

Healthy Living Guide 2022 / 2023

A DIGEST ON HEALTHY EATING AND HEALTHY LIVING

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



EAT

- Spotlight on our food supply
- A closer look at “clean” eating
- Processed foods and health



MOVE

- Activity through the life course
- Bicycling benefits and tips



SLEEP

- A focus on sleep quality



PLUS

Why maintaining oral health is essential to our well-being and quality of life.



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A Note From the Editorial Team

Happy New Year, and welcome to the third edition of the *Healthy Living Guide*!

Throughout 2022, food and nutrition were often in the spotlight, perhaps most notably with the White House Conference on Hunger, Nutrition, and Health. The national strategy that emerged from the event (the first of its kind since the original conference in 1969) aims at ending hunger and increasing healthy eating and physical activity by 2030. While the plan includes many promising approaches, such as expanding nutrition assistance programs and covering medically tailored meals under Medicare, our Department of Nutrition experts also noted some major omissions, including protecting children from unhealthy food marketing, as well as transforming the food system in response to climate change. “To have a significant impact, the administration must bring together the public and private sectors, along with philanthropists, academia, and individuals to develop truly sustainable food systems that support both public and planetary health,” Drs. Frank Hu, Walter Willett, and Lilian Cheung wrote in reflection of the event.¹

Indeed, there is much work to be done in creating policies that ensure there is not only enough food to sustain current and future generations, but also make optimal choices accessible and affordable to all. In the meantime, we encourage you to incorporate healthy behaviors wherever you can—no change is too small! We hope you find this *Guide* useful, and we wish you a fulfilling 2023.

1. Hu, Willett, Cheung. *NY Daily News*. October 6, 2022.

Explore The Nutrition Source website for more evidence-based guidance for healthy eating and healthy living:
hsph.me/nut22



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.



Spotlight: Food Supply Challenges

Recognizing current challenges of food inflation and shortages.

Rising food prices and food shortages due to supply chain issues can make eating a healthy diet more challenging. A 2022 NPR poll in partnership with the Harvard Chan School of Public Health showed that in the U.S., inflation had more negative impacts on minority groups, including Black, Latino, and Native Americans, than White Americans.¹ This meant not having enough emergency savings for a month or not being able to afford food or rental housing. Those whose budgets were very tight had to make difficult choices such as skimping on food to pay for rent or healthcare. The U.S. Department of Agriculture estimates that almost 34 million people, including five million children, are currently food insecure.² According to the Bureau of Labor Statistics, grocery costs spiked by more than 13% in the past year with the highest jumps in eggs, chicken, meat, breakfast cereals, bread, and dairy (milk and butter).³ Fruit, vegetable, and fish prices also increased. Restaurant menus experienced price increases due to a combination of factors: wage increases, higher food costs, and labor shortages. Global events such as the war in Ukraine, lingering impacts from COVID-19 lockdowns, and natural disasters like severe droughts negatively affected food supplies, driving up costs.

Here are some resources that may help when navigating the challenges of food inflation and shortages.



STRATEGIES FOR EATING WELL ON A BUDGET



hsph.me/bgt22

While policy improvements are needed to create a food environment where the healthy choice is the easy and accessible choice, in the meantime, know that creating nutritious meals can be more affordable than one might think. From the supermarket to the kitchen, here are strategies to get the biggest nutrition bang for your buck.



ACCESSING SUPPLEMENTAL FOOD RESOURCES



hsph.me/sup22

If you (or someone you know) are struggling with food access, there are several options to help. Along with a nationwide network of food pantries, the U.S. federal government offers food assistance programs for citizens and legal noncitizens whose income meets certain guidelines and/or who have certain nutritional needs.



NAVIGATING INFANT FORMULA SHORTAGES



hsph.me/inf22

While formula availability has improved compared to earlier in the year, shortages persist. These shortages are undoubtedly alarming for families since infants require formula when human milk is not accessible or not available in adequate amounts. Here are some tips for what to do—and what not to do—when shortages occur.

REFERENCES

1. NPR, RWJF, & HSPH, *Personal Experiences of U.S. Racial/Ethnic Minorities in Today's Difficult Times Survey*, May 16-June 13, 2022.
2. USDA ERS, *Food Security in the U.S.*, 2021.
3. U.S. Bureau of Labor Statistics, *Prices for food at home up 13.5 percent for year ended August 2022*, September 15, 2022.

HEALTHY EATING PLATE

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

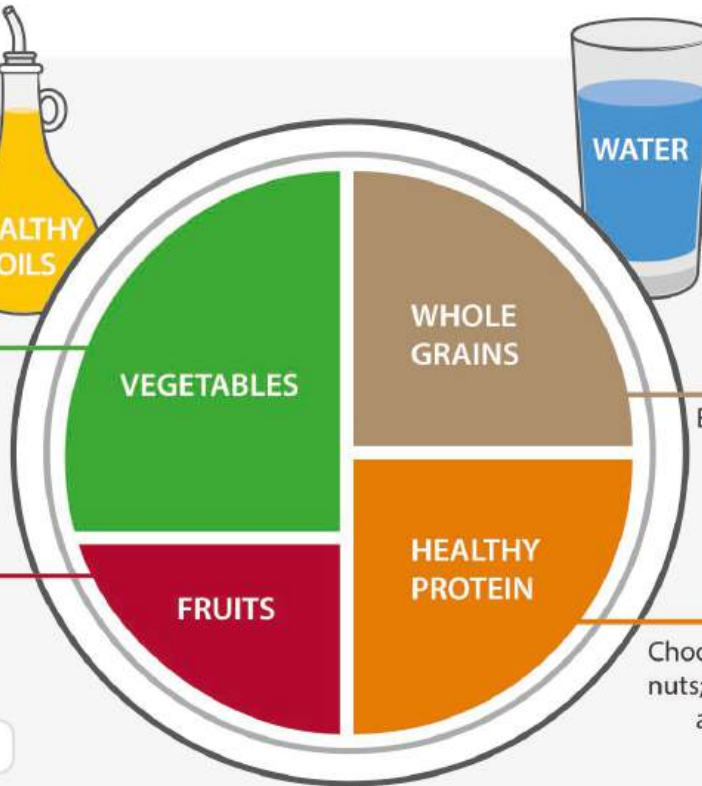


The more veggies – and the greater the variety – the better. Potatoes and French fries don't count.

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/hep22





Vitamin D

Spotlight on the “sunshine” vitamin.

Access the full page on vitamin D, including more research on its role in health: hsph.me/vid22



Vitamin D is both a nutrient we eat and a hormone our bodies make. It is a fat-soluble vitamin that has long been known to help the body absorb and retain calcium and phosphorus; both are critical for building bone. Many of the body’s organs and tissues have receptors for vitamin D, which suggest important roles beyond bone health, and scientists are actively investigating other possible functions.

The role of vitamin D in disease prevention is a popular area of research, but clear answers about the benefit of taking amounts beyond the RDA are inconclusive. Although observational studies see a strong connection with lower rates of certain diseases in people that live in sunnier climates or have higher blood levels of vitamin D, clinical trials that give people vitamin D supplements to affect a particular disease have largely failed to show significant benefits during the intervention period of the trial. This may be due to different study designs, differences in the absorption rates of vitamin D in different populations, different duration of the studies, and different dosages given to participants.

RECENT RESEARCH HIGHLIGHTS

A large study of more than 307,000 White European participants found a 25% increased risk of premature deaths from any cause in those who had vitamin D blood levels of 25 nmol/L (10 ng/mL), compared with those having 50 nmol/L (20 ng/mL) (the National Academy of Medicine cites a vitamin D blood

level of 50 nmol/L as adequate for most people).¹ There were similar increased risks of death due to cardiovascular disease, cancer, and respiratory disease, and risks increased sharply among those with even lower levels of vitamin D below 25 nmol/L. Although the numbers of non-White participants were small, the findings were similar in this group. The researchers removed potential confounding factors that could affect vitamin D levels such as obesity, smoking, and alcohol intake.

In another analysis using the same participants, a 54% higher risk of dementia was seen among those with low blood levels of vitamin D compared with those having an adequate level of 50 nmol/L.²

Together, these findings and previous studies provide strong evidence to avoid low levels of vitamin D. About 75% of U.S. Black adults and 20% of U.S. White adults have blood levels of vitamin D below 50 nmol/L.³

However, any benefit of taking vitamin D supplements when blood levels are normal has not been determined. VITAL, a large double-blind placebo-controlled randomized trial of generally healthy women and men 50 years and older, did not find that taking vitamin D supplements of 2,000 IU daily compared with a placebo reduced the risk of bone fractures, cancer, or cardiovascular disease. JoAnn Manson, MD, DrPH, leader on the VITAL trial acknowledged however the certain cases in which supplements might be warranted: “Of course, vitamin D deficiency should always be treated and some high-risk patients with malabsorption syndromes, osteoporosis, or taking medications that interfere with vitamin D metabolism will benefit from supplementation.” Talk with your doctor about starting supplements if you are concerned about your vitamin D level.

RECOMMENDED AMOUNTS

The Recommended Dietary Allowance (RDA) for adults 19 years and older is 600 IU (15 mcg) daily for men and women, and for adults >70 years it is 800 IU (20 mcg) daily. This RDA provides the daily amount needed to maintain healthy bones and normal calcium metabolism in healthy people. It assumes minimal sun exposure.

The Tolerable Upper Intake Level (UL) is the maximum daily intake unlikely to cause harmful effects on health. The UL for vitamin D for adults and children ages 9+ is 4,000 IU (100 mcg).



