverages are best for our health. Read on and follow the links for an in-depth look at each.

## **GO FOR WATER!**

Calorie-free and as easy to find as the nearest tap (for most who have access to safe drinking water), water is the best choice beverage for health. Water helps to restore fluids lost through metabolism, breathing, sweating, and the removal of waste. It helps to keep you from overheating, lubricates the joints and tissues, maintains healthy skin, and is necessary for proper digestion. It's the perfect zero-calorie beverage for quenching thirst and rehydrating your body.



Water is an essential nutrient at every age, so optimal hydration is a key component for good health. Water accounts for about 60% of an adult's body weight. We drink fluids when we feel thirsty, the major signal alerting us when our body runs low on water. We also customarily drink beverages with meals to help with digestion. But sometimes we drink not based on these factors but on how much we think we should be drinking. One of the most familiar sayings is to aim for “8 glasses a day,” but this may not be appropriate for every person.

The National Academy of Medicine suggests an adequate intake of daily fluids of about 13 cups and 9 cups for healthy men and women, respectively, with 1 cup equaling 8 ounces.<sup>1</sup> Higher amounts may be needed for those who are physically active or exposed to very warm climates. Lower amounts may be needed for those with smaller body sizes. It's important to note that this amount is not a daily target, but a general guide. In the average person, drinking less will not necessarily compromise one's health as each person's exact fluid needs vary, even day-to-day. Keep in mind that about 20% of our total water intake comes not from beverages but from water-rich foods like lettuce, leafy greens, cucumbers, bell peppers, summer squash, celery, berries, and melons.



Learn more about this best-choice beverage for health, including tips for flavor-infused water: [hsph.me/wat23](https://hsph.me/wat23)



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## ENJOY COFFEE AND TEA

After water, tea and coffee are the two most commonly consumed beverages on the planet. As long as they aren't filled with added sugar, these popular beverages can be a great daily choice.

**Coffee:** Consumption of 3 to 5 standard cups of coffee daily has been consistently associated with a reduced risk of several chronic diseases.<sup>2</sup> However, some individuals may not tolerate higher amounts of caffeine due to symptoms of jitteriness, anxiety, and insomnia. Decaffeinated coffee is a good option if one is sensitive to caffeine, and according to the research summarized above, it offers similar health benefits as caffeinated coffee. Remember, the extra calories, sugar, and saturated fat in a coffee house beverage loaded with whipped cream and flavored syrup might offset any health benefits found in a basic black coffee.



**Tea:** A simple preparation of pouring hot water over cured leaves of the *Camellia sinensis* plant, the flavor of tea varies by where the tea leaves are harvested and how they are grown and processed. Animal studies suggest potential health benefits of tea due to its high polyphenol content. Human studies have generally been less conclusive, yet show promise. Observational research has found that tea consumption of 2-3 cups daily is associated with a reduced risk of premature death, heart disease, stroke, and type 2 diabetes.<sup>3</sup>



Learn more  
about coffee  
and tea:  
[hsph.me/cot23](https://hsph.me/cot23)

## DRINK IN MODERATION

Some beverages should be limited or consumed in moderation, including fruit juice, milk, and those made with artificial/low-calorie sweeteners, like diet drinks.

**100% fruit juice:** Fruit juice has vitamins, but it is high in calories from concentrated fruit sugars, so stick to no more than a small glass (4-6 ounces) per day. Even better, enjoy the whole fruit which is much lower in sugar than its juice equivalent and contains the added benefit of fiber.



**Milk:** The health benefits of dairy foods appear to be stronger for fermented types like yogurt, which play a role in the gut microbiome.<sup>4</sup> Milk possesses several individual nutrients that can affect blood pressure and bone health, but some of their health-promoting effects may be weakened by whole milk's high saturated fat content. Although popular media articles have speculated that whole milk is not less healthful than skim milk, research has not supported this statement in regards to diabetes and heart disease, and a high intake of any type of milk can lead to weight gain due to the extra calories.



**Low-calorie sweeteners:** These contain few to no calories but have a higher intensity of sweetness per gram than caloric sweeteners like sugar. Their health effects are inconclusive, with research showing mixed findings. See the next article for a closer look at existing evidence.



Learn more  
about drinks  
to limit:  
[hsph.me/mod23](https://hsph.me/mod23)

## ALCOHOL: IT'S COMPLICATED

Throughout the 10,000 or so years that humans have been drinking fermented beverages, they've also been arguing about their merits and demerits. The debate still simmers today.

It's safe to say that alcohol is both a tonic and a poison. The difference lies mostly in the dose. In some people, moderate drinking may be good for the heart and circulatory system, and probably protects against type 2 diabetes and gallstones. On the other hand, heavy drinking is a major cause of preventable death in most countries.



