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The Science of Integrative Medicine

Course Guidebook

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Mayo Clinic



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Brent A. Bauer, M.D., is board certified in internal medicine and is a Professor of Medicine and the Director of the Complementary and Integrative Medicine Program at Mayo Clinic, where he has been on staff for 24 years. His main research interest has been the scientific evaluation of integrative medicine therapies, which patients and consumers are using with increasing frequency. Dr. Bauer has authored several book chapters and more than 100 papers on this topic and is the medical editor of *Mayo Clinic Book of Alternative Medicine*. He is a member of numerous scientific review panels and is currently collaborating on more than 20 Mayo Clinic studies that evaluate integrative medicine therapies, ranging from acupuncture to valerian. He is the medical director of Rejuvenate, the first spa at Mayo Clinic. After: He is also the medical director of the Well Living Lab, a collaboration between Delos, a company that specializes in what's called wellness real estate, and Mayo Clinic. Dr. Bauer's work is at the forefront of the emerging field of integrative medicine, which combines the best of conventional medicine with the best of evidence-based complementary therapies. ■

About Mayo Clinic

Mayo Clinic is a nonprofit organization committed to providing expert, whole-person care to everyone who needs healing. The Mayo Clinic mission is to inspire hope and contribute to health and well-being by providing the best care to every patient through integrated clinical practice, education, and research. For more information, visit www.mayoclinic.org/about-mayo-clinic or <http://newsnetwork.mayoclinic.org/>.

At the turn of the 20th century, Dr. Charlie and Dr. Will Mayo organized medical professionals in a new way to better care for patients. They created a system that allowed doctors to take the time to thoroughly investigate patient problems and to quickly and easily get help from other specialists.

The system was built on the idea that two heads are better than one. It also encouraged a continual search for better ways of diagnosis and treatment.

Through growth and change, Mayo Clinic remains committed to its heritage: thorough diagnosis, accurate answers, and effective treatment through the application of collective wisdom to the problems of each patient. ■

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Disclaimer

This series of lectures is intended to increase your understanding of how doctors diagnose and treat diseases and how you can improve your own health by being an active and informed patient. However, these lectures are not designed for use as medical references to diagnose, treat, or prevent medical illnesses or trauma, and neither The Teaching Company nor the lecturer is responsible for your use of this educational material or its consequences. Furthermore, participating in this course does not create a doctor-patient relationship. The information contained in these lectures is not intended to dictate what constitutes reasonable, appropriate, or best care for any given health issue, nor does it take into account the unique circumstances that define the health issues of the viewer. If you have questions about the diagnosis, treatment, or prevention of a medical condition or illness, you should consult your personal physician. The opinions and positions provided in these lectures reflect the opinions and positions of the relevant lecturer and do not necessarily reflect the opinions or positions of The Teaching Company or its affiliates.

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Integrative Medicine and Your Wellness

Close your eyes for a moment and imagine what your best version of yourself looks like. What picture would you paint of yourself? Do you feel full of energy? Are you having fun? Are you enjoying spending time with the people around you? These are just a few examples of ways you may describe what you'd ideally like your life to look like—and your overall wellness plays a large role in helping you achieve that vision.

Achieving overall wellness, especially in this day and age, is no simple feat. Conventional Western medicine, as good as it is, doesn't have cures for all that ails us—especially many of the often-chronic conditions that plague people today, such as arthritis, back pain, neck pain, fibromyalgia, and anxiety.

Whether you're looking for help managing a chronic condition or searching for new ways to improve your wellness and live a healthier, more enjoyable life, integrative medicine may be the complement to conventional medicine that you're looking for.

In this course, you'll learn first about what constitutes a foundation for good health, which rests on four key practices: nutrition, exercise, stress management, and a strong support network (NESS). These components are the basis for a healthy life, so you'll be reminded of them often throughout the course. In addition, you'll learn about the 10 most promising practices in integrative medicine—treatments that you might consider as part of your own health and wellness practice.

- Acupuncture
- Guided imagery
- Hypnotherapy
- Massage
- Meditation (both stationary and movement-based)
- Music therapy
- Spinal manipulation
- Spirituality
- Tai chi
- Yoga

In addition to exploring each of these practices, you'll also delve into other areas of integrative medicine, including relaxation therapies, other mind-body techniques, herbal medicine, and dietary supplements. You'll learn about what scientific research says about the safety and effectiveness of these practices, as well as how to integrate them safely into your own life. In addition, you'll get an inside look at how Mayo Clinic incorporates these techniques into its own practice—for its patients, their families, and its employees. You'll also learn how to find and use credible scientific research to help guide your choices. Throughout this course, you'll be exposed to integrative medicine and even receive instruction on some practices you can do at home right away.

By the end of this course, you should have a good idea of what you can do each day to improve your wellness. Although your personal wellness plan starts with a foundation for good health (NESS), you also may begin to identify integrative practices that can support your own personal wellness and help you lead a healthier, happier life. ■

Complementary and Integrative Medicine

If you're taking this course, you might have heard about how natural or holistic practices are being used to complement conventional medicine. You might be interested in learning how to integrate these practices effectively into your life, or—if you're skeptical—you might be wondering if there's any scientific basis for alternative medicine. This course strives to answer your questions and concerns about this type of medicine. In this lecture, you will be introduced to complementary and integrative medicine.

An Inexpensive Way to Reverse Aging

- In 2013, Dean Ornish, M.D., and his colleagues published a remarkable study. They worked with men in their 50s and 60s who had a nonaggressive form of prostate cancer for which the men did not receive medical treatment—no surgery, no chemotherapy.
- Dr. Ornish brought the men in for training on how to eat a healthy diet. They were also given guidance on exercise. They received training in different stress management techniques, such as yoga and meditation, and were instructed to practice them 60 minutes a day. Finally, he had the men come in once a week to participate in a support group.
- The men in this study followed a comprehensive lifestyle approach consisting of four main components: nutrition, exercise, stress management, and social support (NESS).
 - For nutrition, this study followed a low-fat diet that emphasized whole grains, fruits, and vegetables, similar to the popular



Mediterranean or DASH diets. Both of these diets have been shown to lower the risk of heart disease and high blood pressure.

- For exercise, the men were asked to take part in 30 minutes a day of walking or another form of moderate exercise, such as swimming or biking. They did this almost every day—six days a week.
- They also practiced some form of stress management, such as yoga or meditation, for 60 minutes a day, almost every day.
- The study supplied the final component of the comprehensive lifestyle approach—a strong support system—with a weekly one-hour support group. There are significant benefits of friendship on mental, emotional, and physical health for both men and women.

- At the beginning of the study and again after five years, Dr. Ornish measured the men's telomeres, which are the protective caps on the ends of the arms of chromosomes. Our chromosomes contain our DNA and are what allow us to replicate ourselves. As the telomeres shrink, our DNA can be exposed and damaged, leading to aging and increasing the risk of cancer, heart disease, osteoporosis, and other diseases that are associated with aging.
- After three months, Dr. Ornish was able to detect a significant improvement in telomerase, the enzyme that makes telomeres, which was a good sign that he was on the right track. He then followed these men for five more years. He found that the men who didn't follow the comprehensive lifestyle approach had further shortening of their telomeres, the expected result as people age. However, those who continued to engage in the comprehensive lifestyle approach saw their telomeres lengthen.
- The comprehensive lifestyle approach appears to not only slow the aging process, but to some extent, it also seems to reverse it. More studies are needed, and some are already underway, but scientists believe that increases in telomere length may help prevent a variety of chronic illnesses and maybe even lengthen lifespan.
- If you're interested in improving your health, many complementary medicine practices can help. Not only can they speed your recovery from illness or surgery, but they can also help you cope with a chronic condition. Complementary practices, such as meditation and yoga, can work to keep you healthy and may prevent many diseases.

Integrative Medicine

- It wasn't that long ago that complementary medicine was considered "unorthodox" or "alternative" medicine and largely shunned by most physicians. But over time, people continued to experiment with alternative practices, such as massage, acupuncture, and meditation.

- In the last 20 years, there has been a change in attitude toward alternative medical treatments, accompanied by an evolution in terminology. In the 1990s, the terms “unorthodox” and “alternative” were replaced with the term “complementary and alternative medicine” (CAM), which became an umbrella term for everything from herbal remedies to mind-body therapies to traditional Chinese medicine.
- Attitudes changed first among patients and consumers, and in recent years, we’ve seen continued growth in the interest and in the use of many alternative therapies by patients and consumers. A number of surveys looking at the use of CAM by adults in the United States suggest that more than a third of Americans are already using CAM practices as part of their health care.
- With the most advanced medical technology in the world, why are Americans turning to complementary and alternative treatments?
 - Patients in general are taking a greater role in their own health care. Thanks largely to the Internet, today’s typical patient is more aware of health issues and is more open to trying different treatment approaches.
 - Adults in the baby-boom generation don’t like getting older or the effects of aging, and they’re open to a variety of treatments. Many people prefer to try complementary methods before taking a pharmaceutical approach.
 - There is a large degree of chronic stress in the American lifestyle, including job hassles, marital conflict, and financial worries. Complementary medicine has several highly effective, evidence-based approaches to dealing with stress that don’t involve drugs.
- In parallel with this growing interest in alternative medicine, a tremendous amount of research has been done in recent years

on alternative therapies. In the process, this research is helping to identify many genuinely beneficial treatments.

- As evidence concerning the safety and efficacy of many of these therapies grows, physicians are starting to integrate aspects of complementary medicine into conventional medical care. This has led to the current term “integrative medicine.” The idea is not to replace conventional medicine but to find ways to complement existing treatments.
- Recently, more scientific studies on alternative treatments are being conducted, giving physicians more confidence in recommending certain therapies. In addition, the doctor-patient relationship has changed significantly in recent years—it’s more of a partnership. Furthermore, there has been a shift of focus toward wellness and preventive medicine in medicine today, and this is where complementary practices can play a huge role.
- Most likely, medical practitioners will gradually become more open to the idea of integrative medicine. It is much more accepted now as part of medical treatment, both in the medical world and by Western culture in general. But keep in mind that it’s not a replacement for conventional medicine.
- Currently, there are 65 academic medical centers that are part of an organization called the Academic Consortium for Integrative Medicine & Health. It’s clear that complementary medicine is not a fad, and many academic medical centers are taking steps to better understand unconventional treatments to be aware of their safety and effectiveness.
- This does not mean that all complementary treatments are okay to use. Doctors should not prescribe complementary therapies without having some reason to believe that they work, and some therapies carry significant risks. But it does mean that certain therapies have merit and should be discussed with your doctor to see if they can aid in health and healing.

Talk with Your Doctor

- Your doctor can help you think through a number of issues surrounding complementary medicine, including the following.
 - Point out whether the treatment has any potentially dangerous side effects.
 - Help you determine the correct dosage of a particular supplement.
 - Give you advice on which therapies might be the most appropriate for you.
 - Let you know if a product you're taking may interact with a medication you currently use.
 - Put you in touch with someone who performs a particular therapy or who can teach you how to do it.

Working with Your Doctor

- If your doctor has never mentioned practices such as acupuncture or massage, you might be nervous about bringing them up. You might worry that your doctor will be too quick to reject the idea or that you'll be criticized or told to stop a treatment that you feel is helping you.
- Before we judge doctors too quickly, we have to recognize that many patients have been harmed—in some cases, even killed—by unethical and immoral products that have been touted online and in various stores as miracle cures. Unfortunately, some products have turned out to be tainted with either pharmaceutical drugs or herbs that are dangerous and that caused a host of other problems.
- It's understandable why some doctors who have seen this type of harm might be averse to unconventional therapies. If your doctor happens to fall into this category, recognize that he or she may have had an unfortunate past experience with a patient that has produced skepticism.

- Before talking with your doctor, make sure to do your homework and make it known that you're not looking for a miracle cure. Instead, you're looking for evidence-based complementary practices that you can incorporate with your conventional care.
- If your doctor still isn't comfortable about discussing dietary supplements or acupuncture with you, ask for a referral to someone who may be able to help you, such as a pharmacist or a specialist in a particular field.
- Even if they may be skeptical, most doctors are aware that unconventional therapies are very popular. And it's important that they know what you're taking or practicing to be sure that the therapy is safe for you. Make sure that you understand the potential risks as well as benefits.

The 10 Most Promising Practices in Integrative Medicine

- The following is a list of 10 treatments that you might consider as part of your health and wellness practice.
 1. **Acupuncture** is a Chinese practice that involves inserting very thin needles at strategic points on the body and is commonly used for nausea and fibromyalgia and to treat many kinds of pain.
 2. **Guided imagery** (sometimes called visualization) involves bringing to mind a specific image or series of memories to produce certain responses in the body. It's used to treat headaches and some forms of pain.



3. **Hypnosis** involves a trancelike state where the mind is more open to suggestion. It may be used to help manage pain, anxiety, and tension headaches.
4. **Massage** comes in many different varieties, and some have specific health goals. It can address pain, anxiety, and fibromyalgia.
5. **Meditation** involves clearing and calming the mind by focusing on your breathing or a word, phrase, or sound. It is used to help treat anxiety, stress, and high blood pressure.
6. **Music therapy** can influence both your mental and physical health. It may help patients with Alzheimer's disease and autism, as well as depression.



7. **Spinal manipulation** (also called spinal adjustment) is practiced by chiropractors and physical therapists. It's particularly helpful for low-back pain.

8. **Spirituality** is focused on an individual's connection to others and to the search for meaning in life. These connections help people deal with medical illness and chronic disease.

9. **Tai chi** is a graceful exercise in which you move from pose to pose. It's been shown to improve balance and flexibility.

10. **Yoga** involves a series of postures that often includes a focus on breathing. It is commonly practiced to relieve stress, as well as treat heart disease and depression.

Suggested Reading

Bauer, “Chinese Medicine and Integrative Medicine in the United States.”

Hensrud, *The Mayo Clinic Diet*.

———, *The Mayo Clinic Diet Journal*.

Hensrud, et al, *The New Mayo Clinic Cookbook*.

McGarey, *Physician within You*.

Ornish, *Dr. Dean Ornish's Program for Reversing Heart Disease*.

Pang, et al, “Complementary and Integrative Medicine at Mayo Clinic.”