Nutrition Research Highlights



WHO REPORT: GLOBALLY, NONCOMMUNICABLE DISEASES TAKE MORE LIVES THAN INFECTIOUS DISEASES

A report from the World Health Organization (WHO) sends a reminder that although mass media highlight infectious diseases like COVID-19 and the recent spike in respiratory syncytial virus in children, noncommunicable diseases (NCDs) such as cardiovascular disease, cancer, and diabetes are responsible for nearly 75% of deaths worldwide.¹ The good news is that reducing risk factors for NCDs could prevent almost 39 million deaths by 2030, such as implementing a healthy diet, not smoking, exercising regularly, moderating alcohol intake, and reducing exposure to air pollution.



Learn more about preventing NCDs: hsph.me/dis22



NOT ALL PLANT-BASED DIETS HAVE THE SAME BENEFITS ON HEALTH AND THE ENVIRONMENT

Data from the Nurses' Health Study II categorized types of plant-based diets into unhealthy (including refined grains and added sugars) or healthy (including whole grains, legumes, nuts, fruits, vegetables). Researchers looked at environmental impacts and risk of cardiovascular disease (CVD) with these diets, and found that unhealthy plant-based diets can have a negative impact on the environment (requiring more fertilizer and cropland) and a higher risk of CVD compared with healthy plant-based diets, but less so than animal-based diets.²



Learn more about planetary health impacts of food: hsph.me/pla22



WHY LATE-NIGHT EATING MAY CAUSE WEIGHT GAIN

Researchers from Brigham and Women's Hospital looked at the timing of eating in relation to weight gain. Participants were placed on the same sleep and exercise schedules and prescribed identical diets; in the first phase they ate meals earlier in the day and in the second phase ate the same meals four hours later. Fat tissue samples were collected. Results showed that during the late-eating phases, participants reported greater hunger, had lower levels of the appetite-suppressing hormone leptin over 24 hours, and had decreased energy (calorie) needs during the day.³



Learn more about different approaches to meal timing: hsph.me/int22

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SPOTLIGHT ON LONGEVITY IN JAPAN

Japanese women and men currently live five to six years longer than Americans, so their practices are of great interest. Typically, in Japanese families, elders are highly revered and households are intergenerational. Japanese elders are generally healthier than Western elders, but is this the chicken or the egg? Does better health from good lifestyle habits allow them to stay physically active and involved in society so they remain a valuable asset and reap psychosocial benefits, or is it the culture that reveres elders so they have better mental health, less loneliness, and better healthcare so that they stay healthier longer? Japan has also largely avoided the epidemic of obesity that the U.S. is experiencing; for example, the prevalence of obesity among U.S. women is about 37% but among Japanese women is less than 5%.⁴ This difference is certainly an important contributor to differences in life expectancy, but raises questions about how the Japanese have been able to control their weight. In recent years, diets in Japan have become more similar to those in the U.S. but they still eat smaller portions, more fermented foods, less sweets, and less red meat.



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. The population of people over age 65 has grown more quickly than other age groups due to longer life spans and declining birth rates, and yet people are living more years in poor health.¹ Therefore, we will explore not just one's lifespan but healthspan, which promotes more healthy years of life.

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.² 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

FIVE KEY LIFESTYLE FACTORS

Healthy diet – The prevalence of hypertension (high blood pressure) and dementia increases with age. Eating patterns such as those from the DASH, MIND, and Mediterranean diets can lower the risk of these and other chronic conditions that accompany older ages.

Regular exercise – Regular physical activity lowers the risk of several chronic conditions that increase with age including heart disease, hypertension, diabetes, osteoporosis, certain cancers, and cognitive decline. Exercise also helps to lower anxiety and blood pressure, and improve sleep quality.

Healthy weight – Determining one’s healthy weight range is unique for each person. Factors to consider include reviewing current health conditions, family history, weight history, and genetically inherited body type. Rather than focusing on scale weight alone, monitoring an increase in visceral “belly fat” and weight change since age 20 may be useful.

Not smoking – Smoking is a strong risk factor for cancer, diabetes, cardiovascular disease, lung diseases, and earlier death as it promotes chronic inflammation and oxidative stress (a condition that can damage cells and tissues). Smoking harms nearly every organ of the body. Quitting greatly reduces the risk of these smoking-related diseases.

Avoid excessive drinking – Research finds that moderate drinking, defined as 1 drink daily for women and 2 drinks daily for men, is associated with lower risk of type 2 diabetes, heart attacks, and early death from cardiovascular disease. Low to moderate amounts of alcohol raise levels of “good” cholesterol or high-density lipoprotein (HDL) and prevent small blood clots that can block arteries. However, because alcohol intake—especially heavier drinking—is also associated with risks of addiction, liver disease, and several types of cancer, it is a complex issue that is best discussed with your physician to weigh your personal risk versus benefit.

contribute to not just a longer but also a healthier life.³ 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.

ADDITIONAL FACTORS

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:



- **Having life purpose/meaning.** Research shows that having a sense of meaning or purpose in daily life is associated with better sleep, healthier weight, higher physical activity levels, and lower inflammation in some people.^{5,6} It also promotes optimism. If people are healthier at older ages, they can potentially contribute more to their family, community, and society as a whole.¹ This translates to being stronger and more mobile to assist younger generations with childcare or other family activities, working beyond retirement age, volunteering for local causes, pursuing pleasurable hobbies, and engaging in community groups. In reciprocity of these activities, people reap a sense of meaning and purpose.
- **Social connections.** Studies of adults 50 years and older show that loneliness and social isolation are associated with a higher risk of disease, disability, and mortality.⁷⁻¹⁰ The U.S. Health and Retirement study comprised of 11,302 older participants found that almost 20% met criteria for loneliness.⁷ Those who experienced persistent loneliness had a 57% increased risk of early death compared with those who never experienced loneliness; those who were socially isolated had a 28% increased risk. Participants who experienced both loneliness and social isolation showed signs of advanced biological aging (e.g., chronic inflammation that can increase the risk of morbidities). Conversely, people experiencing

cognitive decline may have less social contact due to greater difficulty initiating and maintaining social interactions.¹¹

- **Intermittent fasting.** Animal research shows that caloric restriction over a lifetime, such as with intermittent fasting, increases lifespan.¹² The body responds to fasting with improved regulation of blood glucose, greater stress resistance, and decreased inflammation and production of damaging free radicals. During fasting, cells remove or

repair damaged molecules.¹² These effects may prevent the development of chronic disorders including obesity, diabetes, cardiovascular disease, cancer, and neurological decline including Alzheimer's disease.¹³ Other effects of intermittent fasting in animals include better balance and coordination, and improved cognition, specifically with memory. Human studies have found improved insulin sensitivity, lower blood pressure, decreased LDL cholesterol, and weight loss.^{12,14}

However, human studies and randomized controlled trials on the effects of fasting on aging and longevity are still needed.

- **Improving sleep quality.** Research is still inconclusive, but some reports suggest that insomnia is associated with higher rates of Alzheimer's disease (AD) and other forms of cognitive decline. Chronic disrupted sleep may lead to systemic (throughout the body) inflammation, which is a precursor to the development of beta-amyloid



HOW SENSORY CHANGES WITH AGING AFFECT HOW WE EAT

We know that taste is key when enjoying a meal, but what about the smell, texture, appearance, colorfulness, mouthfeel, and even the sound of food (how it crunches in the mouth or sizzles when cooking)?

These senses can decline over time for various reasons: normal aging, which causes a gradual decrease in taste and smell; prescription drugs that reduce taste sensitivity and promote dry mouth or lack of saliva; deficiencies in micronutrients such as zinc that reduce taste; and poor dentition with tooth loss or dentures leading to chewing problems.¹⁸ Up to 60% of adults 70 years and older may lose their sense of taste.²⁰ With this loss may come heavier seasoning of food with sugar and salt. They may prefer softer lower-fiber foods that don't require much chewing. Poor taste and smell in the elderly is associated with lower dietary quality and poorer appetite.²¹

Food aromas are important as they trigger the release of saliva, stomach acid, and enzymes in preparation for digestion.^{22,23} The scent of food can trigger the release of dopamine and serotonin, causing a feeling of wellbeing to encourage eating. An impaired sense of smell in older adults is also associated with less variety in food choices and poorer nutrition, but can also lead to increased food intake and weight gain in some individuals.²³

Seasoning food more liberally with sodium-free herbs, spices, and vinegars may help to compensate for sensory deficiencies. Using foods with a savory umami quality like mushrooms, tomatoes, some cheeses, and yeast can boost richness and flavor. Another sensory aspect of food called “kokumi” describes a full and rich mouthfeel—such as that experienced from a minestrone soup, an aged cheese, or a seafood stew simmering for many hours. If poor appetite from sensory loss is a problem, providing variety through different textures, smells, and colors in the meal may stimulate an increased desire to eat.²⁰

Eating and food preparation are also important activities offering socialization and mental stimulation such as when learning new cooking skills. Preparing meals helps to reduce sedentariness as there are several action steps involved: selecting and purchasing, washing and chopping, and cooking the ingredients.

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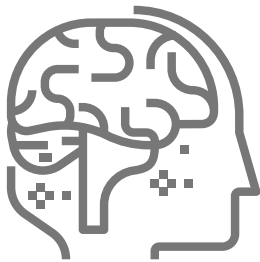
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plaques in the brain as found with AD.¹⁵ The reverse can also occur with advanced stages of AD causing disturbed circadian rhythms that regulate sleep. However, a cohort study of 1,629 adults aged 48 to 91 years from the Alzheimer’s Disease Neuroimaging Initiative did not find that sleep disturbance affected cognitive decline in later years.¹⁶

- **Brain stimulation.** Stressing the brain or doing activities that entail strenuous mental effort, such as learning a new skill, language, or exercise format may reduce the risk of cognitive decline. Research has shown a strong association of attaining higher education and engaging in work that is intellectually demanding with a lower risk of dementia, Alzheimer’s disease, and cognitive impairment.^{10,17}



LOOKING AHEAD

Identifying additional factors that improve and extend our healthspans is an active area of scientific inquiry. In the meantime, current research findings are encouraging, and underscore the importance of following healthy lifestyle habits throughout one’s life course. That said, sticking to these behaviors is easier said than done, and public policies must support and promote these habits by improving the food and physical environments that surround us.