Loose use of the terms "moderate" and "a drink" has fueled some of the ongoing debate about alcohol's impact on health. In the U.S., 1 drink is usually considered to be 12 ounces of beer, 5 ounces of wine, or 1½ ounces of spirits (hard liquor such as gin or whiskey).<sup>5</sup> Each delivers about 12 to 14 grams of alcohol on average, but there is a wider range now that microbrews and wine are being produced with higher alcohol content.

Given the complexity of alcohol's effects on the body and the complexity of the people who drink it, blanket recommendations about alcohol are out of the question. Because each of us has unique personal and family histories, alcohol offers each person a different spectrum of benefits and risks. Whether or not to drink alcohol requires careful balancing of these benefits and risks.



Learn more  
about alcohol's  
complexities:  
[hsph.me/alc23](https://hsph.me/alc23)

## AVOID SUGARY DRINKS

Sugary drinks (also categorized as sugar-sweetened beverages or “soft drinks”) refer to any beverage with added sugar or other sweeteners (high fructose corn syrup, sucrose, fruit juice concentrates, and more). This includes soda, pop, cola, tonic, fruit punch, lemonade (and other “ades”), sweetened powdered drinks, as well as sports and energy drinks.

As a category, these beverages are the single largest source of calories and added sugar in the U.S. diet. In other parts of the world, particularly developing countries, sugary drink consumption is rising dramatically due to widespread urbanization and beverage marketing. When it comes to ranking beverages best for our health, sugary drinks fall at the bottom of the list because they provide so many calories and virtually no other nutrients. People who drink sugary beverages do not feel as full as if they had eaten the same calories from solid food, and research indicates they also don't compensate for the high caloric content of these beverages by eating less food. The average can of sugar-sweetened soda or fruit punch provides about 150 calories, almost all of them from added sugar. Routinely drinking these sugar-loaded beverages can increase the risk of type 2 diabetes, heart disease, and other chronic diseases. Furthermore, higher consumption of sugary drinks has been linked with an increased risk of premature death.<sup>6</sup>



## HOW SWEET IS IT?

Imagine scooping up 7 to 10 teaspoons full of sugar and dumping it into your 12-ounce glass of water. Does that sound too sweet? You may be surprised to learn that's how much added sugar is in the typical can of soda!

1 teaspoon contains  
4.2 grams of sugar



There are 4.2 grams of sugar in a single teaspoon. When reading grams of added sugar on a beverage label, keeping this in mind is a helpful way to visualize just how much sugar you're actually consuming:



Aside from soda, energy drinks have as much sugar as soft drinks, enough caffeine to raise your blood pressure, and additives whose long-term health effects are unknown.

As for sports drinks, these are designed to give athletes carbohydrates, electrolytes, and fluid during high-intensity workouts that last one hour or more. For everyone else they're just another source of calories and sugar.



Take an in-depth look at the research on sugary drinks and health: [hsph.me/sug23](https://hsph.me/sug23)



# Low-Calorie Sweeteners

*Think of these “diet” drinks as a temporary replacement for soda, rather than a long-term beverage option.*



Low-calorie sweeteners (LCS) are sweeteners that contain few to no calories but have a higher intensity of sweetness per gram than sweeteners with calories—like table sugar, fruit juice concentrates, and corn syrups. Other names for LCS are non-nutritive sweeteners, non-sugar sweeteners, artificial sweeteners, sugar substitutes, and high-intensity sweeteners. Foods and beverages containing LCS sometimes carry the label “sugar-free” or “diet.” Some LCS can be used as general purpose sweeteners.

Because LCS are many times sweeter than table sugar, they can be used in smaller amounts to achieve the same level of sweetness as sugar. People may use LCS in place of sugar to consume fewer calories or less sugar or to better control their blood glucose if they have diabetes or pre-diabetes. There are six LCS approved as food additives by the U.S. Food and Drug Administration (FDA). Nu-

merous studies have been conducted on each type to identify possible toxic effects. They are all sweeter than table sugar (sucrose) but contain few or no calories. They include aspartame, acesulfame-K, saccharin, sucralose, neotame, and advantame. Certain steviol glycosides (which come from the South American Stevia plant, *Stevia rebaudiana*) as well as monk fruit are also permitted for specific conditions of use in the food supply through the FDA’s GRAS (“Generally Recognized as Safe”) notification program.

## RESEARCH ON LCS AND HEALTH

The health effects of LCS are inconclusive, with research showing mixed findings. Research is also looking at potential differences in effects from the various types of LCS.