Wahner-Roedler, et al, “Physicians’ Attitudes toward Complementary and Alternative Medicine and Their Knowledge of Specific Therapies: A Survey at an Academic Medical Center.”

Wahner-Roedler, et al, “Physicians’ Attitudes toward Complementary and Alternative Medicine and Their Knowledge of Specific Therapies: 8-Year Follow-Up at an Academic Medical Center.”

Making the Case for Integrative Medicine

Integrative medicine isn't just about fixing things when they're broken; it's about keeping things from breaking in the first place. It's about preventive medicine and treating the whole person. And in many cases, it means trying new therapies and approaches, such as meditation and tai chi. In this lecture, you will learn about what caring for the whole person means. You will learn some simple, evidence-based ways that you can improve your personal health and overall well-being—through good nutrition, exercise, relaxation, and sleep.

Nutrition

- The Mediterranean and DASH (which stands for “dietary approaches to stop hypertension”) diets are your best insurance against high cholesterol, high blood pressure, and heart disease. Their emphasis on whole grains, fruits and vegetables, nuts, olive oil, fish, and poultry offer plenty of variety in a diet intended not necessarily to lose weight—although that may be a side benefit—but to improve your lifelong eating habits.
- The two diets are quite similar, although the DASH diet places more emphasis on lowering your sodium intake and on portion control. Neither the Mediterranean diet nor the DASH diet bans sweets, red meat, or alcohol, but limits them to small amounts.
- These diets have been proven to reduce your risk of heart disease, as well as diabetes and some types of cancer. If strictly followed, they may even help prevent or slow the progression of Alzheimer’s disease.



- The Mediterranean and DASH diets have been scientifically proven to be the best diets to achieve long-term health and wellness. Epidemiological and observational studies have shown that these diets reduce the risk of stroke, heart disease, and dementia.
- In a study published in 2015, Rush University Medical Center came out with a new diet called the MIND (which stands for “Mediterranean-DASH intervention for neurodegenerative delay”) diet. It’s based on the Mediterranean and DASH diets, but it focuses specifically on brain health. Ten brain-healthy foods—including vegetables, nuts, and whole grains—were recommended, and five not-so-brain-healthy foods—including red meats, cheese, and fried food—were restricted.
- The study followed more than 900 people between the ages of 58 and 98 for four and a half years and found that close adherence to the MIND diet in this population reduced the incidence of Alzheimer’s disease by 50 percent. Even moderate adherence to the diet reduced the risk by 35 percent, whereas moderate adherence to the Mediterranean and DASH diets showed no such benefit.
- In addition to considering what’s on our plates, it’s also important to think about how we eat what’s on our plates. Many people eat while doing something else—for example, watching television or browsing the Internet. We don’t really pay attention to what we’re eating, and we eat very quickly.
- Mindfulness means different things to different people, but the traditional concept is about being present in the moment. If you’re eating mindfully, then you take your time eating and become fully aware of the tastes and textures of the food in your mouth. This process slows you down.
- If we eat quickly, our bodies don’t have a chance to tell us when we’re full, so we’re overfull before we know it. If you’re fully

experiencing what you're eating, you might be satisfied with less food.

Exercise

- There are some really great health benefits to exercise. Several studies have shown that aerobic exercise, such as walking, bicycling, swimming, and dancing, reduce age-related brain shrinkage while improving memory and other cognitive functions.
- Exercise also strengthens your cardiovascular and respiratory systems and reduces the buildup of harmful deposits in your arteries by increasing the concentration of high-density lipoprotein (HDL), or “good cholesterol,” in your blood. It strengthens your heart so that it can pump blood more efficiently. And that reduces the risk of developing high blood pressure.
- Exercise keeps bones and muscles strong by maintaining bone density, which plays several roles in preventing osteoporosis. And it helps manage your weight, improving diseases and conditions associated with being overweight, such as diabetes. Exercise appears to reduce your risk of certain cancers, including colon, prostate, breast, and uterine lining cancers.
- Exercise also helps you sleep better. Moderate exercise at least three hours before bedtime can help you relax and sleep better at night. A good night's sleep helps maintain your physical and mental health.
- Although researchers say that larger studies are needed to confirm these findings, some research shows that moderate aerobic exercise may help prevent the common cold. Those who have found that exercise does help suggest that it has a positive effect on the cells that impact your immune system.
- There are also psychological benefits to exercise. Exercise raises endorphins, which gives you energy, and increases serotonin,

which helps you sleep better. Exercise also brings a sense of accomplishment when you increase your physical ability. Furthermore, exercise enhances the power of connection; many fitness activities and sports involve other people. Exercise can also be a spiritual experience, particularly if you're doing something in nature.

Stress

- A big part of what makes our modern lifestyle so unhealthy revolves around stress. We're too stressed to eat properly, get enough sleep, and find time to exercise. And when we eat too much and sleep too little and don't exercise at all, we become even more stressed. And the more we go around on that vicious cycle, the harder it is to get off.
- No one can avoid stress altogether, but how you manage it is critical to your health and well-being. And there are many complementary practices that can help you do that.
- We have stress responses and relaxation responses. The stress response is the so-called fight-or-flight response. If you are about to get hit by a car, your body automatically increases your heart rate and the blood flow to your muscles, while shutting off the blood flow to less vital body functions, so that you can jump out of the way.
- But most of the stresses we face today don't require a fight-or-flight response. For example, if your boss dumps three extra things on your desk, increasing your heart rate isn't going to help you deal with this kind of stress—yet we use that same stress response.
- And this response becomes our default pathway. It sends out adrenaline day after day, increasing our heart rate. It suppresses our immune system and increases inflammation, all of which lead to problems if they occur all the time for a long time.

- For most people, relaxation takes effort. You have to practice creating the relaxation response—essentially the exact opposite of what happens in the stress response. Most people are so overwhelmed that they have to take a formal approach, such as practicing meditation or deep breathing, to see their heart rate come down, their breathing slow, and their brains begin to focus on the present moment.
- There's a tremendous amount of research on stress and how it impacts people's lives. The stressful situations we experience have a cumulative effect on the body and produce many negative consequences.
- Stress increases inflammation throughout your body, which creates a cascade effect that can lead to a variety of chronic diseases, including heart disorders and stomach problems. Stress can also affect the immune system by producing the hormone cortisol, which increases your susceptibility to colds and flu. Stress also decreases wound healing. Studies have shown that stress may worsen asthma symptoms, skin disorders, chronic pain, and depression.

Rest and Relaxation

- Rest and relaxation are the best antidotes to stress, and they're as fundamental to your health as physical activity and a nutritious diet. They both help slow your heart rate so that your heart doesn't have to work as hard. Relaxation lowers blood pressure and increases blood flow to your major muscles. Regular, deep sleep can improve immune function and reduce signs and symptoms of illness, such as headaches, nausea, diarrhea, and pain.
- A good night's sleep gives you more energy and improves your concentration during the day. It can also help you lose weight. When we're tired, we tend to eat more high-calorie foods to keep



our energy up. When we're well rested, we don't need those calories to stay alert.

- Most people need seven to eight hours of sleep a night. If you have trouble sleeping or if you just want to improve how well you sleep, some simple changes in your daily routine may help.
 - Develop and stick to a sleep routine. Reading a book is how many people lull themselves to sleep. Some gentle tai chi may help you relax. Turn off the television and all other electronic devices about an hour before bed.
 - Cut down on caffeine, especially in the hours before bedtime.
 - Avoid alcohol and nicotine before bedtime, too; they both interfere with healthy sleep. If you're bothered by heartburn, don't eat for a few hours before you lie down.

- Avoid “trying to sleep” or worrying about not getting enough sleep; doing so is likely to keep you awake. And don’t keep checking the clock to see how late it is. Hide your alarm clock in a drawer or turn it away from you if you find yourself looking at it too often.
- Although there are both prescription and nonprescription medications to help you sleep, they generally aren’t recommended for long-term use. There are many complementary treatments for insomnia.
- Melatonin is a hormone produced naturally in the brain, and melatonin supplements are widely used for jet lag and sometimes to help people sleep. Melatonin is widely considered safe, but it may cause clotting problems in people taking blood thinners. Also, don’t take it if you’re pregnant or trying to become pregnant.
- The plant-based supplement valerian may help you get to sleep faster and improve sleep quality. Valerian is also used for anxiety. Discuss valerian with your doctor before trying it. Some people who have used high doses or used it for a long time may have increased their risk of liver damage, although it’s not clear if valerian caused the damage.
- Acupuncture and hypnosis are also commonly used to help with insomnia, although research is unclear about their value. Some people say that the smell of lavender helps put them in a peaceful frame of mind, too.
- Don’t ignore sleep problems that persist. People with chronic insomnia are more likely to develop psychiatric problems, such as depression and anxiety disorders. Long-term sleep deprivation can also increase the severity of chronic disease, such as high blood pressure and diabetes.

Suggested Reading

Barton, et al, “The Use of Valeriana Officinalis (Valerian) in Improving Sleep.”

Centers for Disease Control and Prevention, “Sleep and Sleep Disorders.”

Dahm and Smith, *Mayo Clinic Fitness for Everybody*.

DiFiore, “Diet May Help Prevent Alzheimer’s.”

———, “New MIND Diet May Significantly Protect against Alzheimer’s Disease.”

Hensrud, *The Mayo Clinic Diet*.

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Kiecolt-Glaser, et al, “Hostile Marital Interactions, Proinflammatory Cytokine Production, and Wound Healing.”

Morris, “MIND Diet Associated with Reduced Incidence of Alzheimer’s Disease.”

Salter and Brownie, “Treating Primary Insomnia.”

Schmidt and Bland, *Brain-Building Nutrition*.

Song, et al, “The Role of Multiple Negative Social Relationships.”

Sood, *The Mayo Clinic Guide to Stress-Free Living*.

Wolever and Reardon, *The Mindful Diet*.

World Health Organization, “Spending on Health.”

Herbal Supplements

Dietary supplements are by far the most common form of complementary and alternative medicine, accounting for nearly 20 percent of all complementary and integrative therapy in the United States. There has been a tremendous explosion in the use of supplements since 1994, when the U.S. Congress passed the Dietary Supplement Health and Education Act, which exempts manufacturers from having to prove the efficacy and safety of their products. As you will learn in this lecture, before taking any herbal supplements, do your homework on them and involve your health-care team in the decision.

Herbal Medicine

- Herbal medicine is the practice of using plants—their roots, leaves, berries, seeds, bark, and flowers—to treat illness. Herbal supplements may come in the form of powders, pills, syrups, juices, teas, creams, or lotions. Herbal medicine has been around for a long time. As science has evolved, the healing components of many plants have been identified, extracted, and often improved to become standard drugs.
- People also turn to herbal remedies to try to prevent diseases such as Alzheimer’s disease and heart disease, to manage symptoms of menopause and conditions such as fibromyalgia and osteoarthritis, and to improve their general health and well-being.
- There are marketing claims that certain herbs can cure cancer, high blood pressure, obesity, sexual problems, and depression, but there’s no hard scientific evidence that any of those claims are



true. Herbal supplements are best used to help prevent certain diseases, manage specific conditions or symptoms, and maintain good health—they aren't cure-alls.

- Therefore, it's important to pay attention to the messages you read about herbs and supplements. Companies that make supplements can give you three different types of information about their products.
 1. Health claims tell you about a product's link to a disease or health condition.
 2. Nutrient claims tell you how much of a nutrient or dietary substance is in a product.
 3. Structure or function claims tell you about the intended benefits of taking the product.

- But supplements manufacturers can't just say anything they want—this is especially important when it comes to claims about what a product can do. If a supplement maker wants to say something about its product's effects, the company has to have data to back up its claims, and these claims must be followed by a statement that says, "This statement has not been evaluated by the U.S. Food and Drug Administration (FDA). This product is not intended to diagnose, treat, cure or prevent any disease."
- The federal government takes false claims about what a supplement can do very seriously. It's illegal to make claims that products can treat, prevent, or cure diseases, and the government has taken legal action against companies that promote or sell dietary products by making false statements about what they can do.
- But in the end, many consumers are still frustrated and confused by messages that are used in ads. This is when it pays to do your homework. Really look into what an advertisement claims a supplement can do and see if there's actually evidence to prove that it's true.
- Although there are some herbal remedies with good scientific evidence as to their efficacy, there are many popular herbal products without scientific evidence to back them up.
- We also know that there are risks when someone takes too many supplements—herb-herb interactions, herb-drug interactions, and so on. Supplements should not be the first thing you reach for; they should be "supplemental" to your health strategy.
- The use of complementary and alternative therapies is highest in people who have unresolved symptoms. The number one reason is back pain, followed by neck pain, joint pain or stiffness, and then arthritis. Those conditions are usually chronic, which means that you're dealing with the symptoms over a long period of time.

- Sometimes conventional drugs are very helpful for chronic conditions; other times they aren't. Or, conventional drugs may work, but they carry significant side effects. Many people with chronic conditions are interested in complementary therapies, and many are already using supplements.