Visit the full *Healthy Longevity* page on *The Nutrition Source* for regular updates on this popular research area: hsph.me/hlo22



MIND Diet

The Mediterranean-DASH Diet Intervention for Neurodegenerative Delay, or MIND diet, targets the health of the aging brain.

Dementia is the sixth leading cause of death in the U.S., driving many people to search for ways to prevent cognitive decline. Partially based on the Mediterranean and DASH diets, early research behind the MIND diet focused on whether it could directly prevent the onset or slow the progression of dementia. While all three diets highlight plant-based foods and limit the intake of animal and high saturated fat foods, the MIND diet recommends specific “brain healthy” foods to include, and unhealthy food items to limit.

The healthy items include: 3+ servings a day of whole grains; 1+ servings a day of vegetables (other than green leafy); 6+ servings a week of green leafy vegetables; 5+ servings a week of nuts; 4+ meals a week of beans; 2+ servings a week of berries; 2+ meals a week of poultry; 1+ meals a week of fish; and mainly olive oil if added fat is used.

Learn more about the MIND diet and available research on this dietary approach: hsph.me/mid22



The unhealthy items, which are higher in saturated and trans fat, include: Less than 5 servings a week of pastries and sweets; less than 4 servings a week of red meat (including beef, pork, lamb, and products made from these meats); less than one serving a week of cheese and fried foods; less than 1 tablespoon a day of butter/stick margarine.

RESEARCH HIGHLIGHT

The MIND diet contains foods rich in certain vitamins, carotenoids, and flavonoids that are believed to protect the brain by reducing oxidative stress and inflammation. Researchers found a 53% lower rate of Alzheimer’s disease for those with the highest MIND scores. Even those participants who had moderate MIND scores showed a 35% lower rate compared with those with the lowest MIND scores.²⁴ The results didn’t change even after adjusting for factors associated with dementia, supporting the conclusion that the MIND diet was associated with the preservation of cognitive function. More research needs to be done to extend the MIND studies in other populations, and clinical trials are ongoing to prove that the MIND diet reduces cognitive decline that occurs with aging.

A Closer Look at “Clean” Eating

Once just a buzzword, clean eating is now a popular approach. But what it means will depend on who you ask.

The terms clean eating and clean diets are not federally regulated in the U.S., so interpretation by consumers and the marketing of “clean” products by the food industry can vary widely. Generally, clean eating is assumed to refer to foods that are as close to their natural state as possible, maybe organic, and most likely with minimal use of any chemical additives and preservatives. A clean diet may include whole fruits, vegetables, lean proteins, whole grains, and healthy fats while limiting highly processed snacks and other packaged foods with added sugar

and salt. It may also be associated with terms like plant-based, grass-fed, sugar-free, or gluten-free. In summary, clean eating seemingly promotes health and wellness.

The concept is popular among younger consumers active with social media, which is the prime platform for celebrities, bloggers, and other high-profile personalities who chronicle their clean eating meals and recipes. A survey of more than 1,200 participants ages 14-24 years found that 55% were familiar with the term clean eating from social media, other online sources, or their peers.¹

A DARKER SIDE TO CLEAN EATING

It is important to emphasize that it is not harmful to enjoy and seek out healthful foods and recipes. Our society praises and promotes healthy behaviors because of high rates of obesity and other chronic diseases.

Changing dietary habits to reduce the risk of these diseases can feel empowering, because other factors like family history and genetic predisposition cannot be changed. A healthy lifestyle can protect from developing chronic conditions that might otherwise mean hospital visits and bills, which causes anxiety and stress.

Clean eating can take on a different meaning when it introduces unrealistic expectations. In a survey of teenagers and young adults, though 71% defined clean eating as a healthy positive approach, a small percentage felt it was unhealthy due to its restrictive nature.¹ Because of its strong association with health, clean eating was viewed favorably according to another survey of college students even though it produced emotional distress (experiencing negative emotions if not able to follow the diet) and functional impairment (having a rigid eating schedule, ignoring natural hunger cues to eat more or less than is scheduled, interference with school work).³ Some clean diets advise eliminating groups of foods like

A recent poll of U.S. consumers found that nearly half of those surveyed considered themselves to be clean eaters. When asked what that meant, respondents ranked “eating foods that aren’t highly processed,” as the top definition, followed by “eating fresh produce,” “eating organic foods,” and “eating foods with a simple ingredients list” as the most cited definitions.²



dairy, wheat, or refined sugars. The term “clean” also suggests that not following this pattern is “dirty,” which encourages food restrictions and a preoccupation with healthy eating.¹

Although clean eating is not always focused on weight loss, it can mask symptoms of an eating disorder. When food restrictions are taken to an extreme to be “healthy,” clean eating can have negative health consequences that mirror those of eating disorders like anorexia nervosa, such as osteoporosis, amenorrhea, difficulty concentrating, and depression.³

WHAT IS ORTHOREXIA?

Orthorexia nervosa (ON) is a term coined in 1997 by physician Steven Bratman, though it is not yet a diagnosis in the Diagnostic and Statistical Manual of Mental Disorders. Currently there is no universally shared definition of ON and the diagnostic criteria is debatable. It is a condition that exhibits extreme preoccupation with healthy eating, with a goal of trying to achieve dietary “purity” but which leads to distress, anxiety, or obsessive-compulsiveness. Whereas a condition like anorexia nervosa is centered on weight loss, ON is centered on a healthy diet. Some researchers believe that ON is an extreme variant of clean eating. It is the pursuit of control with clean eating and restraint from eating (whether it be amounts or certain types of foods) that can crossover from healthy eating behaviors into ON.

The most common warning signs of ON include experiencing anxiety

Learn more about clean eating and differentiating normal health-promoting behaviors from orthorexia nervosa: hsph.me/cle22

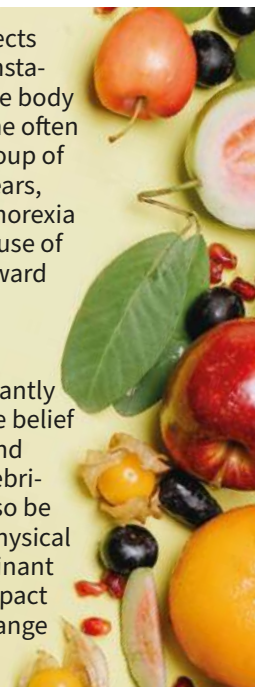


the_instagram_effect



Some research has shown potential negative effects for frequent users of the social media platform Instagram, including anxiety, depression, and negative body image due to social comparison when viewing the often picture-perfect images. One study surveyed a group of young men and women with a mean age of 25 years, using a validated questionnaire to screen for orthorexia nervosa. The results showed that the higher the use of Instagram reported, the greater the tendency toward orthorexia nervosa, with a prevalence of 49%.⁴

The authors observed that if users follow mostly health and food-related accounts, they are constantly exposed to these ideas, potentially leading to the belief that extremes of healthy behaviors are normal and feeling increased pressure to emulate them. Celebrities and other social media “influencers” may also be perceived as authorities on health due to their physical appearance (which typically conforms with dominant societal beauty ideals), and can have a strong impact on their followers’ decisions and increasingly change their behaviors related to food choices and diet.⁵



2,063 views

the_instagram_effect #CleanEating and social media

around food, and impaired functioning that disrupts daily life. This may mean avoiding social events involving food because one cannot eat what is offered. ON often restricts certain foods and nutrients, which may lead to an imbalanced diet. Because it wears a mask of health and wellness, it is not easily recognized as problematic.

FUTURE DIRECTIONS

There are proposals for the Food and Drug Administration to provide clear industry guidance and enforce labeling laws to police deceptive “clean” labeling claims on food products.⁶ This may in turn help to reduce the use of unsupported health claims and protect vulnerable individuals such as those with disordered eating patterns.

BOTTOM LINE

Clean eating can be a concept that promotes health and wellness by encouraging the selection of minimally processed fruits, vegetables, whole grains, healthy proteins, and healthy fats. However, it is an unregulated term, so the interpretation of what defines clean eating can vary widely, both among individuals and within the food industry that markets “clean” food products. Clean eating taken to an extreme has been associated with an increased risk of disordered eating patterns, such as orthorexia nervosa. If you feel increased anxiety around food and eating, avoid situations involving food, or have a preoccupation with food that interferes with daily activities, seek help from your doctor, a counselor, or a registered dietitian.

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Unprocessed or minimally processed foods: Unprocessed foods include the natural edible food parts of plants and animals. Minimally processed foods have been slightly altered for the main purpose of preservation but which does not substantially change the nutritional content of the food. Examples include cleaning and removing inedible or unwanted parts, grinding, refrigeration, pasteurization, fermentation, freezing, and vacuum-packaging. This allows the food to be stored for a greater amount of time and remain safe to eat. Many fresh fruits, vegetables, whole grains, nuts, meats, and milk fall into this category.



Processed culinary ingredients: Food ingredients derived from a minimally processed food by pressing, refining, grinding, or milling. They are typically not eaten on their own but used to prepare minimally processed meals. Examples include oils from plants, seeds, and nuts, or flour and pastas formed from whole grains.

Processed Foods and Health

Breaking down the spectrum of processed foods and their health impacts.