Take a look at the available research on LCS and health: [hsph.me/lcs23](https://hsph.me/lcs23)



## SCIENTIFIC ADVISORY

Due to ongoing research, advisories from the American Heart Association and Diabetes Association note that:

- Children should not drink LCS beverages in the long-term because of unknown effects.
- For adults who are regular high consumers of sugary drinks like soda, LCS beverages may be a useful temporary replacement strategy to reduce sugar intake. This may be particularly helpful for those who are used to a sweet-tasting beverage and for whom water, at least initially, is an undesirable option.
- Alternatives to LCS beverages and sugary drinks, such as plain, carbonated, or unsweetened flavored waters, should be encouraged for all.
- Further research on the effects of LCS beverages on weight control, cardiometabolic risk factors, and risk of cardiovascular disease and other chronic diseases is needed.

**SPOTLIGHT ON ASPARTAME:** The International Agency for Research on Cancer, the World Health Organization, and the Joint Expert Committee on Food Additives recently released a risk assessment of aspartame and cancer. It classified aspartame as a Group 2B carcinogen having “limited evidence” for cancer in humans, specifically liver cancer. Their prior recommendation of an acceptable daily intake of aspartame of 40 mg/kg of body weight did not change, as they acknowledged that their research review did not provide differing evidence to alter this guideline, and affirmed that an intake within this range is safe. For a 150-pound (68 kg) woman, this would mean a limit of 2,727 mg of aspartame daily, equivalent to about eleven 12-ounce cans of diet soda (one can contains about 250 mg). They stated that the evidence on cancer risk in humans based on animal and human studies was not convincing, and that more research, specifically longer-term studies with follow-up and randomized controlled trials, were needed.

# Staying Active

*Exercise may be overlooked in context of busy schedules, but movement is part of the recipe for healthy living.*

Getting regular physical activity is one of the best things you can do for your health. It lowers the risk of heart disease, diabetes, stroke, high blood pressure, osteoporosis, and certain cancers, and it can also help control stress, improve sleep, boost mood, keep weight in check, and reduce the risk of falling and improve cognitive function in older

adults. However, with busy lifestyles and an environment that encourages being sedentary for many hours of the day, exercise often becomes an afterthought. Here are some factors to consider when making a physical activity plan:

- **Frequency:** How often will you do the activity—once a day, three times a week, twice a month?
- **Duration:** How long is the exercise session—20 minutes, 1 hour, 30 minutes split into two sessions in one day?
- **Intensity:** How much energy is needed—light versus vigorous activity?

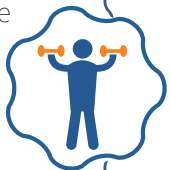
## TYPES OF EXERCISE

**Aerobic/Cardiovascular physical activity**—These are activities that are intense enough and performed long enough to maintain or improve one's heart and lung fitness. Examples: walking, jogging, dancing, bicycling, basketball, soccer, swimming.

**Balance training**—These activities are intended to throw off one's balance to improve body control and stability. They can help to prevent falls and other injuries. Examples: standing on one foot, walking heel-to-toe in a perfectly straight line, standing on a balance or wobble board.

**Flexibility training**—This may be referred to as stretching. It lengthens or flexes a skeletal muscle to the point of tension, and holds for several seconds to increase elasticity and range of motion around a joint. Improving flexibility can enhance the overall physical performance of other types of exercise. Examples: dynamic stretches performed with movement (yoga, tai chi), static stretches without movement (holding a pose for several seconds or longer), passive stretching (using an external force like a strap or wall to hold an elongated pose), and active stretching (holding a pose without an external force).

**Muscle-strengthening activity**—This may be referred to as resistance training. These activities maintain or increase muscle strength, endurance, and power. Examples: weight machines, free weights, resistance elastic bands, Pilates, daily activities of living (lifting children, carrying groceries or laundry, climbing stairs).



Visit the full staying active section on The Nutrition Source for activity ideas and safety reminders: [hsph.me/sa23](https://hsph.me/sa23)



# Research Highlights



Hour-long workout sessions may be on your to-do list but don't be discouraged if you can't always meet this goal. More research is finding that shorter durations of exercise still carry big health benefits.

- ➔ Shorter, slower runs support mental health as much as longer runs, according to a meta-analysis including 15 studies and more than 191,000 participants. The researchers compared runners who completed 150 minutes weekly of moderate physical activity (the recommended exercise guideline from the Centers for Disease Control and Prevention) compared with those who completed half that amount. Those who exercised more showed a 25% reduction in depression risk, but even the lower exercise group showed an 18% lower risk of depression compared with those who didn't exercise at all.<sup>1</sup>



- ➔ Although the “weekend warrior” exercise practice is sometimes discouraged due to higher risk of injury when attempting vigorous infrequent exercise (e.g., only on weekends), a meta-analysis found that this method similarly lowered the risk of cardiovascular diseases compared with more consistent exercise patterns throughout the week.<sup>2</sup> The authors studied more than 89,000 participants and when compared with non-exercisers, the weekend warriors had a 27% lower risk of heart attack compared with regular exercisers who had a 35% lower risk. Similar risk reductions between the groups were found for heart failure and stroke.