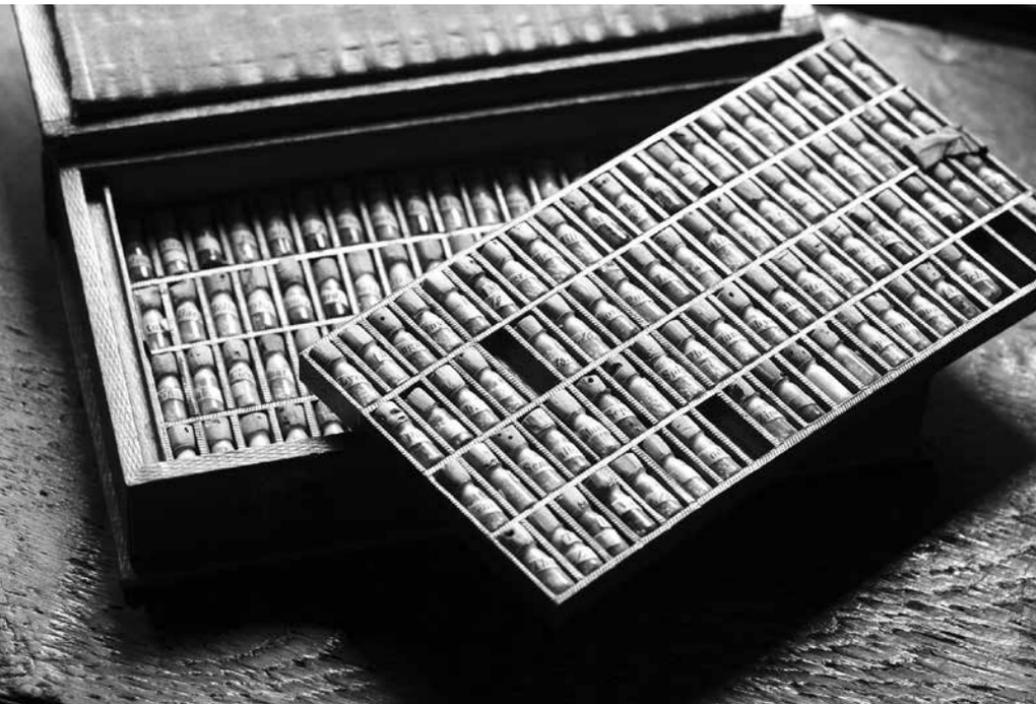
Scientific Testing

- Many people are disappointed when a supplement doesn't work like the miracle drug they envisioned. Herbs and vitamins can be beneficial, but they're not the foundation of good health.
- We can test herbal therapies for efficacy and safety, just as we test prescription drugs. Many herbal therapies, however, haven't been well tested or well researched. Many of them need more rigorous scientific study.
- What constitutes a good test or good study? In general, the larger the study the better. When a study involves several hundred people or more—particularly if it lasts for several months, or even years—it gains more credibility. How the study was performed is also important. Prospective double-blind studies that have been conducted in carefully controlled, randomized settings and published in a peer-reviewed journal are the gold standard.
- Unfortunately, many herbal products haven't gone through rigorous scientific testing. The only research available are small clinical trials, poorly controlled trials, or even biased trials, where the results may be intentionally skewed to look more conclusive than they really are.
- So, in this day and age, why isn't there proper testing for herbal products? One reason is that proper testing, with good controls, is hugely expensive. This is one of the reasons for the formation of the National Center for Complementary and Integrative Health (NCCIH), a government agency under the umbrella of the National Institutes of Health.

- Many of the research studies on herbal medicines have been funded or co-funded through the NCCIH, and more testing is planned for the future. But right now, for many herbal remedies, we just don't know how effective, or even safe, they are.

Risks with Herbal Remedies

- There are also a number of other risks with herbal remedies. One is the perception that herbal products are safe because they're natural. Natural doesn't always translate into being safe—just think of tobacco or poison ivy. And any product that's strong enough to provide a potential benefit to the body can also be strong enough to cause harm.
- Another challenge has been the quality of herbs and supplements sold in the United States. Unfortunately, there are numerous examples of people being harmed by products that contained the wrong herb or that were adulterated with actual prescription drugs.



- Fortunately, thanks to some new rules called Good Manufacturing Practices, which were implemented in 2010, now all supplements sold in the United States are mandated to have in the bottle exactly what is stated on the label.
- Yet another risk is the possibility of an herbal medicine interacting in a bad way with another drug that you're taking. In a 2010 report, Mayo Clinic researchers found more than 25 herbal products that can be dangerous for heart patients on medication.
- One thing that makes this problem even more dangerous is that many people are reluctant to tell their physicians about the supplements they're taking. But it's extremely important to let your doctor know all of the things you're taking so that he or she can check for dangerous interactions with other medicines you're taking.
- Certain people should be extra careful about dietary supplements of all kinds. It's generally wise to avoid supplements if you are pregnant or breastfeeding, unless your doctor specifically approves; are having surgery; are younger than 18 or older than 65; or are already taking prescription or nonprescription medications.
- There is good information on the Internet about herbal supplements, but there's also a lot of hype and a lot of bad information. If what you read sounds too good to be true, it probably is. Make an effort to seek out a reliable, authoritative source. When you're looking for information about herbal supplements on the Internet, remember the three Ds.
 1. **Date:** Check the creation or update date on the website. If you don't see a date, don't assume that the information is recent. Older material may be outdated and not include recent findings.
 2. **Documentation:** Check the sources. Are qualified health professionals creating and reviewing the information? Is

advertising clearly identified? Look for the logo from the Health on the Net Foundation, which means that the information follows their principles for reliability and credibility.

3. Double-check: Visit several health sites and compare the information they offer. If you can't find any supporting evidence to back up the claims of an alternative product, be skeptical.
- Before you follow any advice you find on the Internet, check with your doctor for guidance.
 - Mayo Clinic evaluates many herbal supplements and offers information online at mayoclinic.org/drugs-supplements, and the NCCIH website has a feature called “Herbs at a Glance,” which gives you up-to-date, unbiased information, as well as links to peer-reviewed scientific articles on the research of various herbs.
 - When you've done your research and checked with your doctor, the next step is to head to a pharmacy or store that sells herbal products. But how do you choose the right brand?
 - Look for standardized supplements. The U.S. Pharmacopeial Convention's (USP) dietary supplement verification seal on the label indicates that the product has met certain manufacturing standards. Other groups that certify supplements include ConsumerLab.com and NSF International.
 - Look for a large, recognizable manufacturer.
 - Be cautious about supplements made outside the United States.
 - Bodybuilding and weight loss are two big reasons people use herbal supplements—and they're two types of supplements that have caused a lot of problems. Some companies add other ingredients to these supplements that aren't safe, including stimulants. Keep in mind that any product that's strong enough to

make you lose weight quickly is going to affect other parts of your body, such as your heart.

- Before you buy a supplement, in addition to doing your research, also consider the cost. Spending \$45 a week on something you're not even sure will work might not be the answer you're looking for. It's all about being a well-informed and wise consumer.

Dangerous Herbal Products

- There are certain herbal products that can be very dangerous. For example, kava is a member of the pepper family whose root and underground stem are used in various forms to treat anxiety, insomnia, and menopausal symptoms. But the FDA has issued a warning that using kava supplements can cause severe liver damage, including hepatitis and liver failure, possibly leading to death. Kava may also interact unfavorably with several drugs.
- Another herbal supplement to beware of is ephedra, whose main active ingredient, ephedrine, is known to stimulate the nervous system and heart. It has been used as an ingredient in dietary supplements designed to help people lose weight, boost their energy, and improve their athletic performance. However, between 1995 and 1997, the FDA received more than 900 reports of possible ephedra toxicity. In 2004, the FDA banned the sale of dietary supplements containing ephedra in the United States.
- Yohimbe, a supplement that promises sexual potency and pleasure, lowers blood pressure and increases blood flow to the genitals. It's used to treat sexual dysfunction. Yohimbe can cause severe side effects, including high blood pressure, a racing heartbeat, kidney failure, headache, anxiety, dizziness, nausea, vomiting, tremors, and sleeplessness. The herb can be very dangerous if you take too much of it or take it over a long period of time.

Suggested Reading

Barton, et al, "Pilot Study of Panax Quinquefolius (American Ginseng) to Improve Cancer-Related Fatigue."

Buenz, et al, "Bioprospecting Rumphius's Ambonese Herbal."

ConsumerLab.com, "How to Read a ConsumerLab.com Approved Quality Product Seal."

Edakkanambeth, et al, "Over-the-Counter Enzyme Supplements."

Hurt, et al, "L-Arginine for the Treatment of Centrally Obese Subjects."

Mayo Clinic, "Drugs and Supplements."

McGarey, *Physician within You*.

National Center for Complementary and Integrative Health, "Herbs at a Glance."

NSF International, "What Is NSF Certification?"

Sood, et al, "A Randomized Clinical Trial of St. John's Wort for Smoking Cessation."

Thompson, et al, "Dietary Supplement S-Adenosyl-L-Methionine (AdoMet) Effects on Plasma Homocysteine Levels in Healthy Human Subjects."

United States Pharmacopeia, "USP Verification Services."

Supplements in Practice

As with almost all of the therapies discussed in this course, supplements are rarely a substitute for conventional medical treatment, and they're almost never a standalone solution. First, build your NESS foundation (nutrition, exercise, stress management, and social support). Then, if you still have a persisting symptom or problem, talk to your health-care team if you're considering adding a supplement in a targeted and evidence-based fashion, and take an active role in evaluating and reevaluating your treatment as new medications and treatments become available. In this lecture, you will learn how some popular supplements are used to treat patients with conditions commonly encountered in integrative medicine practice.

Supplements for Arthritis

- Some patients are interested in trying glucosamine for arthritis pain. Many people are troubled by knee pain, particularly athletes. Because the cartilage inside our knees doesn't have a great blood supply, it often doesn't heal well after injury. Glucosamine may provide some relief.
- Glucosamine is one the most widely used dietary supplements. Our bodies naturally make glucosamine, which is an amino sugar. Glucosamine supplements sold in stores are typically made from the skeletons of shellfish, and there are several forms. The form best suited for cartilage repair appears to be glucosamine sulfate.
- Study results on glucosamine for cartilage repair have varied, but several studies show that glucosamine sulfate is helpful in treating

osteoarthritis. People with osteoarthritis use supplements such as glucosamine in hopes that the supplements can improve their symptoms and reduce their need for pain-relieving medications such as nonsteroidal anti-inflammatory drugs (NSAIDs), which can be more expensive and may cause serious side effects.

- Glucosamine is often taken together with chondroitin, which also comes from cartilage, usually cow and shark cartilage. It's not clear if combining the two compounds is more effective than taking them alone.
- Studies looking at both glucosamine and chondroitin are mixed. Glucosamine and chondroitin are generally safe and may offer some relief to some people with osteoarthritis—at least some studies seem to suggest this. Along with NESS (nutrition, exercise, stress management, and social support) as the foundation, patients can try glucosamine and chondroitin for maybe three to four months before they decide whether it's helpful. Those who don't see any improvement after four months can explore other options.
- As with other types of supplements, a major issue is product quality. There's a lot of variability among glucosamine-plus-chondroitin supplements. In the past, some products contained no chondroitin despite label claims, while others contained more chondroitin than the label showed. And price isn't always a guarantee of quality. But with the current Good Manufacturing Rules now in place, finding quality supplements is getting easier.
- Another supplement that may be useful in treating arthritis is SAMe (S-adenosyl-L-methionine), a naturally occurring chemical in the human body that helps produce and regulate hormones. A synthetic version of SAMe has become a popular dietary supplement in the United States, used for arthritis, depression, and liver disease.
- SAMe has been studied extensively in the treatment of osteoarthritis. Multiple trials indicate that it can relieve pain from

arthritis as effectively as NSAIDs, but with fewer side effects. However, it may take up to 30 days to get significant relief.

- Clinical trials have suggested that SAME can also improve symptoms of fibromyalgia, which can cause chronic pain as well as depressive symptoms. SAME isn't approved by the FDA to treat depression in the United States, but it's used in Europe as a prescription drug to treat depression. SAME may be helpful, but more research is needed.
- SAME can interact with drugs or supplements to affect blood pressure, blood glucose, or the risk of bleeding, so be sure your doctor is aware of everything you're taking.
- If the supplement you want to take is generally safe for your situation, you can try it for a month or two and see if you notice any improvement in symptoms. If you're not noticing a difference, stop taking it.

Supplements for the Aging Body

- Hormone therapy, in which the hormone estrogen is taken alone or combined with hormone progesterone, is used to treat symptoms of menopause. Hormone therapy may be a good choice for certain women to treat hot flashes and sleep difficulties, depending on their risk factors. But hormone therapy needs to be individualized.
- Bioidentical hormones are also used to treat symptoms of menopause. Bioidentical basically means that the hormones in the product are chemically the same as the ones in your body. However, the hormones in the bioidentical medications might not be any different than those in traditional hormone therapy.
- Because many bioidentical hormones are marketed as “natural,” people think they're safer, but they aren't. And there isn't any evidence that they're more effective. “Natural” only means the hormones come from plant or animal sources—they're not

synthesized in a lab. However, many of them still need to be commercially processed to become bioidentical.

- Some people view bioidentical hormones as almost magical. But they carry the same risks as hormone therapy, so you should talk with your doctor before using them. For women with severe hot flashes that interfere with their quality of life, hormone therapy may be prescribed for a short period—maybe three to five years, and possibly longer if your doctor thinks that prolonged use would be safe.
- Black cohosh, a member of the buttercup family, is a plant that was used in Native American medicine and was a home remedy for rheumatism and arthritis in 19th-century America. In recent years, black cohosh has become popular for treating hot flashes, night sweats, vaginal dryness, and other symptoms of menopause. Black cohosh has also been used for menstrual irregularities and premenstrual syndrome, and to induce labor.
- A meta-analysis of clinical trials for relief of menopausal symptoms found that black cohosh, whether used alone or with other botanicals, failed to relieve hot flashes and night sweats in postmenopausal women or those approaching menopause.

black cohosh



- For the most part, clinical trials of black cohosh to treat menopausal symptoms haven't found that the herb causes serious side effects, but some people taking black cohosh have experienced stomach discomfort, headache, or rash. Scientists are also concerned about how the herb may affect the liver.
- If you take birth control pills, hormone replacement therapy, sedatives, or blood pressure medicine, don't take black cohosh without your doctor's approval. Because hot flashes can be a difficult symptom to treat, a patient might do a trial of black cohosh, especially if she hasn't had success with conventional approaches.
- Soy is another plant that has been traditionally used to treat menopausal symptoms—as well as osteoporosis, memory problems, high blood pressure, high cholesterol levels, breast cancer, and prostate cancer. As a dietary supplement, soy is available in tablets and capsules that may contain isoflavones or phytoestrogens, soy protein, or both.
- Some studies suggest that soy isoflavone supplements may reduce hot flashes in women after menopause, but the results have been inconsistent. There's not enough scientific evidence to know if soy supplements are effective for any other health uses.
- In general, eating soy foods seems safe and may be beneficial. Taking high doses of soy supplements, on the other hand, doesn't seem to have a lot of proven benefits and may lead to some risks.
- For men, saw palmetto has been used as an alternative treatment for the urinary symptoms associated with an enlarged prostate, also called benign prostatic hyperplasia (BPH). It's also taken for chronic pelvic pain, bladder disorders, decreased sex drive, hair loss, hormone imbalances, and prostate cancer.
- BPH is such a vexing problem for many men as they age, and many conventional medicines to treat it are expensive or can have

side effects. Patients can try saw palmetto to see if they get any positive results.