Often referred to as convenience or pre-prepared foods, processed foods are suggested to be a contributor to the obesity epidemic and rising prevalence of chronic diseases like heart disease and diabetes. However, the definition of a processed food varies widely depending on the source. The U.S. Department of Agriculture defines a processed food as one that has undergone any changes to its natural state. According to these standards, virtually all foods sold in the supermarket would be classified as “processed” to some degree. Because food begins to deteriorate and lose nutrients as soon as it is harvested, even the apples in the produce aisle undergo four or more processing steps before being sold to the consumer. That’s why in practice, it’s helpful to differentiate between the various degrees of food processing. A popular system to clas-

sify processed foods was introduced in 2009, called the NOVA classification. It lists four categories (featured in the graphic above) based on the degree to which a food is processed.¹

IS PROCESSED FOOD UNHEALTHY?

There’s no doubt that at least some processed foods are found in most people’s kitchens. They can be time-savers when preparing meals, and some processed and fortified foods provide important nutrients that may not otherwise be obtained in a busy household or one that has a limited food budget. From a nutritional standpoint, processed and even ultra-processed foods can provide key nutrients. Some nutrients like protein are naturally retained throughout processing, and others like B vitamins and iron may be added back if they are lost during processing. Fruits and vegetables that are quickly frozen after harvesting can retain the majority of vitamin C.

Processing by certain methods like pasteurization, cooking, and drying can destroy or inhibit the growth of

harmful bacteria. Additives such as emulsifiers preserve the texture of foods, such as preventing peanut butter from separating into solid and liquid parts. Other functions of processing include delaying the spoilage of food; preserving desirable sensory qualities of food (flavor, texture, aroma, appearance); and increasing convenience in preparing a complete meal.

But food processing also has drawbacks. Depending on the degree of processing, many nutrients can be destroyed or removed. Peeling outer layers of fruits, vegetables, and whole





Processed foods: Foods from either of the two previous groups that have added salt, sugar, or fats. Some canned fruits and vegetables, some cheeses, freshly made bread, and canned fish are examples. These foods usually are made from at least 2-3 ingredients and can be readily eaten without further preparation.

Ultra-processed foods: Also commonly referred to as “highly processed foods,” these are foods from the prior group that go beyond the incorporation of salt, sweeteners, or fat to include artificial colors and flavors and preservatives that promote shelf stability, preserve texture, and increase palatability. Several processing steps using multiple ingredients comprise the ultra-processed food. They are typically ready-to-eat with minimal additional preparation. Not all but some of these foods tend to be low in fiber and nutrients. Examples are sugary drinks, cookies, some crackers, chips, and breakfast cereals, some frozen dinners, and lunch meats.



grains may remove plant nutrients (phytochemicals) and fiber. Heating or drying foods can destroy certain vitamins and minerals. Although food manufacturers can add back some of the nutrients lost, it is impossible to recreate the food in its original form. Ingredients used widely in the production of highly/ultra-processed foods such as saturated fats, added sugar, and sodium have become markers of poor diet quality due to their effect on heart disease, obesity, and high blood pressure.^{2,3} It is estimated that ultra-processed foods contribute about 90% of the total calories obtained from added sugars.⁴

If you are deciding whether to include a highly processed food in

your diet, it may be useful to evaluate its nutritional content and long-term effects on health. An ultra-processed food that contains an unevenly high ratio of calories to nutrients may be considered unhealthy. For example, research supports an association between a high intake of sugar-sweetened beverages and an increased risk of obesity, diabetes, and heart disease. But some processed foods (e.g., olive oil, rolled oats) and even ultra-processed foods (e.g., some yogurts, some breakfast cereals) that contain beneficial nutrients have been linked with lower rates of these chronic diseases.

BOTTOM LINE

Food processing is a spectrum that ranges from basic technologies like freezing or milling, to the incorporation of additives that promote shelf stability or increase palatability. As a general rule, emphasizing unprocessed or minimally processed foods in the daily diet is optimal. That said, the use of processed foods is the choice of the consumer, and there are pros and cons that come with each type. The Nutrition Facts Label and ingredients list can be useful tools in

DO ULTRA-PROCESSED FOODS CAUSE PEOPLE TO EAT MORE?



More research is needed, but in one study, ten men and ten women were randomized to receive either an ultra-processed or unprocessed diet for 14 days, followed by 14 more days of the alternate diet. The diets were relatively equal in calories and nutrients, and participants were allowed to eat as much or as little as they liked. The study found that participants ate about 500 calories more on the ultra-processed diet and also gained weight (about 2 pounds). Most of the extra calories came from carbohydrate and fats, and the diet also increased sodium intake. When the participants changed to the unprocessed diet, they ate fewer calories and lost the weight. According to appetite surveys, the diets did not differ in levels of hunger, fullness, and satisfaction, though participants tended to eat faster on the ultra-processed diet.⁵

deciding when to include a processed food in the diet. There is evidence showing an association with certain types of food processing and poor health outcomes (especially highly- or ultra-processed foods).⁶ This association applies mainly to ultra-processed foods that contain added sugars, excess sodium, and unhealthy fats.

Access more research on food processing and health, and learn strategies for minimizing ultra-processed foods: hsph.me/pro22





The Science of Snacking

Although snacks are often labeled problematic, they can also be a part of a healthy diet.

Snacks have been associated with both weight gain and maintaining weight, as well as with a lower or higher diet quality.^{1,2} Although snacks can be a regular and important part of a healthy diet, they can also lead to health problems. What differentiates the two scenarios is one's snacking behavior: what you snack on, why you snack, frequency of snacking, and how snacks fit into your overall eating plan.

THE PROS AND CONS OF SNACKS

Research has attempted to see if snacking has a positive or negative impact on nutrition and health outcomes—but without a clear answer.³ This may be because of a lack of a common scientific definition of what is a snack. Studies find that snacking recommendations from public health organizations worldwide generally advise limiting snacks that offer little nutrition but are high in saturated fat, sugar, and sodium; they find that snacks provide at least 10% of daily calories, with a

frequency of eating about two snacks per day.^{3,4} The Dietary Guidelines for Americans 2020-2025 includes recommendations for nutrient-dense snacks, such as raw vegetables, fresh fruit, nuts, and plain yogurt.

Benefits

- Provides a boost of energy if several hours pass between meals and blood glucose levels drop.
- Helps curb your appetite to prevent overeating at the next meal.
- Provides extra nutrients when choosing certain snacks like fresh fruit or nuts.
- Can help maintain adequate nutrition if one has a poor appetite but cannot eat full meals, such as due to an illness.

Pitfalls

- Unwanted weight gain if portions or frequency of snacking is too much, adding excess calories.
- Too much snacking can reduce hunger at meal times or cause one to skip a meal entirely, which increases the risk of losing out on important nutrients.
- Regular intake of ultra-processed snacks that contain added salt, sugar, and fats but that are low in nutrients and high in calories can increase a preference for these types of foods, leading to a change

in eating behaviors and diet quality (e.g., a higher intake of hyperpalatable snacks along with a decreased intake of healthful foods).

SNACK FACTORS

We know that snacks are meant to be satisfying small bites between meals. But some studies show that snacking can lead to weight gain.² Although eating too many snacks may be the obvious reason, there are several subtle factors that can feed this occurrence.^{4,5}

- **The size of snack packages has increased over the years, which directly influences total calorie intake.** In other words, people tend to eat more of a snack food simply because of the larger size of the package.
- **Snack portion sizes can be misleading.** The actual serving size of a snack is often surprising. For example, you may purchase a small package of trail mix or chips thinking that it contains one serving; however, closer viewing of

Learn more about snacking trends and the growing research behind why and how people snack:
hsph.me/snk22



the Nutrition Facts panel reveals that the package actually contains 2-3 servings—meaning that the calories must be doubled or tripled if consuming the entire package.

- **The wide variety of snacks offered can lead to eating more.** Some research has shown that the greater the variety of foods available, the more one eats. This has been referred to as the “variety effect.” Just as a greater variety can increase the risk of more food eaten, the reverse is true in which the palatability and


desire for food decreases when eating the same foods repetitively. Because there is such an abundance of snack options today with various flavor combinations of fat, sugar, salt, and spiciness, the risk of overeating snacks increases.


- **Snacks are often eaten while engaging in screen time** (watching television, playing video games, working on a computer). This behavior leads to distraction so that one loses awareness of how much, and sometimes what, is eaten.






- **Eating with others can encourage more snacking.** Studies show that individuals who eat with someone who consumes a large portion of snacks also tend to eat more. Simply being aware of these factors can help reduce the chances of snack overload. Use mindfulness strategies such as being intentional about choices, savoring small bites and chewing thoroughly, eating slowly, and using the senses to fully appreciate the colors, textures, and tastes of snacks.

POWER SNACKING


The concept of meal planning can be applied to snacks. Take the time to plan to ensure that snacks work for you, not against you. Follow these four steps and ask yourself:

 **WHEN:** Reflect on a typical day: what hours of the day between meals might you feel hungry or tend to grab extra food?

 **WHY:** If snacking occurs frequently, determine if you are truly hungry or eating because of an emotion (bored, stressed, tired, angry, etc.). If you are hungry, go to the next step. If you realize you are eating from emotion, consider using mindfulness strategies before snacking.