- ➔ Walking quickly to catch the bus to work or climbing stairs instead of taking the elevator may be adding years to your life. An observational study following more than 25,000 non-exercising men and women with a mean age of 62 for almost 7 years found that those who engaged in three brief 1-2 minute bursts of vigorous lifestyle physical activity a day had a 38-48% reduced risk of deaths from any cause and deaths from cancer and cardiovascular disease, compared with those who did not engage in this activity. Similar results were found in a different group of adults analyzed by the authors who engaged in regular vigorous physical activity.<sup>3</sup>



## REFERENCES

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3. Stamatkis et al., Nat Med, 2022.

# Zumba

Get moving with this popular dance-themed aerobic exercise.

Dance has been used as a physical expression of emotions, celebration, ceremony, worship, and entertainment for centuries. The *Oxford Dictionary* defines dance as moving rhythmically to music, usually following a specific sequence of steps. Ballet, contemporary, tap, jazz, hip-hop, folk, and step dancing are popular forms of dance.

Research shows that dance as an exercise format, or dance fitness, not only combines cardiovascular benefits of movements set to music but also offers the social aspect of a group setting, which may promote longer-term adherence to exercise.<sup>1</sup>

Here we specifically explore Zumba Fitness®, a popular program worldwide that involves aerobic exercise using Latin-inspired dance themes and music. The choreography is less formal than in traditional dance classes and encourages the

feel of a “dance party.”<sup>2</sup> Zumba has been found to boost intrinsic motivation, which is defined as engaging in an activity because of the innate pleasure it brings.<sup>3</sup>



## ZUMBA AND HEALTH

Dance fitness has been ranked the second most popular leisure-time physical activity after walking among women ages 25 to 75 years, and an activity recommended in the Global Action Plan On Physical Activity 2018–2030 established by WHO.<sup>4</sup> There is research on Zumba to reduce cardiovascular risk, but many studies are limited by small sample sizes, shorter durations of 8-12 weeks, and lack of control groups.<sup>5,6</sup> The intensity of Zumba enters the moderate aerobic zone, but adding jumping and faster-paced music increases intensity. There appears to be a wide range in intensity levels of Zumba classes depending upon the choreography and enthusiasm of the instructor, which has likely contributed to variability in Zumba research.<sup>2</sup>

Zumba Gold® is an offshoot of Zumba that is adapted for older adults to be lower in intensity with movements that focus on balance, range of motion, and coordination. Research has been published on its

safety, high rates of compliance by participants, and intrinsic motivation to exercise in clinical populations such as hemodialysis patients and those with Parkinson’s disease.<sup>7,8</sup>

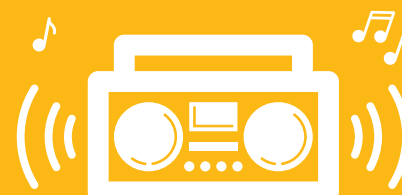
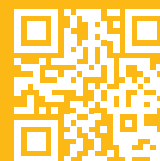
## SAFETY

Exercise of any type carries the risk of injury. Zumba requires a level of coordination to perform rhythmic Latin dance-inspired movements. It is usually fast-paced, including twisting motions at the hip, knee, and ankle. Proper body alignment can be harder to control when the music tempo is fast and routines move quickly. Jumps or hops can lead to lower back pain in less-conditioned participants. If a participant focuses too much on following the instructor and keeping up with their classmates rather than paying attention to their own physical limitations, injuries can occur.

Check with your doctor to discuss if a dance fitness class like Zumba is a good option for you. Inform the instructor if you are brand new to the format, if you have sensitive areas of the body, or are recovering from an injury. An experienced instructor will monitor you throughout the class and offer modifications for complex movements. Of course, don’t hesitate to modify movements on your own to something more comfortable—marching or doing step-touches until the next movement in the routine.



Learn Zumba safety tips and see more research on this activity and health: [hsph.me/zum23](https://hsph.me/zum23)



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2. Luetting et al., *J Sports Sci&Med*, 2012.
3. Krishnan et al., *Am J Health Behav*, 2015.
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# Mindful Movement

*Each step we take, each movement we make, is a chance to deepen our connection with our body and the earth.*



Watch an animated clip about walking mindfully and learn other mindful living techniques: [hsph.me/tnh23](https://hsph.me/tnh23)

Mindful moving is healthy for the body and the mind.

Start by walking for the sake of walking. Release yourself from planning or reflecting.

Just walk.

Breathe in. Step forward.  
Breathe out. Step forward.

Focus on each step.