- Keeping a good record of your response to a supplement can really help you determine which one may be right for you.

Supplements for Heart Disease

- When it comes to preventing heart disease, it's not possible to overstate the importance of the four principles of NESS—nutrition, exercise, stress management, and social support—as an overall strategy for optimizing health and wellness.
- When we think about the sequelae of heart disease—the negative aftereffects—one of the more challenging for many patients is something called congestive heart failure, which means that the heart muscle is no longer pumping as effectively as it once did. Many patients face heart failure after having heart damage from a heart attack.
- Conventional medicine has a number of treatments (such as beta blockers and ACE inhibitors) that have been shown to reduce the risk of further heart disease and help alleviate the symptoms of heart failure. In some cases, they may even help to remodel the heart muscle back into a nearly normal function.
- For heart failure, two supplements are at the top of Natural Medicines Comprehensive Database (which is compiled by pharmacists and medical doctors): coenzyme Q10 and fish oil.
- Coenzyme Q10 is an antioxidant made by your body and used by cells throughout your body for their basic functions. It helps your body convert food into energy. Coenzyme Q10 has been shown to reduce mortality by nearly half in certain patients with moderate to severe heart failure.



- Coenzyme Q10 is something to talk about with your health-care team if you're dealing with congestive heart failure. It's important to note that in most of the studies on coenzyme Q10, it was used as an adjunct—which means that it was used after the conventional therapy had already been in place—so we should consider coenzyme Q10 as part of an overall strategy, not as a substitute for conventional therapy.
- Another supplement that has shown in treating congestive heart failure is fish oil, which is one of the most widely used dietary supplements in the United States.
- A meta-analysis conducted by Dr. W. Xin and colleagues in Beijing concluded that using fish oil supplements in patients with congestive heart failure resulted in a number of improvements in the overall function of the heart.
- Keep in mind that high doses of fish oil can be harmful. Too much fish oil can increase your risk of bleeding, cause higher levels of low-density lipoprotein (LDL, or “bad”) cholesterol, and cause problems controlling your blood sugar.
- Simply eating more fish is part of an overall healthy nutrition strategy, but there are ongoing concerns about fish and especially the accumulation of toxic chemicals, such as mercury, that make eating fish every day at least somewhat problematic.

- Hawthorn berries have been around for a long time with a rather long history of efficacy for treating congestive heart failure. In patients who don't have access to the best conventional medical management of congestive heart failure, hawthorn probably does have something to offer. But for people who are receiving the best conventional treatments available, it seems like hawthorn probably falls by the wayside.
- Patients who have congestive heart failure and are interested in dietary supplements can explore possibly using coenzyme Q10 and fish oil. But the evidence on hawthorn is somewhat conflicting.

Suggested Reading

Clegg, et al, "Glucosamine, Chondroitin Sulfate, and the Two in Combination for Painful Knee Osteoarthritis."

Guo, et al, "Hawthorn Extract for Treating Chronic Heart Failure (Review)."

Moertl, et al, "Dose-Dependent Effects of Omega-3-Polyunsaturated Fatty Acids."

Mortenson, et al, "The Effect of Coenzyme Q10 on Morbidity and Mortality in Chronic Heart Failure."

Pavelká, et al, "Glucosamine Sulfate Use and Delay of Progression of Knee Osteoarthritis."

Reginster, et al, "Long-Term Effects of Glucosamine Sulphate on Osteoarthritis Progression."

Wahner-Roedler, et al, "Dietary Soy Supplement on Fibromyalgia Symptoms."

Wahner-Roedler, et al, "The Effect of Grape Seed Extract on Estrogen Levels of Postmenopausal Women."

Xin, et al, "Effects of Fish Oil Supplementation on Cardiac Function in Chronic Heart Failure."

Zick, et al, "Hawthorn Extract Randomized Blinded Chronic Heart Failure (HERB CHF) Trial."

Mind-Body Medicine

Mind-body medicine focuses on how the power of your thought process can change what's happening in your body. You can't wish cancer away, but you can help train your attention. And by training your attention, you can address anxiety and even work to create new pathways that help you experience less stress and anger. In this lecture, you will learn about some of the great ways that mind-body practices can be used as part of your overall health and wellness plan.

The Power of the Mind

- The power and speed of the mind is phenomenal. Let's take the stress response and the relaxation response as an example. The stress response is the fight-or-flight response; it automatically kicks in when you're faced with danger. Your body pumps up your heart rate, increases blood flow to your muscles, and decreases blood flow to the parts of your body that aren't needed to face the threat.
- The opposite of the stress response is the relaxation response. It's something that takes practice, but through approaches such as practicing meditation or deep breathing, you can train your body in a way that slows down your heart rate and breathing and increases your focus on the present moment. The way your mind can work in these two instances tells us a lot about the power of the mind-body connection—and makes mind-body medicine a fascinating area of medical study.



- Mind-body practices have two core components.
 1. Restore the mind to a state of peaceful neutrality. In this state, your mind achieves a state that's nonjudgmental, efficient, and adaptive to your needs. To reach this state, the mind has to shed negative experiences acquired over the years.
 2. Once your mind is "ready," use it in ways that help you achieve good health. This might be through spiritual intervention or prayer, a spoken intervention such as transcendental meditation, or through practices that involve breathing and posture or soothing imagery.
- As we learn newer and more refined mind-body techniques, it's important to recognize the simplicity of their underlying concepts. At their core, mind-body interventions are based on the values of peace, forgiveness, sharing, selflessness, integrity, and love—values that can help you achieve the outcomes you seek.
- Chronic stress may lead to genetic changes that increase the amount of inflammation in our body. Chronic stress can do all kinds of terrible things to our cardiovascular systems, from raising the risk of hypertension, to increasing the risk of heart attacks, to making blood vessels less pliable.
- It's time for us to recognize that what happens to us mentally or emotionally can have a profound impact on our health. And it's worth noting that if you even simply *think* about something bad, your body will start to prepare just like it's actually happening.
- Fortunately, we can harness that same imaginative power for our good. Just like thinking about something stressful may have negative physiologic effects, the reverse of that—the relaxation response—can induce positive effects in our body.

- This is where practices such as meditation, guided imagery, or even yoga or tai chi—things that can help calm the brain—become a great tool in our approach to optimize our health and wellness.
- A simple approach is to think about a quiet space or place. You could imagine, for example, the last time you were at a beach—and by slowing your breathing and focusing on that pleasant memory, you can start to raise your heart rate variability (which has been shown to improve health overall) and lower your stress response.

Neuroplasticity and Mind-Body Practices

- While the stress response is good for life-threatening situations, most of us face few truly life-threatening situations each day. That means that we're overreacting to the various small stressors we face each day.
- Our brains are hardwired to keep reusing the responses we have in place. So, if you respond in a fight-or-flight way to a small stressor, that's how your brain will automatically respond to a small stressor the next time you experience one. The good news is that you can train your brain to take a different path.
- That's where neuroplasticity comes in. Neuroplasticity means that the brain is "plastic," or changeable, and that we can retrain it to react in more skillful ways. Mind-body practitioners focus on two processes within the mind that together help craft your everyday experiences: attention and interpretation.
- The process of attention helps you screen, select, and absorb sensory information from the world. This information is then subject to interpretation, a process that relies on previous experience, preferences, and how you planned for things to go.

- The way you attend to the world around you can predispose you to stress, which can lead to illness. If you are constantly attending to what's wrong in the world, or in yourself, or in other people, you're interpreting your world in a mostly negative way.
- You're also likely to exaggerate those negative thoughts, so small irritations become large threats, and you feel chronically anxious and stressed. You may develop a rigid outlook that can get in the way of your ability to see things from a more mature perspective, which takes other viewpoints and outcomes into consideration.
- Mind-body therapists call this situation "mindlessness," and it's not good for your brain. In a state of mindlessness, you become disengaged from the real world and focused mainly on your anxiety-provoking thoughts. A mindless state not only invites stress, sleeplessness, and decreased quality of life, but also may predispose you to multiple medical conditions, some of them potentially life-threatening.
- The purpose of mind-body medicine is to help free you from excessive negative thoughts and the related state of mindlessness. The hope is to bring your attention to the present moment in a state of acceptance that empowers you to engage in meaningful action.
- In place of those negative thoughts, mind-body medicine is intended to help you cultivate transformative principles, such as forgiveness, acceptance, compassion, gratitude, interconnectedness, and a higher meaning to life. These principles can provide you with balanced optimism and openness to experience. They can help you see the reality—or lack thereof—in your thoughts.
- Amit Sood, M.D., who chairs the Mind-Body Medicine Initiative in Mayo Clinic's Complementary and Integrative Medicine Program, has found that small meditative practices—done three or four

times a day for a few minutes each time—significantly reduces stress and slows breathing. For example, when you get out of bed and put your feet on the floor first thing in the morning, think of five things or people that you're grateful for and think kind thoughts or put forward good intentions. This doesn't rise to the level of deep meditation, but it can set the tone for your day.

- Dr. Sood also introduced the SMART (Stress Management and Resiliency Training) program, which is scientifically proven to decrease symptoms of stress and anxiety and increase well-being, resilience, self-regulation, mindfulness, happiness, and positive health behavior.
- Participants in the SMART program learn how to train their attention so that it is stronger and more focused in the present moment. They learn to guide their thoughts based on higher principles rather than by prejudices. The program has been tested in 10 completed research studies in and outside of Mayo Clinic, with the results showing a decrease in stress and anxiety and an improvement in positive health behaviors.

Biofeedback

- One way to start the rerouting process is through biofeedback, which is a technique you can use to learn to control your body's functions, such as your heart rate. With biofeedback, you're connected to electrical sensors that help you receive information about your body. This feedback helps you focus on making subtle changes in your body, such as relaxing certain muscles, to achieve the results you want, such as reducing pain.
- In essence, biofeedback gives you the power to use your thoughts to control your body, often to improve a health condition or your physical performance. Biofeedback is often used as a relaxation technique.

- Biofeedback, sometimes called biofeedback training, is used to help manage many physical and mental health issues, including the following.

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|-----------------------------|----------------------------|
| ○ Anxiety or stress | ○ Constipation |
| ○ Asthma | ○ High blood pressure |
| ○ Chemotherapy side effects | ○ Incontinence |
| ○ Chronic pain | ○ Irritable bowel syndrome |

- Although you can receive biofeedback training in physical therapy clinics, medical centers, and hospitals, more and more biofeedback devices and programs are being marketed for use at home. Some of these are handheld portable devices, while others connect to your computer. You can try different devices until you find one that works for you, or ask your doctor for advice. You might also check with your health insurance company to see what costs, if any, associated with biofeedback devices are covered.
- Two of the main types of equipment used in biofeedback are as follows.
 1. A breathing sensor monitors your breathing, helping you learn to breathe more slowly and deeply. It has also been shown to reduce blood pressure.
 2. A heart rate variability monitor shows the increases and decreases in your heart's natural cycle or rhythm. These devices measure the pulse in your fingertip or earlobe and display the time between your heartbeats. By controlling your breathing—more deeply and slowly—you can change your heart rate.
- For some people, biofeedback devices like these help produce a deep state of relaxation. Other people rely on practices such as meditation but use biofeedback devices to assess their progress.

And then other people find the devices distracting. You have to find what works for you.

- The following are four main types of biofeedback techniques for stress management and how they work.
 1. Electromyography biofeedback (EMG) gives you information about the tension of your muscles to help you practice relaxation.
 2. With temperature, or thermal, biofeedback, sensors attached to your fingers or feet measure your skin temperature and the blood flow to your skin. Because your temperature often drops when you're under stress, a low reading may prompt you to begin relaxation techniques.
 3. In galvanic skin response training, sensors measure the activity of your sweat glands and the amount of sweat on your skin, alerting you to anxiety.



4. Heart rate variability biofeedback helps you control your heart rate in an effort to improve blood pressure, lung function, and stress and anxiety.
- If you're interested in trying biofeedback, the first step is to find a registered therapist. Start by asking your doctor or another health-care professional who's knowledgeable about biofeedback therapy to recommend someone who has experience in treating your condition.
 - State laws regulating biofeedback practitioners vary. Many biofeedback therapists are licensed in another area of health care, such as nursing or physical therapy, and might work under the guidance of a doctor. Some biofeedback therapists choose to become certified to show that they have extra training and experience in the practice.
 - When you find a potential biofeedback therapist, the following are some questions to ask before starting treatment.
 - Are you licensed, certified, or registered?
 - If you aren't licensed, are you working under the supervision of a licensed health-care professional?
 - What is your training and experience?
 - Do you have experience providing feedback for my condition?
 - How many biofeedback sessions do you think I'll need?
 - What is the cost, and is it covered by health insurance?
 - Can you provide a list of references?

Suggested Reading

Bays, *How to Train a Wild Elephant*.

Chesak, et al, "Enhancing Resilience among New Nurses."

Cutshall, et al, "Evaluation of a Biofeedback-Assisted Meditation Program as a Stress Management Tool."

Flugel Colle, et al, "Measurement of Quality of Life and Participant Experience."

Sharma, et al, "Bibliotherapy to Decrease Stress and Anxiety."

Sood, *The Mayo Clinic Guide to Stress-Free Living*.

———, *The Mayo Clinic Handbook for Happiness*.

Sood, et al, "Stress Management and Resiliency Training (SMART) Program."

U.S. Department of Health and Human Services, "Neuroplasticity."

Waller, et al, "Unresolved Trauma in Fibromyalgia."

Guided Imagery, Hypnosis, and Spirituality

Aristotle and Hippocrates believed in the power of images in the brain to enliven the heart and body. Today, research shows that they were right. In this lecture, you will discover three aspects of mind-body medicine: guided imagery, hypnosis, and spirituality. Like all of the other techniques you've learned about, these methods won't change you overnight. But they can be used as part of your tool kit for mind-body health.