WHAT: Decide which snack choices will satisfy you. A satisfying snack will alleviate hunger, be enjoyable, and help you to forget about food until your next meal! Think about the last snack you ate—did you still feel hungry or want to keep eating shortly after finishing one portion of the snack? Studies show that snacking on whole foods containing protein, fiber, and whole grains (e.g., nuts, yogurt, popcorn) enhance satisfaction.⁵ But it’s also important to pause before making a snack choice to consider what will truly satisfy: if you choose an apple when you really want salty popcorn or a creamy yogurt, you may feel unsatisfied and want more. If you do not have a specific craving but are trying to quiet hunger, choose a snack that is high in fiber and water that will fill your stomach quickly. Consider these nutritious snack choices depending on your preference:

- **Crunchy**—raw vegetable sticks, nuts, seeds, whole grain crackers, apple
- **Creamy**—cottage cheese, yogurt, hummus, avocado
- **Sweet**—chopped fresh fruit, dark chocolate
- **Savory/Salty**—cube or slice of cheese, roasted chickpeas, handful of nuts, nut butter

 **HOW MUCH:** A snack portion should be enough to satisfy but not so much that it interferes with your appetite for a meal or adds too many calories. A general rule of thumb is to aim for about 150-250 calories per snack. This is equivalent to an apple with a tablespoon of peanut butter, or a string cheese with 6 whole grain crackers. If choosing a packaged snack, read the Nutrition Facts panel to learn what is one serving, found at the top of the panel.

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Chia Seeds

Often referred to as a “superfood,” learn more about these highly versatile seeds which are also a complete protein.

“Ch-ch-ch-chia” may be a familiar jingle if you grew up during the 1980s. Little did we know that those popular ceramic pets sprouting grass “hair” were a foretelling of the even greater success their seeds would have in edible form years later. Despite their relatively recent popularity in the U.S., chia seeds were cultivated as early as 3500 BC from the plant *Salvia hispanica* L., and were at one time a major food crop in Mexico and Guatemala.

Chia seeds are often referred to as a “superfood” or functional food—unregulated terms more useful in the marketing sphere than by nutrition experts who understand that there is no magic bullet or replacement for a healthful dietary pattern that relies on a variety of nutritious foods. Indeed, health claims about chia seeds abound, but how does the research stack up?

CHIA SEEDS AND HEALTH

Chia seeds contain several components that, when eaten as part of a balanced plant-rich diet, may prevent the development of various chronic diseases. Of particular interest by researchers is their high content of alpha-linolenic (ALA) fatty acids. Sixty percent of the oil in chia seeds is from these omega-3 fatty acids. However, available research has been more favorable towards a diet containing omega-3-rich foods rather than on chia seeds alone.

In animal and human studies, omega-3 fatty acids have shown a beneficial effect on cardiovascular health (lowering cholesterol, regulating heart rhythms and blood pressure, preventing blood clots, decreasing inflammation). The fiber in chia seeds is mainly soluble fiber and mucilage, the substance

responsible for the gluey texture of moistened chia seeds. These fibers may help to lower LDL cholesterol and slow down digestion, which can prevent blood sugar spikes after eating a meal and promote a feeling of fullness.

A large Chinese cohort of more than 63,000 individuals found that those with the highest intakes of omega-3 fatty acids from seafood and plant sources had a 17% reduced risk of cardiovascular mortality compared with those who had the lowest intakes.¹ Few cohort studies include ALA plant sources of omega-3, but these oils are fairly common in the Asian diet. The Nurses’ Health Study found a 40% reduced risk of sudden cardiac death in women who ate the highest amounts of ALA.² The Cardiovascular Health Study cohort with more than 5000 men and women, ages 65 years and older, found a 50% lower risk of fatal ischemic heart disease with higher intakes of ALA.³

Learn more about chia seeds and explore other interesting food features, including apples, avocados, kale, oats, and quinoa: hsph.me/chi22



DID YOU KNOW?

Chia seeds come in black and white varieties, but there is no difference in nutritional content.

Two tablespoons of chia seeds (1 ounce or 28 grams) contain about 140 calories, 4 grams of protein, 11 grams of fiber, 7 grams of unsaturated fat, 18% RDA for calcium, and trace minerals including zinc and copper.

They are the richest plant source of omega-3 fatty acids. Chia seeds are a complete protein, containing all nine essential amino acids that cannot be made by the body.

Food sources of ALA in these studies included whole grains, cooking oils, legumes, and soy.

Animal studies have shown that chia seeds can beneficially affect cholesterol levels, weight loss, and increased satiety.⁴ However, literature reviews and controlled trials in humans have not shown a specific benefit of chia seeds on cardiovascular risk factors including body weight, blood pressure, lipid levels, blood sugar, and inflammation.^{4,6} These findings affirm that chia seeds do not act alone to benefit human health but may contribute to disease prevention when incorporated as part of a varied plant-rich diet and other healthy lifestyle behaviors.

IDEAS FOR USING CHIA SEEDS

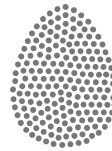
If purchasing chia seeds, remember to store them in a cool, dry spot. They can last up to 4-5 years without refrigeration!

People often wonder if chia seeds should be eaten ground instead of whole. The surface of chia seeds is delicate and easily breaks apart when exposed to moisture, so they are typically prepared with liquid foods. In this way, they are absorbed and di-

gested well in their whole form, unlike flax seeds.

Chia seeds are a highly versatile ingredient. They have little if any distinctive flavor, so they don't compete with other flavors in a dish. They also soften in the presence of liquid and become a less detectable texture. Commercially, they are added to cereals, crackers, beverages, breads, and other baked goods to boost their nutritional value. At home, easy ways to incorporate chia seeds include stirring into salad dressings, sauces, and marinades, or simply sprinkling a few teaspoons into breakfast cereal, oatmeal, soups, or stews. Basically, chia seeds can be added as long as there is moisture to hold the seed in place. Here are some other ideas for using chia seeds:

Egg replacer: This may be used to replace whole eggs in baking. For 1 whole egg, mix 1 tablespoon of whole chia seeds or 2 teaspoons ground chia seeds with 3 tablespoons water. Allow to sit for at least 5 minutes or until the mixture thickens to the consistency of a raw scrambled egg.



Chia sprouts: Place chia seeds in a single layer (use only about a teaspoon to allow enough space to grow) in a terracotta saucer or unglazed clay dish. Spray the seeds lightly with fresh, clean water several times and cover with plastic wrap or a clear glass dish. Put in a sunny spot. Spray morning and evening until green sprouts appear, about 3-7 days. Use these microgreens to garnish salads and sandwiches.

TRY IT AT HOME



Chia seeds absorb liquid quickly (and up to 10 times their weight!), resulting in a gel or pudding consistency. This base is perfect for layering with your favorite flavors and ingredients to create a tasty parfait. For a portable breakfast, prep these in a jar with a lid the night before and store in the refrigerator.

For the base: Place ¼ cup seeds in 1 cup liquid such as milk (almond, oat, soy, or dairy all work well), stir well, and cover. Allow to sit for about 15-20 minutes until the texture changes to a soft gelatin.

For toppings: Mix in berries or other bite-size pieces of fruit for sweetness; add nuts or granola for a satisfying crunch; top with a sprinkle of cinnamon or some chopped mint.



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Spotlight on Oral Health



Maintaining oral health is essential to our well-being and quality of life.

“There is no health without oral health.” You may have heard this statement but what does it mean? The health of our mouth, or oral health, is more important than many of us may realize. It is a key indicator of overall health, which is essential to our well-being and quality of life.

Although preventable to a great extent, untreated tooth decay (or cavities) is the most common health condition worldwide. When we think about the potential consequences of untreated oral diseases including pain, reduced quality of life, lost school days, disruption to family life, and decreased work productivity, making sure our mouths stay healthy is incredibly important.¹

WHAT IS A HEALTHY MOUTH?

The mouth, also called the oral cavity, starts at the lips and ends at the throat. A healthy mouth and well-functioning teeth are important at all stages of life since they support human functions like breathing,

speaking, and eating. In a healthy mouth, tissues are moist, odor-free, and pain-free. When we talk about a healthy mouth, we are not just talking about the teeth but also the gingival tissue (or gums) and the supporting bone, known together as the periodontium. The gingiva may vary in color from coral pink to heavily pigmented and vary in pattern and color between different people. Healthy gingiva is firm, not red or swollen, and does not bleed when brushed or flossed. A healthy mouth has no untreated tooth decay and no evidence of lumps, ulcers, or unusual color on or under the tongue, cheeks, or gums. Teeth should not be wiggly but firmly attached to the gingiva and bone. It should not hurt to chew or brush your teeth.

Throughout life, teeth and oral tissues are exposed to many environmental factors that may lead to disease and/or tooth loss. The most common oral diseases are tooth decay and periodontal disease. Good oral hygiene and regular visits to the dentist, combined with a healthy lifestyle and avoiding risks like excess sugar and smoking, help to avoid these two diseases.

ORAL HEALTH AND NUTRITION

Just like a healthy body, a healthy smile depends on good nutrition. A balanced diet with adequate nutrients is essential for a healthy mouth and in turn, a healthy mouth supports nutritional well-being. Food choices and eating habits are important in preventing tooth decay and gingival disease.

Minerals like calcium and phosphorus contribute to dental health by protecting and rebuilding tooth enamel.² Enamel is the hard outer protective layer of the tooth (fun fact: enamel is the hardest substance in the human body). Eating foods high in calcium and other nutrients such as cheese, milk, plain yogurt, calcium-fortified tofu, leafy greens, and almonds may help tooth health.² Protein-rich foods like meat, poultry, fish, milk and eggs are great sources of phosphorus.

When it comes to a healthy smile, fruits and vegetables are also good choices since they are high in water and fiber, which balance the sugars they hold and help to clean the teeth.² These foods also help stimulate saliva, which helps to wash away acids and food from teeth, both neutralizing acid and protecting teeth from decay. Many fruits and vegetables also have vitamins like vitamin C, which is important for healthy gingiva and healing, and vitamin A, another key nutrient in building tooth enamel.²

Water is the clear winner as the best drink for your teeth—particu-



larly fluoridated water. It helps keep your mouth clean and helps fight dry mouth. Fluoride is needed regularly throughout life to protect teeth against tooth decay.³ Drinking water with fluoride is one of the easiest and most beneficial things you can do to help prevent cavities.