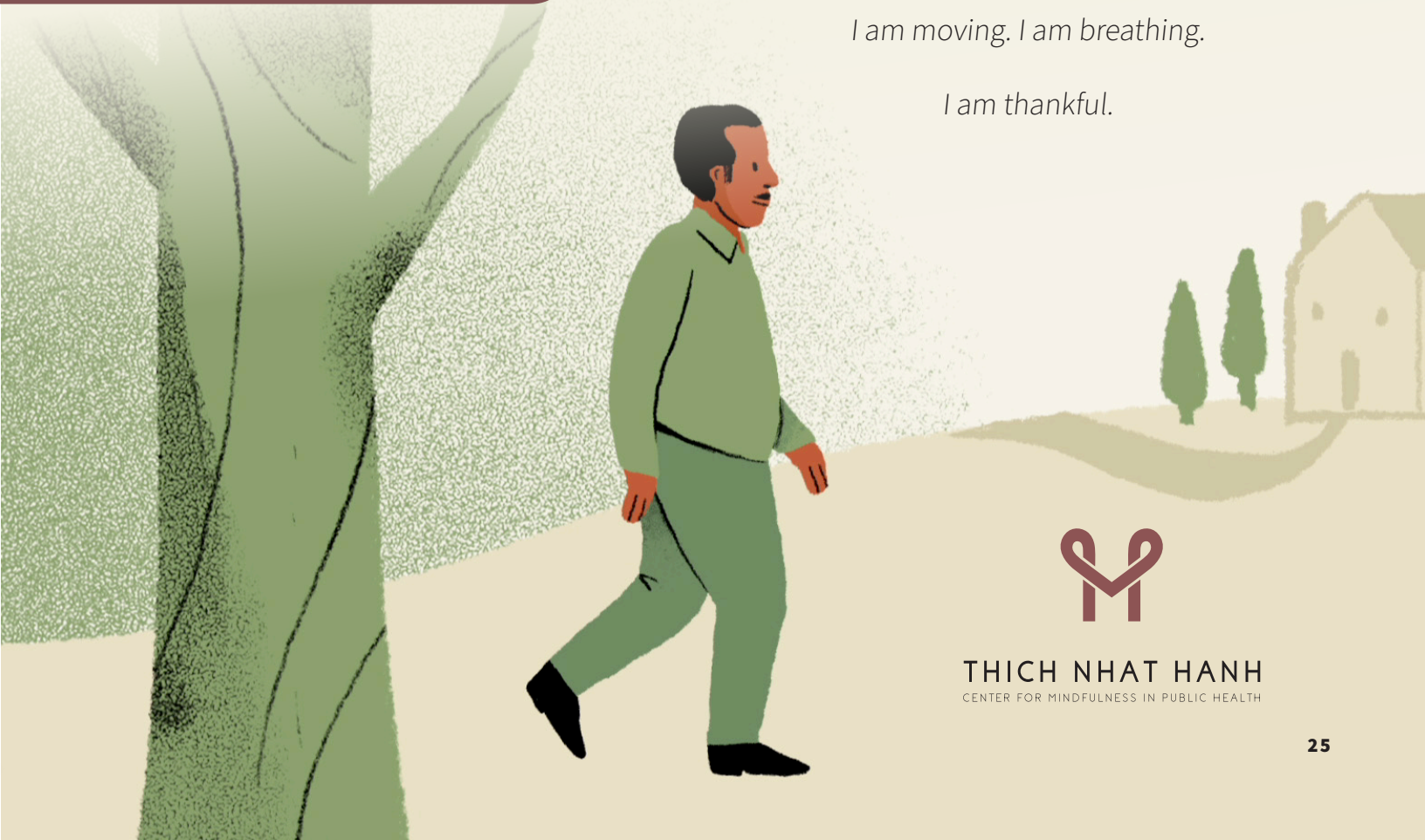
How you connect with the ground.  
How you belong in this place.

You can also practice other types of mindful movement.

Breathe in. Breathe out.

*I am moving. I am breathing.*

*I am thankful.*



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## SLEEP TIPS

Try to avoid large meals, heavy snacking, or alcohol 2-3 hours before bed.

Aim to go to bed and wake up around similar times each day, even on weekends.

Stop using blue light-emitting devices an hour before going to bed.

# Sleep

*Sleep is as essential to our daily needs as food and water.*

Sleep plays a critical role in brain as well as physical functioning. Although we may feel that sleep simply rests our tired bodies, our brains remain active throughout the night.