Guided Imagery

- Guided imagery, sometimes called visualization, is a mind-body intervention that uses the power of imagination to bring about change in your physical, emotional, or spiritual wellness. With this method of meditation, you form mental images of places or situations you find relaxing. You try to use as many senses as possible, such as smells, sights, sounds, and textures.
- Guided imagery uses the power of your imagination to guide the way your mind and body talk to each other. By imagining certain scenes in your mind, your mind can send messages to your brain that help change the way your body feels.
- From there, the message sent to your brain is passed along to the body's endocrine, immune, and autonomic nervous systems. These systems influence a wide range of bodily functions, including heart and breathing rates and blood pressure.
- Using positron-emission tomography (PET), researchers have found that the same parts of the brain are activated when people

are imagining something as when they are actually experiencing it. So, if certain images bring you a feeling of peace, then incorporate them into your daily surroundings.

- Guided imagery has been shown to benefit patients by:
 - Reducing side effects from cancer treatment, including nausea, hair loss, and depression.
 - Reducing fear and anxiety prior to surgery.
 - Coping with stress.
 - Managing headaches.
- Research has shown that when you use guided imagery to imagine a beautiful vista or a relaxing kayak ride, the image and sensations you're creating with your mind don't just stay in your



mind. They affect many parts of your body, including your heart rate, blood pressure, and immune system function.

- Many people find that listening to a CD that contains guided imagery coaching to be helpful. Others choose to work one-on-one or in a small group with someone who is experienced in guided imagery.
- To make guided imagery work for you, take the following four steps.
 1. Relax. To create a desirable image, clear your mind of all chatter, worries, and distractions. Loosen tight-fitting clothing and find a comfortable, quiet place. Once you are quiet and comfortable, begin taking slow, deep breaths and release all random thoughts as you exhale.
 2. Concentrate. Focus your attention on your breathing as a way to clear your mind. If your mind wanders, acknowledge the thoughts that enter your mind and release them easily and effortlessly as you exhale. Then, refocus your attention on your breathing.
 3. Visualize. Combine a desired image with an intention, and for the next several minutes, focus on that image. You may find that your mind wanders. This may happen frequently, especially during the early stages of visualization. When it does, bring your focus back by using a slow, deep breath.
 4. Affirm. A positive affirmation coupled with the image will help create a positive message that will be stored in your brain—a message you can easily recall at a later time. Combining an image with a word or phrase may help engage both sides of your brain.
- Practicing guided imagery may feel uncomfortable or strange at first, but there's no risk. Keep an open mind and see where it takes you; you may be surprised to feel the positive effect that even just a few minutes of guided imagery can have.

Hypnotherapy

- Hypnosis, also referred to as hypnotherapy or hypnotic suggestion, is a trancelike state in which you have heightened focus and concentration. It's usually done with the help of a therapist using verbal repetition and mental images. When you're under hypnosis, you usually feel calm and relaxed and are more open to suggestions.
- There are three stages, or phases, to the process of hypnotherapy.
 1. Pre-suggestion
 2. Suggestion
 3. Post-suggestion
- The goal during pre-suggestion is to open the unconscious mind to suggestion. During the second phase, a specific thought or suggestion is presented to the subject—for example, driving over a bridge is safe, not scary. Questions may be asked and memories reviewed. Finally, in the post-suggestion stage, after returning to a normal state of consciousness, you practice the behavior that was suggested during hypnosis.
- We're not sure how hypnotherapy works in the body. Changes in skin temperature, heart rate, and immune response have been observed. Some scientists believe that hypnotherapy activates certain mind-body pathways in the nervous system.
- Hypnotherapy can be used to help you gain control over undesired behaviors or help you cope better with anxiety or pain. Although you're more open to suggestion during hypnotherapy, you don't lose control over your behavior.
- Hypnotherapy can be an effective method for coping with stress and anxiety. In particular, it can reduce stress and anxiety before a medical procedure.



- Hypnotherapy has been studied for other conditions, including the following.
 - Pain control. Hypnotherapy may be beneficial for pain associated with cancer, irritable bowel syndrome, fibromyalgia, temporomandibular joint problems (TMJ), dental procedures, and headaches.
 - Hot flashes. Hypnotherapy may relieve symptoms of hot flashes associated with menopause.
 - Behavior change. Hypnotherapy has been used with some success in treating insomnia, bed-wetting, smoking, obesity, and phobias.
- Another interesting way that hypnotherapy is used is in weight loss. Weight loss hypnotherapy may help you shed an extra few

pounds when it's part of a weight-loss plan that includes diet, exercise, and counseling. But it's difficult to say definitively if it works because there isn't enough solid scientific evidence that focuses specifically on weight loss hypnotherapy.

- Hypnotherapy that's conducted by a trained therapist or health-care professional is considered a safe complementary treatment. However, hypnotherapy may not be appropriate in people with severe mental illness.
- Adverse reactions to hypnotherapy are rare, but may include the following.
 - Headache
 - Drowsiness or dizziness
 - Anxiety or distress
 - Creation of false memories
- You don't need any special preparation to undergo hypnotherapy, but it's a good idea to wear comfortable clothing to help you relax. Also, make sure that you're well rested so that you're not inclined to fall asleep during the session.
- Be sure to carefully choose a therapist or health-care professional to perform hypnotherapy. Get a recommendation from someone you trust. Learn as much as you can about any therapist you're considering. Start by asking questions, such as the following.
 - Do you have training in a field such as psychology, medicine, or social work?
 - Are you licensed in your specialty in this state?

- How much training have you had in hypnotherapy and from what schools?
- How long have you been in practice?
- What are your fees?
- Will insurance cover your services?
- Although hypnotherapy may have the potential to help with a wide variety of conditions, it's typically used as one part of a broader treatment plan rather than as a standalone therapy. Like any other therapy, it can be very helpful to some people and not work for others. It seems to have the most success when you're highly motivated and your therapist is well trained and understands your particular problem.

Spirituality

- Spirituality has many definitions, and it's not necessarily connected to a specific belief system or even to religious worship. Instead, it arises from your connection with yourself and with others, the development of your personal value system, and your search for meaning in life.
- For many, spirituality takes the form of religious observance, prayer, meditation, or a belief in a higher power. For others, it can be found in nature, music, art, or a secular community. And some people view spirituality as experiencing a sense of peace, purpose, or connection to others or nature.
- No matter how you experience it, spirituality can help you find a sense of purpose and meaning within yourself and in your relationships with others. It can offer hope and peace during times of struggle or personal crisis. It can help lead to positive changes and improve your quality of life.

- A lot of research done on spirituality has been inconclusive, and it's been difficult to pin down exactly how it may affect people in specific ways. But researchers have found that spiritual practices may help:
 - Improve range of motion and pain in people with neck pain and restricted neck movement.
 - Decrease feelings of hopelessness in people who have idiopathic chronic pain syndrome.
 - Improve general function and reduce anxiety, depression, and symptoms of many chronic health conditions.
- Spirituality and health has become a growing field of study in medical education in the last 25 years. The field of spirituality and health is focused on the principles of service, compassion, dignity, and interconnectedness. Aiding patients' search for meaning has become more and more a focus in medical education and patient care, with an increasing number of spirituality and health courses, as well as research in this field.
- Spirituality can do a lot to help you manage your stress and benefit your overall mental health. It can help you feel a sense of purpose, connect to the world, release control, expand your support network, and lead a healthier life.
- Uncovering your spirituality may take some self-discovery. The following are some questions to ask yourself to discover what experiences and values define you.
 - What are your important relationships?
 - What do you value most in your life?
 - What people give you a sense of community?



- What inspires you and gives you hope?
- What brings you joy?
- What are your proudest achievements?
- The answers to questions like these can help you identify the most important people and experiences in your life. Once you know the answers to these questions, you can focus your search for spirituality on the relationships and activities in life that have helped define you as a person and those that continue to inspire your personal growth.
- One of the best ways you can cultivate your spirituality is to foster relationships with the people who are most important to you. There are many ways you can strengthen your bond with the people you care about. The following are some ideas you can try.
 - Eat together as a family.
 - Socialize at family gatherings.
 - Be active together.
 - Take care of your friendships.
- The following activities are great ways to get in touch with your spirituality.
 - Practice prayer, meditation, and relaxation techniques to help you focus your thoughts.
 - Keep a journal to help you express your feelings and record your progress.

- Seek out a trusted advisor or friend—someone with similar life experiences who can help you discover what’s important in life.
- Read inspirational stories or essays to help you evaluate different philosophies in life.
- Most important, be open to new experiences.
- At the same time that you’re focusing inward, don’t forget to cultivate the relationships in your life.
 - Work on your listening and communication skills.
 - Share your spiritual journey with loved ones.
 - Volunteer within your community.
 - See the good in people and yourself.

Suggested Reading

Dasse, et al, “Hypnotizability, Not Suggestion, Influences False Memory Development.”

Foji, et al, “The Study of the Effect of Guided Imagery.”

Gonzales, et al, “Effects of Guided Imagery on Postoperative Outcomes.”

Halpin, et al, “Guided Imagery in Cardiac Surgery.”

Kwekkeboom, et al, “Patients’ Perceptions of the Effectiveness of Guided Imagery.”

Lang, “Americans’ Circle of Confidantes Has Shrunk to Two People.”

Natural Medicines Research Collaboration, “Spiritual Healing.”

Practicing Meditation

Many meditation techniques have roots in Eastern religious or spiritual traditions, and some people consider praying a form of meditation. But like many of the mind-body practices you've encountered in this course, there's no one right way to meditate. No matter how you meditate, the goal is the same: to focus your attention. As you will learn in this lecture, the idea behind meditation is to suspend the stream of thoughts that normally occupies your conscious mind, leading to a state of physical relaxation, mental calmness, and psychological balance.

Understanding Meditation

- Amit Sood, M.D., the head of Mayo Clinic's Mind-Body Initiative, says that it's common for people to struggle when they first start a meditation practice. That's because American life tends to be complex and busy.
- One of the biggest challenges is addressing the constant state of anxiety that Americans have. People worry that if they're still and quiet instead of constantly thinking about which undone task they have to do next, they will make a mistake and one of those tasks will not get done. Being busy all of the time often makes people feel like they're handling life much better; slowing down or stopping feels uncomfortable.
- The second challenge is learning to be mentally still. Dr. Sood says that the brain wanders on purpose on an evolutionary level. If we were cavemen and were sitting still in the middle of a forest



with our eyes closed, not paying attention to what's around us, that might be problematic—and even life-threatening.

- So, one of the first things we have to accept is that our minds are going to wander. In fact, the mind spends most of the day wandering. Trying to focus this wandering mind goes against human nature.
- Being physically still—actually sitting still—is a similar challenge. You might feel an itch or pain in your back, or you might get fidgety. That's all okay. It's okay, too, to meditate in the way that works best for you.
- Sometimes patients are worried that if they try to sit still and meditate, they'll fail. For these individuals, meditation is one more thing they feel bad about not doing—one of the undone tasks taking up space in their minds. These individuals should try different practices until they find one that works for them.

- Dr. Sood says that the final challenge in learning to meditate is laziness. Meditation, like everything else, is a discipline. You have to commit time to it, and like any new habit or behavior, it may require a little extra effort at first.
- Some people have unrealistic expectations about how meditation will affect their lives. They may expect an out-of-body experience with lights and sounds or that their anger will suddenly disappear. For most people, these things don't usually happen during meditation.
- You might discover that as soon as you let yourself relax when meditating, you fall asleep. If this is a problem for you, you could try doing meditation earlier in the day or use a sitting, rather than a lying-down, posture. True meditation should be at the cusp of relaxation—when you're still awake and alert.
- When you meditate, you want to clear away the information overload that builds up every day and contributes to your stress.
- Emotional benefits of meditation can include:
 - Gaining a new perspective on stressful situations.
 - Building skills to manage your stress.
 - Increasing self-awareness.
 - Being able to focus on the present moment.
 - Reducing negative emotions.
 - Improving your memory and concentration.
 - Helping you stick to a physical activity program.

Four Steps to Starting Meditation

1. **Find a quiet place.** Try to find a quiet place with few distractions. The more often you practice meditation, the easier it will be for you to meditate, even with traffic blaring around you.
2. **Choose your posture.** Is sitting against a wall comfortable for you? What about sitting on a cushion or in a favorite chair? Are you most comfortable lying down? These are all fine postures.
3. **Focus your attention.** Maybe you want to choose a word to repeat, or you can light a candle and focus on the flame.
4. **Keep an open mind.** Let distractions come and go without engaging them. If they happen, let them go and bring your attention back to the focus.

- Meditation might also be useful if you have a medical condition, especially one that may be worsened by stress.
- Some research suggests that meditation can help people manage symptoms of conditions such as anxiety disorders, asthma, cancer, depression, heart disease, high blood pressure, pain, and sleep problems.
- Researchers at Harvard found that participating in an eight-week mindfulness meditation program appears to make measurable changes in the parts of the brain associated with memory, sense of self, empathy, and stress. At UCLA, researchers found that the brains of long-term meditators were better preserved than the brains of non-meditators as they aged.
- In some circumstances, we know that meditation helps, but we're not sure why. A meta-analysis at Johns Hopkins University focused on the relationship between mindfulness meditation and its ability to reduce symptoms of depression, anxiety, and pain. Researchers found that among people with depression, meditation produced a response similar to that of antidepressants. This is an

interesting finding, and one day, meditation might become part of a care plan for depression.

How Meditation Works

- Practicing meditation has been shown to produce physical changes, such as in the body's fight-or-flight response. The system responsible for this response is called the autonomic nervous system, sometimes called the involuntary nervous system, which regulates many activities, including your heartbeat, blood pressure, perspiration, breathing rate, body temperature, the production of body fluids, and digestion.
- The autonomic nervous system is divided into the sympathetic nervous system and the parasympathetic nervous system. The sympathetic nervous system helps mobilize the body into action—the fight-or-flight response. The parasympathetic nervous system, or the so-called rest-and-digest system, slows your heartbeat, allowing your blood vessels to dilate and improving blood flow. Research is focusing on how meditation may reduce the activity



of the sympathetic nervous system and increase that of the parasympathetic system.