Nutrition and oral health are closely related. Dental pain or missing teeth can lead to difficulty chewing or swallowing food which negatively affects nutrition. This may mean eating fewer meals or meals with lower nutritional value due to impaired oral health and increased risk of malnutrition. On the other hand, lack of proper nutrients can also negatively affect the development of the oral cavity, the progression of oral diseases and result in poor healing.⁴ In this way, nutrition affects oral health, and oral health affects nutrition.

Nutrition is a major factor in infection and inflammation.⁴ Inflammation is part of the body's process of fighting against things that harm it, like infections and injuries. Although inflammation is a natural part of the body's immune response to protect and heal the body, it can be harmful if it becomes unbalanced. In this way inflammation is a dominant factor in many chronic diseases. Periodontal diseases and obesity are risk factors involved in the onset and progression of chronic inflammation and its consequences.⁵

GENERAL HEALTH IMPLICATIONS

While it may appear that oral diseases only affect the mouth, their consequences can affect the rest of the body as well. There is a proven

relationship between oral and general health. Many health conditions may increase the risk of oral diseases, and poor oral health can negatively affect many general health conditions and the management of those conditions.

One example is infective endocarditis (IE), an infection of the inner lining of the heart muscle, which can be caused by bacteria that live on teeth.⁶ Gingivitis and periodontitis are inflammatory diseases of the gingiva and supporting structures of the teeth caused by specific bacteria. There is evidence that the surface of inflamed tissue around teeth is the point of entry for the specific bacteria that cause as much as 50% of the IE cases in the U.S. annually. This means that improving oral hygiene may help in reducing the risk of developing IE. In addition, periodontal disease may be associated with heart disease and shares risk factors including tobacco use, poorly controlled diabetes, and stress.^{7,8}

Certain conditions may also affect your oral health, such as unchecked stress and anxiety. Stress creates a hormone in the body called cortisol. Spikes in this hormone can weaken the immune system and increase susceptibility to developing periodontal disease. Evidence has shown that stress reduces the flow of saliva which in turn can contribute to dental plaque formation.⁹ Certain medications like antidepressants and anti-anxiety medications can also cause dry mouth, increasing risk of tooth decay. Additionally, stress may contribute to teeth grinding (or bruxism), clenching, cold sores, and canker sores.

IS CARBONATED WATER A HEALTHY CHOICE FOR MY TEETH?



According to available research, carbonated or “sparkling” water, although slightly more acidic than regular water, is generally fine for your teeth.² While it is great to replace soda with carbonated water, it should not be used as a replacement for water with fluoride. However, not all carbonated waters are created equal. Citrus-flavored waters may have higher acid levels, increasing the risk of damage to tooth enamel. A good way to help protect your teeth is to drink these in one sitting or with meals. If you prefer drinking it without food, another option is to use a straw to help the water bypass your teeth. Remember, sparkling waters that have added sugar are sugar-sweetened beverages, which increase your risk of developing tooth decay and other chronic diseases.

SHOULD I BRUSH MY TEETH EVERY TIME I EAT SOMETHING SUGARY?



What you eat and how often you eat can affect your teeth. Plaque is a sticky film of bacteria that forms on teeth and, unless removed daily, this plaque builds up. Plaque bacteria use sugar from things you eat and drink to make acid that attacks tooth enamel. This “acid attack” can last up to 20 minutes even after you’ve finished eating or drinking. This is why snacking all day or sipping a sugary drink for a long period of time can lead to tooth decay. Excess intake of added sugars leads not only to tooth decay but is also associated with other health problems, including obesity, diabetes, and cardiovascular diseases.¹⁰ Although you may not be adding that much sugar to your food, you can still be eating more sugar than you realize. This is because added sugars are often hidden. Learning about where sugar may be hiding and how to identify these added sugars can help you win this game of hide and seek.



Learn more about the connections between oral health and general health, including implications for prenatal care and pregnancy; as well as oral health considerations for osteoporosis and Paget’s Disease: hsph.me/orl22



A HEALTHY, PAIN-FREE MOUTH CAN LEAD TO A BETTER STATE OF MIND!

Positive oral health can enhance mental and overall health, while neglect of oral health can negatively impact an individual's self-image and self-esteem. Poor oral health may also affect speech, which can cause or contribute to social anxiety. In this way, regular dental exams and professional cleaning not only help support positive oral health but are also vital to overall well-being and good mental health as well.

EATING CONCERNS - WHAT TO EAT IF YOU HAVE...

- **Braces and orthodontic treatments.** Depending on the type of orthodontic treatment, your braces may have brackets, bands, and wires. In this case, it is important to avoid eating hard or sticky food. This includes things like nuts, popcorn, hard candy or gum, which could break or displace parts of your orthodontics and potentially delay your treatment. Enjoying pasta, soft veggies, fruits, and dairy products are good choices. Having good oral hygiene is key in making sure tooth decay do not form around the braces. This means making sure the teeth and braces are thoroughly cleaned of food debris so that plaque does not accumulate. Allowing plaque to build-up can cause white spots on the surfaces of the teeth. You can ask your dentist for tips on how to maintain good oral hygiene. If you have clear trays or aligners that are removable, you should always remove your trays before eating or drinking any liquid other than water. Regardless of whether food is hard or soft, removing your tray before eating helps to ensure effectiveness of your treatment.
- **Dentures.** If you wear dentures, adjusting to what and how you eat

can be a major challenge. When you first get dentures, your mouth and tissue need time to adjust to chewing and biting. Starting with soft foods like soups, smoothies, and applesauce for your first few meals can help make the transition more comfortable. Be mindful of hot dishes and drinks as it can sometimes be difficult to gauge the temperature of your food. After a couple of days, you can move onto more solid foods as your mouth begins to adjust to the dentures. Take care to avoid hard or sticky food and tough meats which could break or damage your dentures. Denture-friendly foods include slow-cooked or ground meats, cooked fish, ripe fruits, and cooked vegetables. A good tip is that if you can cut the food with a fork, chances are the food will not damage your dentures.

- **Dry mouth.** Dry mouth or xerostomia can make it difficult to talk, chew, and swallow food. Symptoms of dry mouth may include increased thirst, sore mouth and tongue, difficulty swallowing and talking, and changes in taste.¹¹ If you are experiencing a dry mouth, it is important to talk to your oral health care provider (as well as primary care provider) to better understand the potential causes and management. Regardless of

the cause, you have lots of options for making it easier to eat. First, ensure that you drink plenty of fluids and sip cold water between meals. Chew your food well if you're having trouble swallowing and only take small bites. Combining solid foods with liquid foods such as yogurt, gravy, sauces, or milk can also help. You want to avoid foods that are acidic, hot, or spicy as these may irritate your mouth further. Good oral care also plays a key role in alleviating dry mouth and preventing tooth decay, which is a common oral complication of dry mouth.



BOTTOM LINE

There is no health without oral health. As growing research and studies reveal the link between oral health and overall health, it becomes more evident that taking care of your teeth isn't just about having a nice smile and pleasant breath. Studies show that poor oral health is linked to heart disease, diabetes, pregnancy complications, and more, while positive oral health can enhance both mental and overall health. Good oral hygiene and regular visits to the dentist, combined with a healthy lifestyle and avoiding risks like excess sugar and smoking, help to keep your smile and body healthy.

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ORAL HEALTH TIPS

Some actions you can take to support good oral health:¹²

- 🦷 Drink fluoridated water and brush with fluoride toothpaste.
- 🦷 Practice good oral hygiene. Brush teeth thoroughly twice a day and floss daily between the teeth to remove dental plaque.
- 🦷 Visit your dentist at least once a year (the average person should go twice a year), even if you have no natural teeth or have dentures.
- 🦷 Do not use any tobacco products. If you smoke, seek resources to help you quit.
- 🦷 Limit alcoholic drinks. Some alcoholic beverages can be very acidic, resulting in erosion of tooth enamel, and those with a high alcohol content can lead to dry mouth. Also be mindful of drink mixers, many of which are high in sugar and can increase the risk of tooth decay.
- 🦷 If you have diabetes, work to support control of the disease. This will decrease the risk for other complications, including gum disease. Treating gum disease may help lower your blood sugar level.
- 🦷 If your medication causes dry mouth, discuss other medication options with your doctor that may not cause this condition. If dry mouth cannot be avoided, drink plenty of water, chew sugarless gum, and avoid tobacco products and alcohol. Your oral health care provider may be able to recommend over-the-counter or prescription medications to improve your dry mouth as well.
- 🦷 See your doctor or a dentist if you experience sudden changes in taste and smell.
- 🦷 When acting as a caregiver, help those who are not able to brush and floss their teeth independently.
- 🦷 Chew sugar-free xylitol gum between meals and/or when you are unable to brush after a meal.



Fluoride

A trace mineral most recognized for its role in preventing dental caries.

Fluoride is a trace mineral naturally found in small amounts in a variety of foods. Brewed black tea and coffee naturally contain fluoride as the plants absorb the mineral in soil. Shellfish may contain fluoride that collects in their shells and muscles. However, people obtain most fluoride from fluoridated water and toothpastes.

It is most recognized for its role in preventing and reversing dental caries and building strong teeth and bones. Most fluoride is absorbed in the gut and stored in bones and teeth. Unabsorbed fluoride is excreted in urine. Children absorb fluoride more efficiently than adults, as their teeth and bones are rapidly forming.