## HOW MUCH SLEEP DO I NEED?

Sleep needs change as we age, with the average person generally requiring less sleep at older ages. However, specific sleep amounts vary by individual. According to the National Sleep Foundation and American Academy of Sleep Medicine (AASM), newborns need the most sleep, at 14-17 hours a day, followed by infants at 12-16 hours a day including naps. Toddlers need about 10-14 hours a day. Preteens and teenagers need about 8-12 hours a day, and adults about 7-8 hours a day.<sup>1</sup> A consensus by the AASM and Sleep Research Society recommends that adults should sleep 7 or more hours a night to promote optimal health.<sup>2</sup>

Despite these general recommendations on sleep duration, individual differences in sleep requirements exist. In most epidemiologic studies, increased risk of adverse health outcomes such as obesity, diabetes, and cardiovascular disease has been

observed among those who reported sleeping 5 hours or less per day, and 9 hours or more per day. Thus, a range of sleep hours (more than 5 and less than 9) is considered appropriate for most healthy adults.

Other factors such as quality of sleep are important, because just meeting the total recommended sleep hours may not be enough if one wakes up frequently in the night. A common belief is that lost sleep from a late night out or studying can be recovered by “sleeping in” another day or taking naps. However, both of these methods disrupt the body’s circadian rhythms and may deprive the body of deeper sleep stages. Although some epidemiologic studies have shown that taking a short nap during the day may reduce risk of cardiovascular disease, increased variability in how much sleep we get from night to night is associated with an increased risk of developing metabolic and heart diseases.<sup>3</sup> It is important to respond, whenever possible, to the body’s natural signals of sleepiness.



## 2023 RESEARCH HIGHLIGHTS

Sleeping difficulties are at an all-time high, with the AASM estimating that 40-50% of American adults, mostly women, experience insomnia.<sup>4</sup> The Centers for Disease Control and Prevention report that more than a third of Americans do not sleep enough on a daily basis.

Having a consistent sleep schedule may be just as important as getting enough hours of sleep, according to a review of 63 studies conducted by the National Sleep Foundation.<sup>5</sup> Regu-

Visit the full sleep section on *The Nutrition Source* for more information about sleep and health, and tips for sleeping well: [hsph.me/sle23](https://hsph.me/sle23)



## REFERENCES

1. Paruthi et al., *J Clin Sleep Med*, 2016.
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4. Haghayegh et al., *Hypertension*, 2023.
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lar schedules were associated with better cardiovascular, metabolic, and mental health and improved academic and cognitive performance. Consistent sleep times also increased the likelihood of better sleep quality and duration. In contrast, a more variable sleep schedule was associated with health and performance problems. However, the review also found that when adequate sleep could not be achieved, often on work days, catching up on sleep at other times such as non-work days or the weekends may be beneficial. The panel recommended reducing sleep deficiency by extending sleep on non-work days up to 1-2 hours and/or taking naps.

Recent research from the Nurses' Health Study II cohort highlights sleep quality and health impacts:

- Women who had better pre-pandemic sleep scores who later tested positive for Covid-19 had less risk of developing long Covid symptoms.<sup>6</sup> When comparing participants with the poorest quality sleep with those with highest quality, the latter group had a 30% lower chance of

developing long Covid. The researchers theorized that poor sleep quality is linked to inflammation and development of autoimmune antibodies (protective proteins that mistakenly attack one's own cells).

- Women who slept 6 hours or less a day had significantly higher risk of hypertension compared with women who slept 7-8 hours a day.<sup>4</sup> The study also found a higher risk of hypertension in women who had difficulty falling or staying asleep compared with those without these difficulties. Although the exact relationship of poor sleep and elevated blood pressure is unknown, the authors noted that sleeping difficulties can interfere with the normal constriction/relaxation of blood vessels and can promote metabolic changes that increase sodium retention and stiffen arteries. Data from the study also showed that women with sleeping difficulties tended to weigh more, exercise less, have poorer diets, and smoke and use excess alcohol, all of which can contribute to hypertension.



### Are you a morning person or a night owl?

Middle-aged women with an “evening chronotype” with late sleep habits such as going to bed at 3am and waking at noon were more likely to report unhealthy lifestyle behaviors (low quality diet, increased alcohol use, smoking, heavier weight, less exercise and sleep) and had increased diabetes risk than those with a “morning chronotype” who retired earlier and woke up early.<sup>7</sup> The findings were consistent with other research that found night owls to have more difficulty in regulating blood sugar and weight, and having higher rates of type 2 diabetes. The researchers noted that adjusting for diet, exercise, and body weight weakened the association; therefore improving these lifestyle factors may be beneficial to reduce health risks in those with an evening chronotype.

**TRY IT OUT:** Create a calming bedtime ritual, such as doing light yoga stretches, listening to soothing music, or practicing deep breathing exercises. If you're having difficulty relaxing or your mind is racing with to-do's and other stressors, try some of these simple mantras as you inhale and exhale.