- Research has also shown that meditation can be an effective way to slow our brain waves—slow down all of the traffic in our head—so that the body and mind can work in tandem. As each breath begins to lengthen, the brain waves begin to slow.
- You can take the first step toward starting a meditation program simply by setting aside time each day to incorporate some quiet reflection in your life, quieting your mind a little and focusing on just one thing.
- If one kind of meditation doesn't work for you, try something else that may be more your speed—tai chi or yoga or going for a quiet walk. Whatever you can do to try to quiet your mind and let the thoughts flow by, that's what works for you.
- For some people, it's a struggle to keep very quiet, and they get frustrated and think they're not doing it right. Maybe sitting for 15 minutes in silence is a long-range goal, and that's okay. What's important is to start somewhere, no matter where it is, doing something that works for you.
- If sitting in silence for 15 minutes doesn't work for you right now, maybe a practice that makes more sense for you is to focus on compassionate thoughts or kind intentions. In these cases, you're not sitting down to meditate; instead, you're being mindful toward the people you meet. That's meditation, too.

Styles of Meditation

- If you're thinking about starting a meditation practice, the following are a few options to start with.
 - Analytical meditation is when you try to comprehend the deeper meaning of an object you're focusing on. In analytical

meditation, you might focus your attention on a scriptural passage or a concept—maybe how precious human life is. Through this type of meditation, the goal is to focus on feeling empathy and compassion toward yourself and toward others.

- Breath meditation involves focusing on your breathing, consciously observing every inhalation and exhalation and the rising and falling of the chest. Breathing that is deep, slow, and smooth and that comes from your diaphragm is maintained in this practice. The purpose is to slow your breathing, take in more oxygen, and reduce the use of shoulder, neck, and upper chest muscles while breathing so that you breathe more efficiently.
- Mindfulness meditation is based on the concept of having an increased awareness and acceptance of the present moment. One mindfulness meditation exercise is to bring all your attention to the sensation and flow of air moving in and out of your body. The goal is to focus on what you're experiencing in the present moment without reacting to it or making any judgments about it.
- Body scanning means that you focus attention on different parts of your body. Through body scanning, you become aware of your body's various sensations—whether that's pain, tension, warmth, or relaxation. You can combine body scanning with breathing exercises and imagine breathing heat or relaxation into and out of different parts of your body.
- Transcendental meditation teaches you to focus on a mantra—a sound, word, or phrase—that you repeat over and over, either out loud or to yourself. The goal is to keep distracting thoughts out of your conscious awareness. You can create your own mantra, whether it's religious or secular. Whatever mantra you choose, it should hold your attention on a single thought or sensation that brings you a sense of comfort. This type of training is offered for a fee (for more information, visit www.tm.org/learn-tm).

Types of Meditation

- **Walking meditation**

With walking meditation, called *kinhin* in the Zen tradition, you focus on the subtle movements used to stand and walk. You can use this technique anywhere you're walking, such as in a tranquil forest, on a city sidewalk, or at the mall.



When you use this method, slow down your pace so that you can focus on each movement of your legs or feet. Don't focus on a particular destination. Concentrate on your legs and feet, repeating action words in your mind, such as "lifting," "moving," and "placing," as you lift each foot. Move your leg forward and place your foot on the ground.

- **Guided meditation**

Similar to guided imagery, or visualization, techniques, with guided meditation, you form mental images of places or situations you find relaxing. Try to use as many senses as possible, such as smells, sights, sounds, and textures. You may be led through this process in a class by a guide or teacher, or you may prefer to use guided imagery programs on your own at home.

- **Focus your love and gratitude**

In this type of meditation, you focus your attention on a sacred object or being, weaving feelings of love, compassion, and gratitude into your thoughts. You can also close your eyes and use your imagination or gaze at representations of the object.

Suggested Reading

Creagan, et al, "Animal-Assisted Therapy at Mayo Clinic."

Cutshall, et al, "A Decade of Offering a Healing Enhancement Program."

Cutshall, et al, "Creation of a Healing Enhancement Program."

Goyal, et al, "Meditation Programs for Psychological Stress and Wellbeing."

Holzel, et al, "Mindfulness Practice Leads to Increases in Regional Brain Gray Matter."

Luders, Eileen, et al, "Forever Young(er)."

Moving Meditation: Yoga, Tai Chi, and Qi Gong

Meditation refers to a group of techniques that help you focus your attention. For most of the types of meditation addressed in the previous lecture, you're sitting still or lying down. But that doesn't always have to be the case. Moving meditation—another way to focus your mind—follows the same general principles of meditation but adds movement to the mix. Yoga, tai chi, and qi gong are three types of moving meditation. In this lecture, you will learn about how each one works.

Yoga

- Yoga is a series of physical postures—often named after mammals, fish, or reptiles—performed with controlled-breathing exercises. The ultimate goal of yoga is to reach complete peacefulness of mind and body. However, many people coming to yoga today are simply looking to increase their flexibility, relieve stress, or take part in a different form of exercise. You'll get the most out of yoga if you embrace it as part of a whole wellness plan.
- Hatha yoga is a general category that includes most of the styles practiced in Western societies. It includes the practice of “asanas”—the term for yoga postures—and “pranayama,” the term for yoga breathing exercises.
- In most cases, hatha yoga is gentle and slow, which makes it great for beginners or for students who are looking for a more relaxed style of yoga that allows them to hold poses longer. Hatha yoga can vary a lot, so it's a good idea to call a yoga studio and ask about what type of hatha yoga is offered before attending a class.

- Yoga and other forms of moving meditation can provide major health benefits. Yoga can lower blood pressure, improve cognition, and decrease anxiety.
- According to Amit Sood, M.D., the head of Mayo Clinic's Mind-Body Initiative, yoga is all about attention. For example, when you're moving your hand, you are completely focusing on that hand and training your attention. You're in the moment and not worrying about life and daily struggles. Ultimately, he says, the purpose of yoga, with its physical postures, is to create a flexible body and a focused mind.
- When looking for a yoga class, you want one that can accommodate your needs. You shouldn't be forced into positions, and you shouldn't feel that you're being pushed past your safe zone.
- Like meditation, yoga also can be used as a short intervention. If you are sitting for a long period of time, taking a few minutes to stand up and do a few stretches can increase your energy level.



- If you learn a pose or two and practice some stretches or deep breathing, you'll notice some benefit, but you'll get the most out of it if you can invest at least 30 minutes in your yoga session.
- Don't expect too much at the beginning. When you're new, your muscles may be stiff and tight. As you become more comfortable with the practice, you'll reach a point where yoga allows you to recharge your batteries, which helps you feel better and more energized.
- The science says that many people who practice yoga use it to maintain their health and well-being, improve physical fitness, relieve stress, and enhance quality of life. In addition, they may be turning to yoga for specific health conditions, such as back pain, neck pain, arthritis, and anxiety.
- Yoga is helpful in a number of ways, but we don't fully understand the reason behind how it helps. Many studies are trying to tease out yoga's mechanism of action.
- Yoga isn't the answer to all that ails you, however. In studies of certain health conditions—including eating disorders, cognitive disorders, asthma, and arthritis—yoga was used but didn't provide any benefit.
- Yoga is generally considered safe for most healthy people when practiced under the guidance of a trained instructor. But in some situations, yoga might pose a risk. Talk to your doctor before you do yoga if you have any of the following conditions or if any of these situations apply to you.
 - A herniated disk
 - A risk of blood clots
 - Pregnancy

- Severe balance problems
- Severe osteoporosis
- Uncontrolled blood pressure
- Eye conditions, including glaucoma
- You may be able to practice yoga in these situations if you take certain precautions, such as avoiding certain poses or stretches. If you develop symptoms or concerns, see your doctor to make sure that yoga isn't causing you harm.
- Dr. Sood recommends that if you're looking for a yoga class, see if a friend has a suggestion. Make sure that your teacher is credentialed and has some experience teaching people your age and at your experience level. Be careful if a class makes promises about weight loss or if it focuses on herbal remedies.
- The class shouldn't feel competitive, but instead welcoming. The purpose of yoga and meditation isn't about being able to do a handstand or meditate silently for an hour; it's about improving your overall health and becoming a better human being, who is focused and happier.

Tai Chi

- Tai chi was originally developed for self-defense, but it has evolved into a graceful form of exercise. Tai chi involves a series of movements performed in a slow, focused manner and accompanied by deep breathing.
- To understand both tai chi and qi gong, it's important to first understand what "qi" is: a principle of Eastern philosophy that represents the quality or nature of whatever it's applied to. The most specific way to describe qi is to say that it describes the nature, dynamic, and relationships of that which exists.

- The term “tai chi” means “grand ultimate.” In Chinese culture, it represents an expansive philosophical and theoretical notion between the balance of light and dark, movement and stillness, waves and particles.
- Traditional tai chi is typically performed as a highly choreographed, lengthy, and complex series of movements. Qi gong, another type of moving meditation, is usually simpler, easier to learn, and more repetitive than tai chi. In tai chi, each posture flows into the next without pause, ensuring that your body is in constant motion.
- Tai chi is a low-impact exercise that doesn't put much stress on your muscles and joints, making it generally safe for all ages and fitness levels. People also find tai chi appealing because it's inexpensive and you don't need any special equipment for it. You can do tai chi anywhere, including indoors or outside, and you can do it alone or in a group class.
- Although tai chi is generally safe, women who are pregnant or people with joint problems, back pain, fractures, severe osteoporosis, or a hernia should talk with their health-care team before trying tai chi. You may need to modify or avoid certain postures, based on what your doctor says.
- When you learn proper tai chi techniques from a qualified instructor and perform tai chi regularly, it can be a great addition to your overall approach to good health. Research shows that tai chi can help you:
 - Manage stress, anxiety, and depression.
 - Improve your mood.
 - Exercise more easily.
 - Get more energy and stamina.

- Improve your flexibility, balance, and agility.
- Build stronger and more well-defined muscles.
- Tai chi also may help you:
 - Sleep better.
 - Fight off illness more easily.
 - Lower your blood pressure.
 - Improve joint pain.
 - Improve symptoms of congestive heart failure.
 - Improve your overall well-being.
 - Reduce your risk of falling if you're an older adult.
- You can find many videos and books about tai chi, but to get the full benefits and learn the right way to do it, consider working with a qualified tai chi instructor. Not using the proper techniques can lead to injury.
- To find a class near you, contact local fitness centers, health clubs, and senior centers. Tai chi instructors don't have to be licensed or attend a standard training program, but it's a good idea to ask about an instructor's training and experience and get recommendations if possible.
- After you learn tai chi, you may eventually feel confident enough to do it on your own. But if you enjoy the social aspects of a class, group tai chi classes are out there.

- You may benefit from taking a tai chi class that lasts 12 weeks or less, but if you continue doing tai chi long term and become more skilled at it, you may get even greater benefit.
- You can even practice the soothing mind-body concepts of tai chi without performing the actual movements. Try this when you are in a stressful situation; you may be surprised at the difference it makes.

Qi Gong

- Qi gong, also known as “energy-skill,” is an ancient Chinese meditation practice in the tradition of tai chi. It coordinates slow movements with breathing to cultivate your flow of energy, or qi, in a graceful, fluid dance. The movements in qi gong are smooth and rhythmic, teaching balance and increasing flexibility.
- There are two types of qi gong: internal and external. Internal qi gong is a self-directed practice with movements and meditation. With internal qi gong, you control your breathing pattern and work to improve your physical fitness and overall well-being.
- In the traditional practice of external qi gong, a trained practitioner uses his or her ability and knowledge to improve the flow of qi for the person seeking help. A practitioner will use his or her hands to direct energy onto a person’s body.
- Qi gong is a form of exercise, but instead of focusing so much on the muscles, it’s more of a mindful, energy-based practice.
- Qi gong is focused on stillness, so it can create a very peaceful feeling. In turn, qi gong can help improve concentration and memory. Among its other benefits, qi gong has been found to improve quality of life and reduce the side effects of cancer treatment. It has also been shown to reduce pain and improve sleep, attitude, and mobility in people with chronic fatigue.



- The strongest and most consistent research on qi gong shows that it can improve bone health, heart and lung functioning, and balance. It also may improve quality of life and self-efficacy (having confidence in your ability to do something important).
- Although there isn't as much research focusing specifically on tai chi and qi gong as there is on yoga and mindfulness meditation, what we've seen so far is promising. A research study conducted by researchers from the University of Minnesota and Mayo Clinic found that external qi gong can help patients' chronic pain.
- Another independent research study found that internal qi gong also relieves chronic pain. In addition to pain, we've found evidence that qi gong may help treat depression—we're just not sure how that works yet.
- How do you get started with tai chi and qi gong? Because both are self-paced and noncompetitive, you don't need a large space to do them or special clothing or equipment. And you can perform them yourself or in a group. Also, because they're both slow and gentle, tai chi and qi gong have virtually no side effects. However, when you're first learning them, make sure that you get proper instruction.

Suggested Reading

Balasubramaniam, et al, "Yoga on Our Minds."

Chan, et al, "A Chinese *Chan*-Based Mind-Body Intervention."

Chan, et al, "Qigong Exercise Alleviates Fatigue, Anxiety, and Depressive Symptoms."

Coleman, "Spring Forest Qigong and Chronic Pain."

Fong, et al, "The Effects of a 6-Month Tai Chi Qigong Training Program."

Gaik, “Qigong as an Alternative and Complementary Treatment for Depression.”

“Get the Facts: Yoga for Health,” National Center for Complementary and Alternative Medicine.

Jahnke, et al, “A Comprehensive Review of Health Benefits of Qigong and Tai Chi.”

Overcash, et al, “The Benefits of Medical Qigong in Patients with Cancer.”

Terjestam, et al, “Effects of Scheduled Qigong Exercise on Pupils’ Well-Being.”

Thomley, et al, “Effects of a Brief, Comprehensive, Yoga-Based Program.”

Tsang and Fung, “A Review on Neurobiological and Psychological Mechanisms.”

Vincent, et al, “External Qigong for Chronic Pain.”

Wang, et al, “Managing Stress and Anxiety through Qigong Exercise in Healthy Adults.”