RECOMMENDED AMOUNTS

There is not a Recommended Dietary Allowance for fluoride as nutritional requirements have not been established. However, adequate intakes have been established for adults 19+ years at 4 mg a day for men and 3 mg for women. For women who are pregnant or lactating, the AI is 3 mg. The Tolerable Upper Intake Level (UL) for fluoride for all adults 19+ years of age and pregnant and lactating women is 10 mg daily; a UL is the maximum daily intake unlikely to cause harmful effects on health.

Learn more about the research on fluoride and health, as well as discussions around fluoridated water: hsph.me/flu22





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?

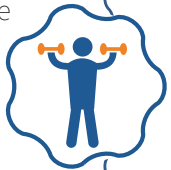
TYPES OF EXERCISE

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).





WHAT'S THE DIFFERENCE BETWEEN MUSCLE PAIN AND MUSCLE SORENESS?

It is normal and healthy to feel moderately sore muscles the day after a vigorous workout. The soreness is usually noted in the general area of the body that was used while exercising. This is caused by the accumulation of lactic acid as well as small tears in muscle fibers that become inflamed; after 48 hours the lactic acid begins to disperse and muscle tissue is repaired so the soreness should lessen. Although you may not want to move at all when experiencing muscle soreness, this can actually delay healing. Doing light movements like walking or stretching can increase blood flow and circulation, speeding healing time. On the other hand, sharp pain in a specific area that starts during the workout or soon after could be a sign of a more serious injury. See a doctor if the pain does not lessen in a day or two or you notice swelling or bruising around the painful area.



Visit the full staying active section on The Nutrition Source for activity ideas, exercise tips, and safety reminders: hsph.me/sa22

2022 RESEARCH HIGHLIGHTS

Evidence strongly supports the benefits of exercise across a range of physical and mental health conditions for people of all ages. Of course, research is continuously conducted on activity types, amounts, and other factors. Here's a look at some recent findings.

How many daily steps? 10,000 steps a day is a mantra for good health, and a new study may support that claim. A meta-analysis of 15 studies following more than 47,000 adults looked at the effect of daily steps on mortality.¹ The participants with the highest median daily step count (10,901) had a 53% lower risk of early death from any cause compared with those with the lowest daily step count (3,553). Those who didn't quite reach 10,000 steps daily (5,800-7,800) still had a 40-45% lower risk of death than the lowest steppers.¹

How exercise can extend years. Exercising more than the amount outlined in current national physical activity guidelines could mean living longer. Experts recommend moderate-intensity aerobic exercise for at least 150 minutes weekly (or vigorous aerobics for 75 minutes weekly), which lowers the risk of death by

about 21%. But new findings from the Nurses' Health Study and Health Professionals Follow-up Study that followed more than 100,000 older men and women (average age of 66) found that doubling or quadrupling that amount of activity could lower the risk as much as 31%.²

Another analysis of 16 cohort studies found that muscle-strengthening activities were associated with a 10-17% lower risk deaths from any cause, with the greatest risk reduction found in performing 30-60 minutes a week of strengthening exercises.³ A combination of muscle-strengthening and aerobic activities was associated with an even greater benefit, with a 40% lower risk of early deaths compared with those who did not exercise.

Interrupting long stretches of sitting with light exercise or even standing may help regulate blood sugar.

Findings from a meta-analysis of seven studies that included people who had overweight with and without diabetes showed that, compared with sitting for long stretches, light exercise breaks of walking for 2-5 minutes every 20-30 minutes throughout the day significantly prevented blood sugar surges after eating.⁴ Standing instead of sitting also produced benefits, though not as much as walking.

What if I eat a healthy diet but don't exercise, or I exercise daily at the gym but don't watch what I eat? Incorporating one healthy habit doesn't give allowance to ignore another, according to a cohort study of more than 346,000 adults in the United Kingdom. After 11 years, the findings weren't too surprising: those who exercised the most had a lower risk of deaths from any cause compared with the no-to-low exercisers.⁵ But participants with higher levels of exercise combined with the highest diet quality (e.g., 4.5 servings daily of fruits and vegetables, 2 servings of fish weekly, less than twice weekly of processed meat) had the lowest death rates of all. The authors also noted that having high physical activity levels but a poor diet did not protect from the risks of early death.



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Exercise Considerations

A look at physical activity considerations for special populations.

Research strongly supports the benefits of staying active across a range of physical and mental health conditions for people of all ages. In the U.S., the Department of Health and Human Services provides specific guidelines for physical activity special populations, including pregnant individuals, older adults, and those exercising with chronic conditions. However, if you are new to exercise or have a specific medical condition, be sure to let your doctor know what type of exercise you'll be starting. They can review the format to ensure it is safe with a specific health condition.

PREGNANCY

Pregnancy is often associated with the discomforts of tiredness, nausea, or aches and pains from carrying extra weight at the belly. Though one may not feel like exercising, extra movement can actually help. It can increase strength and boost energy levels, and lower the risk of constipation and lower back pain—common issues during the latter trimesters. Exercise may also promote a healthier pregnancy. The Physical Activity Guidelines for Americans encourages moderate-intensity physical activity in healthy women during pregnancy to increase or maintain cardiovascular fitness, lower the risk of excess weight gain and development of gestational diabetes, and reduce symptoms of postpartum depres-

sion.¹ Preventing excess weight gain during pregnancy also lowers the risk of developing obesity after the delivery and conceiving an infant of higher birth weight (which increases the risk of a more difficult labor and health problems in the infant).

Some recommended guidelines:

- Unless there are medical reasons to not exercise during pregnancy, healthy women may engage in at least 150 minutes a week of moderate-intensity aerobic activity, preferably spread out through the week (e.g., 30 minutes 5 days a week rather than one or more hours over 2 consecutive days).¹
- If a woman exercises for the first time during pregnancy, it is recommended to start slowly and increase the time and intensity gradually.²
- Because the heart pumps out more blood during pregnancy, the heart rate is naturally higher. Therefore, measuring heart rate during exercise may not be useful to gauge intensity. Instead, the talk test can be used: If one achieves a moderate-intensity level, they should be able to talk to someone nearby but not be able to sing. If one achieves a vigorous-intensity level, they may feel more breathless and would not be able to say more than a few words.

- Pregnant women who regularly participated in vigorous aerobic exercise and or strength training prior to pregnancy can continue to do so throughout the pregnancy and postpartum. However, with natural pregnancy weight gain, it is emphasized to listen to one's body and slow down or modify movements as needed.
- During the 2nd and 3rd trimesters, it is easy for the body to overheat during exercise, thereby increasing the risk of the fetus overheating. Bring a water bottle and take sips every 15 minutes. Continually gauge intensity level during the exercise session using the talk test. If feeling lightheaded or dizzy at any point, take a quick break or slow down the intensity.
- Stop exercising and contact your physician if you experience any of the following: blood or fluids leaking from the vagina, uterine contractions, shortness of breath that doesn't stop when you end the exercise, swelling in the legs, or chest pain.



See more risks and recommendations for physical activity while pregnant: hsph.me/pap22



OLDER ADULTS

Adults ages 65 and older can reap many health benefits from a consistent physical activity regimen. These benefits have also been observed in those with chronic conditions like osteoarthritis and cardiovascular disease.³ In addition, exercise can help improve balance and strength that make daily activities easier to perform (lifting groceries, doing laundry, raking leaves, getting out of bed or a chair, climbing stairs, and standing for long stretches while cooking). However, more than a third of this age group report not getting any regular exercise, and only about 16% meet the national guidelines of getting at least 150 minutes of moderate-intensity aerobic activity or 75 minutes of vigorous-intensity aerobic activity and two or more days of muscle-strengthening activities each week.³

A large cohort study of more than 99,700 adults ages 60 years and older found that those who met weekly guidelines for moderate to vigorous aerobic physical activity combined with weightlifting (such as using free weights or resistance machines 1-2 days a week) had a 41% lower risk of death than those who did neither.⁴ Those who engaged in both exercise types also had a lower risk of death compared with those who performed just aerobics or just weightlifting. Consistent weightlifting is associated with increased lean muscle mass and strength, which can combat sarcopenia, a progressive loss of muscle and strength that naturally occurs with aging beginning in mid-life.

An exercise prescription for older adults should consider their health status and functional ability. Yet any amount of exercise is better than being sedentary, even if one cannot achieve the recommended goals. Time spent sitting tends to increase with age, and this is associated with



See more tips and recommendations for physical activity in older adults: hsph.me/pao22



elevated blood sugar and risk of early death.³ Important considerations to discuss with a healthcare provider when deciding upon an exercise regimen include: Identifying barriers to exercise and reviewing potential solutions; discussing specific recommendations on the type (exercise format), frequency (how many times a week), duration (for how long), and intensity of activities (using a measure such as the talk test); and, setting achievable short-term and long-term activity goals based on one's preferences and abilities.

Some recommended guidelines:

- Aim for at least 150 minutes of moderate-intensity aerobic exercise and two or more days of resistance training a week. Even if this cannot be achieved at first, accomplish what is possible, as some physical activity is always better than none.
- An exercise regimen may be unstructured, such as climbing stairs in the house several times a day or walking to do errands, or structured such as participating in an exercise program with planned repetitive movements to increase physical fitness.
- For frail or very deconditioned individuals, muscle strengthening exercises and balance training are recommended before starting aerobic exercises.

CONSIDERATIONS FOR ACTIVITY WITH CHRONIC CONDITIONS

The Physical Activity Guidelines also provide general considerations for those looking to engage in physical activities with chronic medical conditions. However, individuals should discuss with their doctor how their condition may affect their ability to perform regular exercise.

Visit *The Nutrition Source* to learn more about exercising with these conditions:



hsph.me/pac22

- Osteoporosis
- Osteoarthritis
- Type 2 diabetes
- Physical disabilities
- Musculoskeletal pain
- Cardiovascular disease



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Bicycling

Health benefits and safety precautions for this popular activity.