*Breathing in,  
I notice my scattered mind.*

*Breathing out,  
I still my mind by focusing on the  
here and the now.*

*Breathing in,  
I feel calmer.*

*Breathing out,  
I am more at ease.*





# Healthy Longevity

*What you do today can transform your “healthspan,” or how you age in the future.*

Longevity is the achievement of a long life. We may hope for longevity so that we can experience many years of quality time with loved ones or have time to explore the world. But living to a ripe old age doesn't necessarily mean healthy or happy longevity if it is burdened by disability or disease. What you do today can transform your *healthspan* or how you age in the future. Although starting early is ideal, it's never too late to reap benefits. Researchers from Harvard University looked at factors that might increase the chances of a longer life.<sup>1</sup> Using data collected from men and women from the Nurses' Health Study and Health Professionals Follow-up Study who were followed for up to 34 years, researchers identified five low-risk lifestyle factors: healthy diet, regular exercise (at least 30 minutes daily of moderate to vigorous activity), healthy weight (as defined by a body mass index of 18.5-24.9), no smoking, and moderate alcohol intake (up to 1 drink daily for women, and up to

2 daily for men). Compared with those who did not incorporate any of these lifestyle factors, those with all five factors lived up to 14 years longer.

In a follow-up study, the researchers found that those factors might contribute to not just a longer but also a healthier life.<sup>2</sup> They saw that women at age 50 who practiced four or five of the healthy habits listed above lived about 34 more years free of diabetes, cardiovascular diseases, and cancer, compared with 24 more disease-free years in women who practiced none of these healthy habits. Men practicing four or five healthy habits at age 50 lived about 31 years free of chronic disease, compared with 24 years among men who practiced none. Men who were current heavy smokers, and men and women with obesity, had the lowest disease-free life expectancy.

Beyond the five core lifestyle habits mentioned above, a growing body of research is identifying additional factors that may be key to increasing our healthspans.

Access the full article on healthy longevity for a closer look at the research on aging: [hsph.me/hlo23](https://hsph.me/hlo23)



## GLOBAL DIETS AND CULTURES

Although further clinical trials are needed to better understand the effects of specific diets on aging, there is a pressing need to establish and maintain studies that examine large cohorts of people over time to see the association of dietary factors on aging in culturally diverse populations.

Some traditional diets (e.g., the Mediterranean, Nordic, and Okinawa) and contemporary dietary patterns such as the Healthy Plant-Based Diet Index, the DASH (Dietary Approaches to Stop Hypertension) diet, and the Alternate Healthy Eating Index have been associated with lower mortality and healthy longevity. These patterns share a common foundation of nutrient-rich plant foods, limited amounts of animal foods especially red and processed meats, and culinary herbs and spices as found in global cuisines while embracing distinct elements from different cultures. For example, the Mediterranean diet mainly uses extra virgin olive oil and the Nordic diet uses rapeseed oil, but both are rich in a monounsaturated fatty acid called oleic acid.<sup>3</sup>

In practice, dietary recommendations should be adapted to individual preferences and cultures, and address special nutritional needs of aging persons. Public health strategies should promote readily accessible nutrition options in public institutions and care facilities for the elderly.

**WIDENING GENDER GAP IN U.S. LIFE EXPECTANCY:** Women are living about six years longer than men, as a new *JAMA* study finds that men are dying at earlier ages, from about 79 years in 2019 to 76 years in 2021.<sup>4</sup> The authors noted that prior to Covid-19, chronic conditions like diabetes and heart disease played a bigger role in earlier deaths in men, but from 2019 to 2021 Covid-19 became the main contributor, followed by “deaths of despair” such as the opioid-overdose epidemic, accidents, and suicide. Socioeconomic factors involved with higher death rates from Covid-19 included increased exposure at jobs, incarceration, and homelessness.

# Research Highlights



## **CURBING THE EFFECTS OF LONELINESS ON HEALTH**

Loneliness is associated with chronic disease and depression according to a new study from Harvard Medical School and Hebrew SeniorLife.<sup>5</sup> The authors found that during the Covid-19 pandemic, participants were more vulnerable to loneliness with older ages and having depression, anxiety, impaired vision, or impaired ability to complete daily activities. Those who were protected from loneliness had higher cognitive function, a large social network, ability to use technology, and engaged regularly in physical activity. Interestingly, physical function improved significantly in lonely participants who had larger social networks. To expand your social networks and curb the effects of loneliness on health:

- Visit a local senior center that may offer free or discounted meals and various activities such as classes for senior exercise, arts and crafts, computer skills, games, shopping trips, and lectures.
- Sign up for volunteer activities in your community. There are many options such as helping out in a food pantry, assisting homebound persons with their medications and food shopping, walking pets, tutoring younger adults, delivering magazines or books to hospitalized patients, and administrative duties.
- Be open to learning how to use modern technological devices that allow for virtual social connections. Senior centers, libraries, and other local organizations may offer beginner classes, or if available have a younger family member or neighbor demonstrate.