Relaxation Therapies

In this lecture, you will explore several relaxation therapies, both physical and mental, including progressive muscle relaxation, deep breathing, music therapy, and art therapy. With these techniques, as well as the others you have learned about in this course, the goal is to find what works for you as you build the stress management part of your NESS (nutrition, exercise, stress management, and social support) foundation.

Progressive Muscle Relaxation

- Progressive muscle relaxation is a technique that focuses on the slow, steady contraction (shortening or tensing) of a muscle, followed by a gradual relaxation phase, in which you lengthen and release the muscle. The process is then repeated on other groups of muscles in succession.
- When practicing meditation, the idea is to try to get the body as still and quiet as possible. With progressive muscle relaxation, we're also trying to reach a state of deep relaxation, but we do it through tensing and then relaxing various muscle groups in sequence. By doing this, we can identify areas where extra stress or tension is being stored in the muscle and then deliberately relieve that tension.
- Progressive muscle relaxation can help anyone who is experiencing stress. Many patients who are new to the concept of meditation or other relaxation strategies can often start with progressive muscle relaxation and find success with this technique.

- Progressive muscle relaxation is just one more tool in the mind-body tool kit that can help you deal with stress and its effect on your body. The general technique is easy to learn and will become second nature with time and experience. All you need to do is find a quiet spot, some privacy, and some spare moments in the day.
- Beginning with your face, contract the tiny muscles around your eyes, nose, and mouth so that you form a tight grimace. Hold the tension to the count of eight, exhale, and then allow your entire face to become loose and free. You should feel a difference when you do this. You're bringing oxygen to those tight muscles, and then when you let go, the muscles relax.
- You then move down the body, completely tensing your neck, then your jaw, and then your shoulders, holding each set of muscles for eight seconds and then releasing them. You continue this exercise in your chest, abdomen, arms, hands, fingers, buttocks, legs, feet, and toes until all of your muscle groups have been contracted and relaxed.

Getting Started with Relaxation and Breathing Exercises

When it comes to getting started with progressive muscle relaxation and deep breathing, using a CD or podcast or YouTube video and allowing a soothing voice to walk you through each step of the process can be helpful. Some muscle relaxation CDs include a meditative component. Many simply involve suggested progressions of body relaxation, while others incorporate visualization. All of these options can help you achieve muscle relaxation.

The added benefit of using a calming, instructive voice on a CD or video is that a “third party” is there to lead you through each step and help you focus if your mind tends to wander. When you practice these techniques repeatedly, they'll get stored away in your head, ready to access during periods of high stress or tension.

- If you don't have much time, you can do a shortened version of progressive muscle relaxation by applying this technique to just a few targeted areas, such as your face and neck, arms, shoulders and abdomen, chest and buttocks, legs and feet.
- Your larger muscle areas are contracted at once, rather than in smaller groups of muscles. The effect may feel like the gentle unraveling of a tightly sprung coil.
- You can do progressive muscle relaxation exercises anywhere you can add just a few moments of awareness, including in your office or car.
- As with all the other techniques, progressive muscle relaxation won't perform miracles, but research shows that it does have an impact, especially on blood pressure, sleeplessness, tension headaches, and anxiety.
- There haven't been many major studies focused on progressive muscle relaxation, but research that has been done shows that it seems to help people of many ages with many different types of concerns.
- Progressive muscle relaxation is often used with other types of meditation and relaxation therapies, such as guided imagery.
- There are no licensing or certification requirements for teaching progressive muscle relaxation, but many health-care professionals have received training as part of their formal education.
- Many cancer hospitals and clinics offer relaxation training programs that include progressive muscle relaxation. Your health-care team may be able to recommend one for you to try.
- Try to practice relaxation regularly to reap its benefits. If one relaxation technique doesn't work for you, try another. If none of

your efforts at stress reduction seem to work, talk to your doctor about other options.

- While progressive muscle relaxation may help lessen your stress, as with other types of complementary treatment, it shouldn't be used as a substitute for standard medical care to treat a health problem. If you're interested in using progressive muscle relaxation to help manage a specific health condition, talk to your doctor about incorporating it into your self-care.

Deep Breathing

- Deep, or relaxed, breathing is a technique that involves deep, even-paced breathing using your diaphragm—the muscle under your rib cage—to expand your lungs. That's why this technique is also sometimes called diaphragmatic breathing or paced breathing. The purpose is to slow your breathing, take in more oxygen, and reduce the use of shoulder, neck, and upper chest muscles while you breathe. This helps you breathe more efficiently.
- With deep breathing, you take a deep breath of air, pause, exhale, and then pause before repeating. This is the most relaxed way to breathe. Your breaths are slow, smooth, and deep.
- Deep breathing can help you relax by reducing the stress chemicals in your brain. It's known to help relieve chronic pain, and some evidence shows that it can help reduce hot flashes that come with menopause, including how often they occur and how severe they are.
- Deep breathing can also help lower blood pressure and decrease anxiety, and it may be useful for chronic obstructive pulmonary disease (COPD). To get the full physical effects of relaxed breathing, it's best to do at least 15 to 20 minutes a day.
- Dizziness, tingling in your extremities, and fainting are all possible on rare occasion with deep breathing. You may want to avoid deep

breathing if you experience dizziness or tend to hyperventilate. Otherwise, paced breathing is a generally safe mind-body approach to enhance relaxation.

- Deep breathing releases endorphins throughout the body. Endorphins are feel-good, natural painkillers created by our own bodies. Deep breathing increases the blood flow to your major muscles and makes it easier for your heart to do its work. It's a good way to help your body and mind relax and regain strength and energy.
- The following are some basic instructions to help get you started in trying deep breathing.
 - Lie on your back or sit comfortably with your feet flat on the floor.
 - Relax your shoulders as you breathe.



- Breathe in slowly through your nose, allowing your abdomen to expand. Your chest should move only slightly.
- Breathe out slowly through your mouth. Repeat this sequence as many times as you like.
- Focusing on each breath is great for your body in a number of ways. First, if you're truly focused on inhaling and exhaling each breath, you really can't focus on other things. Directing the mind to focus on each breath serves as an anchor and helps prevent wandering thoughts that can be so challenging early in a meditative or other type of relaxation program. Also, the simple act of slowing our breathing produces the relaxation response.

Music Therapy

- Music has tremendous power to help us relax and enjoy life. Listening to music can certainly be therapeutic, but that's not the same as true music therapy. With true music therapy, a trained music therapist works with a patient's health-care team to come up with a plan that uses music therapy to meet the patient's specific needs.
- The therapist is trained to assess a patient's strengths and needs and uses a variety of tools, music, and instruments to help meet the patient's clinical goals. Music therapy can involve creating, singing, moving to, and listening to music.
- Music therapy also provides avenues for communication that can be helpful to those who find it difficult to express themselves in words.
- Music therapists can help people of all ages in a variety of ways. Music therapy has been shown to help lessen the effects of dementia, help reduce the number of asthma attacks in children and adults, relieve pain for people when they're in the hospital,



help children with autism communicate better, and help people who have Parkinson's disease improve their motor skills.

- Music can be therapeutic in more general ways, too. People with Alzheimer's disease who are listening to their favorite songs may feel calmer and less anxious. A piano player in the lobby of a hospital can make everyone feel a little better.
- Finding one specific type of music and using it for every patient population probably wouldn't be successful. In fact, in most music therapy studies or in studies of music in clinical environments, there's almost always an element of personal choice.
- Recorded music is what's used most often for patients who experience music therapy as part of their care; most patients don't experience a live musical performance as part of music therapy. But so far, studies that have been done on music therapy seem to suggest excellent outcomes, even when the music is recorded.

- Music therapy can't replace nursing care, pain medications, or other needed conventional approaches. If you are attuned to music and the appropriate music helps you relax or maybe even fall asleep without the use of medication, then it is worth using.

Art Therapy

- Art therapy is similar to music therapy in that it's based on the belief that the creative process involved in artistic self-expression can help people resolve conflicts and problems and reduce stress.
- The uses for art therapy range from helping war veterans to people who have anorexia and people who have experienced abuse or trauma. Art therapy is practiced in a wide variety of settings, including hospitals, psychiatric and rehab facilities, wellness centers, schools, crisis centers, senior communities, private practice, and other clinical and community settings, in both individual and group sessions.
- Numerous case studies have found that art therapy benefits patients with both emotional and physical illnesses. Case studies of young people have involved burn recovery, eating disorders, and sexual abuse. Studies of adults using art therapy have included bereavement, addictions, and bone marrow transplants, among others.
- Art therapy can take many forms, from drawing and painting to pottery and card-making. Getting your hands into finger paint or modeling clay can release pent-up tension and get you in touch with deeper feelings. There are even coloring books and patterns specifically to help with anxiety, where people work with repetitive patterns to help break a panic cycle.



Suggested Reading

Bauer, et al, "Effect of the Combination of Music and Nature Sounds."

Clair, et al, "A Feasibility Study of the Effects of Music and Movement."

Hashim, et al, "The Effects of Progressive Muscle Relaxation and Autogenic Relaxation."

Loewy, et al, "The Effects of Music Therapy."

Mayo Clinic Cancer Center, "A Creative Bedside Manner."

Scheufele, "Effects of Progressive Muscle Relaxation and Classical Music."

Yoo, et al, "Efficacy of Progressive Muscle Relaxation Training and Guided Imagery."

Effective Acupuncture

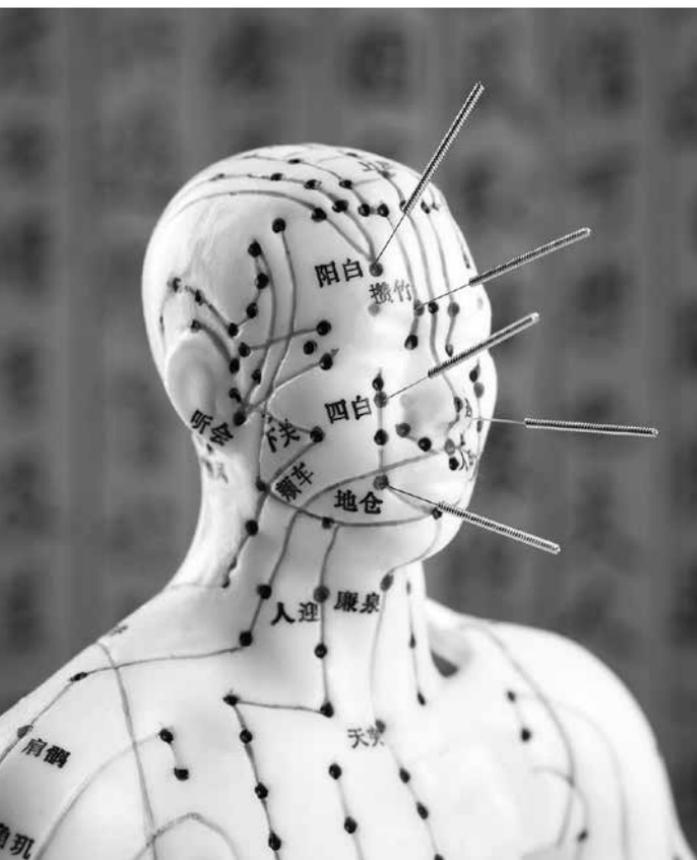
Acupuncture is a component of traditional Chinese medicine that involves inserting extremely thin metal needles through your skin at certain points on your body. Acupuncture is a technique for balancing the flow of energy, or life force—the qi you learned about in relation to tai chi and qi gong. Those who practice traditional Chinese medicine believe that qi flows through pathways in your body called meridians. By inserting needles into specific points along these meridians, the goal is to rebalance your energy flow. In this lecture, you will learn about acupuncture, as well as acupressure and *tui na*.

Acupuncture

- According to traditional Chinese medicine, the body contains a delicate balance of two opposing and inseparable forces: yin and yang. Yin represents the cold, slow, or passive principle; yang represents the hot, excited, or active principle.
- The goal is to achieve a balance of the two. Disease, in traditional Chinese medicine, comes from an imbalance that leads to a blockage in the flow of qi—that vital energy or life force believed to regulate your spiritual, emotional, mental, and physical health. Acupuncture is meant to remove blockages in the flow of qi and restore and maintain health.
- However, many scientists, physicians, and consumers aren't ready to buy into an energy force that we can't measure or see. So, the more Western approach is to look at acupuncture as a treatment

that stimulates nerves and pain pathways, as well as stimulation of the fascia, or the connective tissue fibers.

- Neither theory fully explains how acupuncture works, but it does seem to be an effective treatment, and many studies support its use, particularly when it's combined with other mind-body approaches and Western medicine. But many amazing things have been done with nothing more than acupuncture.
- One of the common misconceptions about acupuncture is that it's a standalone treatment. In reality, acupuncture is usually just one component of a larger treatment program, including recommendations about diet and lifestyle, and it might also include herbs, massage, or exercises, such as tai chi or qi gong.



- Many studies have been done just looking at acupuncture in isolation—in other words, taking a group of patients with back pain and providing half with acupuncture and half with sham acupuncture (needles placed in non-acupuncture sites). This is clearly not the way acupuncture would be used in most traditional Chinese medical practices, but even when it's delivered in this suboptimal approach, acupuncture works surprisingly well for headaches, back pain, and nausea.
- While people often link acupuncture to pain control, in the hands of a well-trained practitioner, acupuncture can do even more. It can be effectively used alone or when added to other medical treatments.
- The World Health Organization recognizes acupuncture as an effective treatment for a range of medical problems, including:
 - Digestive disorders, such as constipation and hyperacidity.
 - Respiratory disorders, including allergic rhinitis.
 - Neurological and muscular disorders, such as headaches, stroke, and neck pain.
 - Low-back pain and sciatica.
 - Urinary and menstrual problems.
- Most patients experience little or no discomfort with acupuncture. Some people describe a kind of aching or tugging sensation when the needles are manipulated, but this is mild. An acupuncture practitioner will use anywhere from five to 20 needles.
- Unlike therapies such as yoga and meditation, you can't practice acupuncture yourself at home. However, you can get acupressure bands that work for nausea, and you can learn about specific acupressure points. For example, squeezing firmly between your thumb and forefinger may help with headaches.