Bicycling, also referred to as biking or cycling, is a form of transportation and a popular leisure-time physical activity. Health benefits include improved cardiovascular fitness, stronger muscles, greater coordination and general mobility, and reduced body fat. As with other types of exercise, it can also help improve mental health by lowering stress levels and stimulating feel-good endorphins.

Although not listed as an independent category in the American College of Sports Medicine's annual top fitness trends, bicycling can be included in several of their top categories: outdoor activities, exercise for weight loss, group training (i.e., spinning classes), and fitness programs for older adults.¹ Bicycling is

versatile—you can ride alone or with a group, indoors on a stationary bicycle or outdoors in nature, and at any age. It is a low-impact activity that reduces stress on the hips, knees, and feet and may be performed by people who cannot do higher-impact activities such as jogging or running.

Bicycling for transportation, such as commuting to work, provides the benefits of incorporating exercise into everyday life, reducing costs associated with driving a car or taking public transportation, and lessening road congestion and air/noise pollution, as seen in urban areas.² In one survey of cyclists, 21% reported biking to work.³ Studies show that people who bike to work are more likely to meet national physical activity guidelines. Due to the intensity and energy expenditure of cycling, they are also more likely to meet recommended guidelines for cardiovascular fitness and health benefits.³

BICYCLING AND HEALTH

Much research on the health benefits of bicycling focuses on “active commuting” which entails walking or cycling to work or other places that usually involve driving. These studies find that cycling reduces the risk of cardiovascular disease, diabetes, and early deaths, and may prevent weight gain or obesity. Most of the research is observational or cross-sectional, using self-reported surveys of cycling frequency. A possible bias in these studies is that cycling requires a minimum level of existing physical fitness, so adults who are healthier at baseline may be more likely to choose cycling or active commuting than less healthy individuals, which may affect mortality and disease rates.⁴

BICYCLING SAFETY

A major reason people may not participate in biking is a belief that it is unsafe, which is not unfounded.⁵



MOVING TOWARD A BETTER BICYCLING ENVIRONMENT

Efforts are underway in many cities to improve bicycling infrastructure, including the building of cycle tracks or protected bike lanes. These facilities, located between sidewalks and the road, provide pedestrians, cyclists, and automobiles their own separate spaces to travel.

Beyond cycle tracks, some countries including the Netherlands and Denmark have implemented traffic signals for bicycles, special precautions at traffic intersections, and even express superhighways for cyclists riding longer distances to work.⁶ Providing additional motorist training and traffic safety education in schools can further reduce accidents. Amenities along bike lanes such as bike-specific signals, smooth surfaces with low resistance, parks, sidewalk cafes, art, and trees planted between the lanes and street may attract more people to cycle.⁷



Learn more about
bicycling, including
available research on
its health benefits:
hsph.me/bic22



Bicycle riders in the U.S. have much higher fatality and serious injury rates than in comparable high-income countries.⁶ According to the Centers for Disease Control and Prevention, about 1,000 bicyclists die in the U.S. each year in crashes involving motor vehicles, and more than 130,000 are injured on roads.⁸ Male adults ages 55-69 are most likely to die from bicycle deaths, whereas male adolescents and young adults have the highest bicycle-related injuries. Deaths tend to occur in urban areas where there is heavier motor vehicle traffic; high speeds (of bicyclists and car drivers) and alcohol are major risk factors for accidents.

RULES OF THE ROAD

Both cyclists and car drivers should be aware of cycling rules on the road. Check with your local state and municipal biking laws. Below are examples of common regulations.

- Cyclists are allowed on any public roads and sidewalks unless specifically prohibited, such as on express state highways or private roads. Ride in the direction of traffic.
- Cyclists must obey automobile road rules such as stopping at red lights and stop signs. Slow down at traffic intersections even if a light is green. An exception is that cyclists can pass cars on the right side.
- Cyclists may ride on sidewalks

outside business districts but must yield to pedestrians and signal when passing, such as with a bell or horn.

- Cyclists 16 years or younger must wear a helmet with chin strap meeting the U.S. Consumer Product Safety Commission requirements. This protects against brain and head injuries. An exception is if a child is riding with an adult in an enclosed trailer. Regardless of requirements, use of helmets by riders of all ages can substantially reduce risk of brain injuries.
- Bikes may be parked on sidewalks, but never blocking crosswalks, bus stops, fire hydrants, parking spaces, or walking access by pedestrians. Allow four feet clearance.
- Theft of bikes or biking equipment is very common, so take with you any parts that can be easily removed from the bike. Ideally lock the bike lock to a bike rack with a lock that secures the frame and wheels, such as with U-locks. Do not lock bikes to trees, handrails, or private fences.
- Some states require bike lights and reflectors for night use, and this is highly desirable even if not required. Display a white light on the front of the bicycle and a red light or reflector on the back. Wear ankle reflectors if the pedals do not have reflectors.
- Be alert at all times for pedestrians, cars, other cyclists, animals, and changes in the road terrain.
- In certain states, cyclists must use hand signals when turning unless it is dangerous to remove hands from handlebars. At least one hand should be kept on the handlebars at all times.

HAND SIGNALS

While drivers of motorized vehicles use their blinkers or backup lights to communicate, bicyclists use hand-signals.⁹

Left Turn: Extend your left arm out sideways with all fingers extended or use your index finger to point left.



Right Turn: Extend your left arm out sideways bent at a 90-degree angle at the elbow joint, hand pointing upward and the palm of hand facing forward.



Alternative Right Turn: Extend your right arm out straight with all fingers extended or use your index finger to point right.



Stopping or Slowing:

Extend your left arm or right arm sideways and bend your arm at a 90-degree angle at the elbow joint, hand pointing downwards and the palm of your hand facing backwards.



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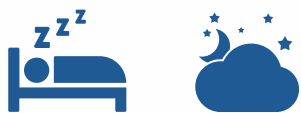
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Sleep

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.¹ A consensus by the AASM and Sleep Research Society recommends that adults should sleep 7 or more hours a night to promote optimal health.²

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.³ It is important to respond, whenever possible, to the body’s natural signals of sleepiness.

Visit the full sleep section on *The Nutrition Source* for more information about sleep and health, and tips for sleeping well: hsph.me/sle22





2022 Research Highlights



RISING TEMPERATURES FROM CLIMATE CHANGE MAY WORSEN SLEEP QUALITY.

Those who live in warmer climates may lose more sleep, with the greatest impacts on the elderly, women, and residents of lower-income countries. Researchers used billions of sleep measurements from sleep-tracking wristbands comprising over 7 million sleep records across 68 countries, linking them to local meteorological data. Hot nights delayed the time people fell asleep, increasing the chances of an insufficient, short night of sleep. By 2099, people living in hotter climates are expected to lose considerably more sleep, which will highlight the inequalities of high-risk groups.⁴



INADEQUATE SLEEP DISRUPTS BRAIN ACTIVITY IN YOUNG ADOLESCENTS.

A study of more than 8,000 9 and 10-year-old children found that inadequate sleep of less than 9 hours a night disrupted areas of the brain, especially the basal ganglia (responsible for memory, learning, and behavior patterns), which led to behavioral problems, poorer attention span, and reduced ability to process information.⁵



BOTH ADOLESCENTS AND PARENTS ENDORSE MYTHS ABOUT ADOLESCENT SLEEP BEHAVIORS THAT MAY PREVENT HEALTHY SLEEP HABITS.

A new paper explored 10 common myths about adolescent sleep behaviors. One common belief is that sleeping later and waking up later on weekends is acceptable; however the study found that this practice does not restore sleep deficits and can worsen circadian rhythms, causing lower academic performance and negative mental health symptoms. It also found that over-the-counter melatonin supplements, perceived as natural and popular among teens, lack evidence regarding safety in younger ages especially in the longer-term, and animal studies show negative effects of melatonin on pubertal development.⁶ The American Academy of Sleep Medicine issued an advisory cautioning the use of melatonin in children and adolescents, as overdoses have been reported, causing excess sleepiness, headaches, and agitation. Supplement dosages are unregulated and can vary by up to four times what is shown on the label, particularly in chewable tablets that are given to children. They advise parents to work with their child on better sleep hygiene or to consult with their pediatrician before reaching for melatonin supplements.⁷



IT'S NOT JUST ABOUT FALLING ASLEEP, BUT THE QUALITY OF SLEEP.

In an animal study, researchers performed gene editing to inhibit GABA receptors. Current medications for insomnia enhance the activity of GABA receptors, a brain neurotransmitter that can help with falling asleep initially but that reduces the activity of delta waves associated with deeper restorative sleep. These findings may help pave the way for more effective sleep medications that do not just induce sleep but promote increased delta wave activity.⁸



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Which of these factors may have an impact on food cravings?



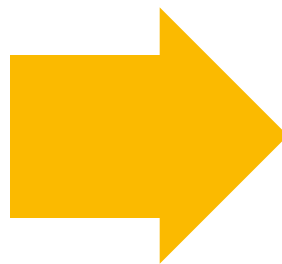
A Lack of sleep

B Chronic stress

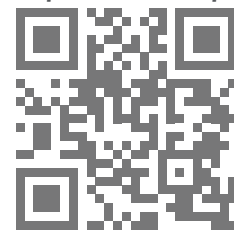
C Food advertising

D All of the above

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

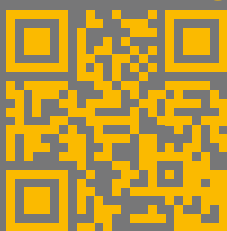


hsph.me/hqz2



Hint: The answers to the quiz can be found throughout the 2021/2022 Healthy Living Guide. Download the full edition here if you haven't checked it out!

hsph.me/hlg2



Test your healthy living knowledge!