## **BRAIN CARE SCORE AND DEMENTIA RISK**

Researchers from Massachusetts General Hospital followed almost 400,000 adults ages 40-69 from the United Kingdom Biobank for 12.5 years to see if certain components reduced risk of stroke and dementia over time. They developed a 21-point Brain Care Score that comprised three categories of health:

1. Physical - body mass index, blood pressure, cholesterol, and blood sugar
2. Lifestyle - diet quality, aerobic exercise, sleep quality, and use of tobacco or alcohol
3. Social-emotional components - social relationships, stress management, and finding meaning in life



Higher scores indicated improved brain care and were associated with a lower risk of dementia and stroke across all age groups but with stronger associations in those younger than 50 years (each 5-point higher score was associated with a 59% percent lower risk of developing dementia and 48% lower risk of stroke).<sup>6</sup>

Starting young to develop lifelong healthy behaviors is optimal but improvements can be seen at any age; it is never too late.

## **SPOTLIGHT ON FALLS**

Falls are the leading cause of injury and deaths from injury in people 65 years and older. A new report by the Centers for Disease Control and Prevention found that in 2021, an average of 100 older adults died from falls daily.<sup>7</sup> Although women tended to fall more often than men, death rates from falls were higher in men than women. Health care providers should screen older patients for fall risk factors, with interventions such as physical therapy to improve balance, monitoring medications that are associated with falls, and providing information on home safety tips to reduce falls (e.g., keeping floors and stairs clear of clutter, installing handrails, having adequate lighting).

### REFERENCES

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Which of these foods are the richest plant source of omega-3 fatty acids?



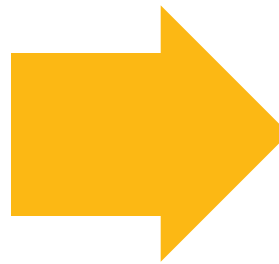
A Walnuts

B Hemp seeds

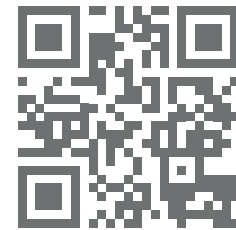
C Lentils

D Chia seeds

Think you know the answer?  
Follow the link below to test  
your healthy living knowledge  
with this 10 question quiz.

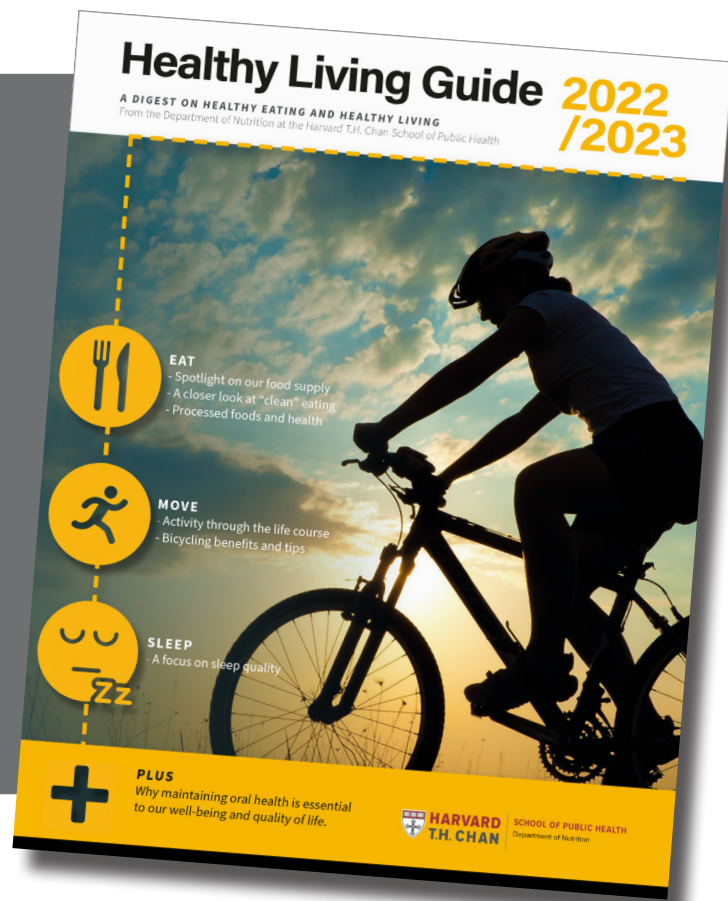


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**Hint:** The answers to the quiz can be found throughout the 2022/2023 Healthy Living Guide. Download the full edition here if you haven't checked it out!

[hsph.me/hlg3](https://hsph.me/hlg3)



Test your healthy living knowledge!