- Medicare doesn't cover acupuncture, and many insurance programs don't cover it, either. But as the evidence of its effectiveness grows, more insurance companies are taking a closer look at acupuncture. In the meantime, if you're interested in acupuncture but don't have insurance coverage for it, check to see if you have a community acupuncture program in your area. These tend to be less private but often less expensive.
- For most health problems, it may take six to eight treatments to see the full effect of the acupuncture treatment, which is usually given once or twice a week. If you don't see any benefits after six to eight treatments, it probably isn't for you.
- We really don't know how acupuncture works. The classical Chinese explanation is that channels of energy run in regular patterns throughout the body and over its surface. These energy channels, called meridians, are like rivers flowing through the body to irrigate and nourish its tissues. An obstruction in the movement of these energy rivers is like a dam that backs up.
- The meridians can be influenced by the insertion of tiny needles in acupuncture points; the needles unblock the obstructions and reestablish the regular flow of energy. Scientific research to date hasn't found any anatomical structures corresponding to these meridians, nor has anything particular been observed at the classical acupuncture points.
- The modern scientific explanation is that needling the acupuncture points stimulates the nervous system to release chemicals in the muscles, spinal cord, and brain. These chemicals either change how you experience pain or trigger the release of other chemicals and hormones that influence the body's internal regulating system. These responses can occur locally, at or close to the site of application, or at a distance, mediated mainly by sensory neurons to many structures within the central nervous system.

- Our body's natural painkillers—known as endogenous opioids—may play a key role in how acupuncture helps treat pain. Considerable evidence supports the idea that opioid peptides are released during acupuncture, and the pain-relieving effects of acupuncture are at least partially explained by their actions.
- The effects of acupuncture are broad and seem to involve many organ systems, as well as different regions of the brain. The final answer probably will be that acupuncture creates a number of complex, interrelated effects throughout our bodies and central nervous system and that its effects on opioid receptors are just one part of many.
- Treatment for pain is the best-studied aspect of acupuncture. The processing of pain signals involves many parts of the brain, and how much pain you feel partly depends on the context. Research has shown that true acupuncture is better than sham acupuncture in treating chronic neck pain, chronic low-back pain, and acute low-back pain.
- Although we still don't have a complete scientific account of how acupuncture works, we have some pretty good evidence that it does work for certain conditions and for certain people. The number of treatments needed differs from person to person.
- People experience acupuncture needling differently. Most patients feel only minimal pain as the needles are inserted, and some feel no pain. Once the needles are in place, you don't feel any pain. Usually, there aren't any side effects to acupuncture treatment.
- On the day of your acupuncture treatment, there are some things you can do to help prepare yourself. This advice comes from the American Academy of Medical Acupuncture, the professional society of physicians in North America who have incorporated acupuncture into their traditional medical practice.

- Don't eat an unusually large meal right before or after your treatment.
- Don't exercise vigorously, engage in sexual activity, or consume alcoholic beverages within six hours before or after treatment.
- Plan your activities so that after your treatment, you can get some rest—or at least not have to be working at top performance. This is especially important for the first few visits.
- Continue to take any prescription medicines as directed by your doctor. Abusing drugs or alcohol, especially in the week before treatment, will seriously interfere with the effectiveness of acupuncture treatments.
- Keep good mental or written notes of your response to treatment. This is important for your doctor to know so that the follow-up treatments can be designed to best help you.
- If you're considering acupuncture, you'll want to find a qualified practitioner. Take the same steps you would to choose a doctor.
 - Ask people you trust for recommendations.
 - Check the practitioner's training and credentials. Most states require that acupuncturists who aren't physicians pass an exam conducted by the National Certification Commission for Acupuncture and Oriental Medicine.
 - Interview the practitioner. Ask what's involved in the treatment, how likely it is to help your condition, and how much it will cost.
 - Find out whether your insurance covers the treatment.
- Although acupuncture has been a life-changing therapy for many patients with chronic pain problems, it can't cure everything. And

like all of the other treatments you have been learning about, it still requires that we build our health foundation to see the optimal health benefits.

Acupressure

- Acupressure, sometimes called “shiatsu,” is based on the same ideas as acupuncture. But instead of inserting a needle, the practitioner applies physical pressure to specific points on the surface of the body using a finger, hand, elbow, or device. The intent is to restore the flow of life energy, or qi.
- Some people use acupressure simply as a relaxation technique, but it’s also used to treat a wide variety of conditions, including musculoskeletal pain and tension, depression, anxiety, sleep difficulties, headache, and nausea.
- Numerous scientific studies support the use of acupressure applied to a specific point on the wrist known as P6 to prevent and treat nausea associated with chemotherapy and surgery, as well as nausea related to the morning sickness that may accompany pregnancy. Some people have found that wrist acupressure also helps reduce motion sickness. The P6 point is located about three finger widths from the large crease in your wrist.

Tui Na

- Another technique that’s closely related to acupuncture and acupressure is Chinese massage, also called *tui na*. It’s the oldest known system of massage and has been used in China for thousands of years, dating back to the Shang dynasty.
- Unlike other forms of massage therapy, *tui na* uses the meridian system—that’s what makes it similar to acupuncture and acupressure. Through the application of massage and manipulation techniques at specific points on the body, *tui na* seeks to reestablish the normal flow of qi.



- *Tui na*, which translates into “push and pull” in Chinese, is a series of maneuvers that include pressing, kneading, and grasping, which range from light stroking to deep tissue work. The maneuvers involve hand techniques to massage the body’s soft tissues (muscles and tendons). Acupressure techniques affect the flow of qi, and manipulation techniques realign the musculoskeletal system.
- Unlike most forms of massage, Chinese massage generally isn’t a light, relaxing massage. It can be very powerful, and some people find parts of the massage to be a bit painful. It’s generally used to treat injuries, joint and muscle problems, chronic pain, and some internal disorders. It shouldn’t be used for conditions such as a bone fracture or external wound or open sores. It’s also not recommended to treat life-threatening conditions, such as a cancerous tumor.

Suggested Reading

Kim, et al, "Acupuncture for Lumbar Spinal Stenosis."

Liu, et al, "Acupuncture for Low Back Pain."

Mallory, et al, "Acupuncture in the Postoperative Setting for Breast Cancer Patients."

Martin, et al, "Improvement in Fibromyalgia Symptoms with Acupuncture."

Suarez-Almazor, et al, "A Randomized Controlled Trial of Acupuncture for Osteoarthritis of the Knee."

Takahashi, "Mechanism of Acupuncture on Neuromodulation in the Gut."

Thicke, et al, "Acupuncture for Treatment of Noncyclic Breast Pain."

"Understanding Acupuncture: Time to Try It?" *NIH News in Health*.

Vincent, et al, "Utilisation of Acupuncture at an Academic Medical Centre."

Zhang, et al, "Efficacy of Acupuncture for Chronic Constipation."

Massage Therapy and Spinal Manipulation

Massage and spinal manipulation are two of the most popular integrative therapies. They are used most often to treat back pain, neck pain, headaches, and arthritis, and they can play an important role in your health and wellness. In this lecture, you will learn about both massage and spinal manipulation, how they work, and where each can help the most. While these therapies are not cures for diseases such as cancer, heart disease, HIV, or diabetes, they may help ease chronic muscle, joint, and back pain and can help you rebound from a sports injury.

Massage

- Massage is a general term for pressing, rubbing, and manipulating your skin, muscles, tendons, and ligaments. Massage therapists typically use their hands and fingers for massage, but they may also use their forearms, elbows, and even feet. Massage may range from light stroking to deep pressure.
- There are many different types of massage. The following are four common types.
 - Swedish massage is the most popular kind of massage. It's a gentle form of massage that uses long strokes, kneading, deep circular movements, vibration, and tapping to help you feel relaxed and energized.
 - Deep massage is a technique that uses slower, more forceful strokes to target the deeper layers of muscle and connective



tissue. It's commonly used to help with muscle damage from injuries.

- Sports massage is like Swedish massage, but it's geared toward preventing or treating injuries for people involved in sports activities.
- Trigger point massage focuses on tight muscle fibers that can form if you've injured or overused a muscle.
- Massage is being offered more and more along with standard treatment for a wide range of medical conditions and situations.
- Researchers have found that massage is an effective way to reduce stress, pain, and muscle tension. It releases endorphins—the body's natural painkillers—and increases the blood flow through your body. It can also reduce heart rate and improve how well your immune system works.
- More research on the benefits of massage is needed, but the studies that have been done so far indicate that massage may be helpful for the following conditions.
 - Anxiety
 - Digestive disorders
 - Fibromyalgia
 - Headaches
 - Insomnia related to stress
 - Myofascial pain syndrome
 - Paresthesia and nerve pain

- Soft tissue strains or injuries
- Sports injuries
- Temporomandibular joint pain
- Many people wonder why massage has so many profound effects on people. This is a difficult question to answer because there are so many layers involved in massage therapy.
- On one hand, muscles and tissues are being manipulated in a structured and purposeful fashion. Moving muscles and the fibers that connect them might have an impact on muscle pain or alignment or posture.
- But far beyond the simple manipulation of muscle, massage also involves human contact. There's a great deal of power in human touch, and that power is a key benefit in massage therapy. Beyond this, massage usually occurs in a very quiet, pleasant environment; sometimes aromatherapy is also used. The ambience, or the whole effect of the environment, may play a role in the healing power of massage, too.
- No matter which of these components is the main driver—or maybe they all work together—the fact is that most people see very profound effects from massage therapy. They feel less pain, they are less anxious, and their muscles are less tense.
- In most studies of massage therapy, patients say that their overall well-being is improved, too. In addition, a number of studies suggest positive changes to the body, including a decrease in some of the chemicals associated with stress.
- While most people enjoy massage and often feel better after massage—even after a day or two—there's no question that the acute effects of massage generally aren't long-lasting. But even

when the memory of your last massage is starting to fade, you may be still enjoying its benefits, even if they're not obvious to you.

- Beyond its specific treatment benefits, massage is something that people enjoy because it often involves caring, comfort, a sense of empowerment, and creating deep connections with a massage therapist.
- Despite this, massage isn't meant as a replacement for regular medical care. Let your doctor know that you're trying massage, and be sure to follow any standard treatment plans you have.
- Most people can benefit from massage, but it's not appropriate for everyone, especially if you have had a recent heart attack, have a bleeding disorder, or are taking blood-thinning medication. If you have deep vein thrombosis, burns, fractures, or severe osteoporosis, massage may be harmful. People with cancer, healing wounds, or nerve damage should avoid pressure on affected areas of the body.
- Be sure to talk about the pros and cons of massage with your doctor, especially if you're pregnant or have cancer or unexplained pain.
- Some forms of massage can leave you feeling a bit sore the next day. But in general, massage shouldn't be painful or uncomfortable. If any part of your massage doesn't feel right or is painful, speak up right away. Most serious problems come from too much pressure during massage.
- No matter what kind of massage you choose, you should feel calm and relaxed during and after your session.
- Several types of health-care professionals—such as physical therapists, occupational therapists, and massage therapists—perform massage. Ask your doctor or someone else you trust for a recommendation. Most states regulate massage therapists through licensing, registration, or certification requirements.

- Don't be afraid to ask a potential massage therapist questions like the following.
 - Are you licensed, certified, or registered?
 - What is your training and experience?
 - How many massage therapy sessions do you think I'll need?
 - What's the cost, and is it covered by health insurance?

Spinal Manipulation

- Another popular hands-on therapy is spinal manipulation, or spinal adjustment. This type of therapy is practiced by chiropractors, doctors of osteopathic medicine, and some physical therapists.
- Research shows that spinal manipulation can effectively treat certain musculoskeletal conditions, such as low-back pain. It's generally considered to be safe, but it's not appropriate for everyone.
- Chiropractic care is based on the idea that your body's structure—nerves, bones, joints, and muscles—and its capacity for healthy function are closely intertwined. By aligning and balancing your body's structure, chiropractic treatment is intended to support the body's natural ability to heal itself.
- Adjustment is one form of therapy that chiropractors use to treat spinal mobility. The goal is to restore spinal movement and, as a result, improve function and decrease back pain.
- During an adjustment, chiropractors use their hands to apply a controlled, sudden force to a joint. This often results in a cracking sound made by separation of the joint surfaces—not, as many people think, by “cracking joints.”

- Some chiropractors use instruments to adjust the spine. These methods have not been carefully studied, so their value is uncertain.
- Chiropractors may use muscle pressure and stretching to relax muscles that are shortened or in spasm. Many use additional treatments, such as exercise, ultrasound, and general muscle stimulation.
- Chiropractic care can also be used as a complement or supporting treatment for other medical conditions by relieving the musculoskeletal aspects associated with the condition.
- Chiropractic adjustment rarely causes discomfort and is safe when it's performed by someone who is trained and licensed to deliver chiropractic care. You may have mild soreness or aching following treatment, but this usually resolves within 12 to 48 hours after treatment. Serious complications associated with chiropractic adjustment are rare.



- Don't seek chiropractic adjustment if you have severe osteoporosis, numbness, tingling, or loss of strength in an arm or leg, cancer in your spine, an increased risk of stroke, or an unstable spine.
- Some people experience minor side effects for a few days after chiropractic adjustment. These may include headache, fatigue, or pain in the parts of the body that were treated.
- Not everyone responds to chiropractic adjustments. A lot depends on your particular situation. If your symptoms don't begin to improve after several weeks of treatments, chiropractic adjustment might not be the best option for you.
- Most of the research done on spinal manipulation has focused on back pain, and many studies suggest that it does help.
- In an interview with the *Chicago Tribune*, Ralph Gay, M.D., vice chair of the Midwest Spine Care Practice within Mayo Clinic's department of Physical Medicine and Rehabilitation, addressed the idea of safety within a larger conversation about how medical doctors view the field of chiropractic care. In his interview, Dr. Gay said that medical doctors generally have three main concerns about chiropractic care.
 1. Some medical doctors feel that the education requirements for chiropractors aren't rigorous enough. Unlike traditional medicine, there's no requirement for an internship or residency before a chiropractor is licensed.
 2. Chiropractors don't police themselves very well. State boards regulate practice in all 50 states, but most chiropractors have their own private practice. That means there's not much oversight, and there's not much reason for chiropractors to change the way they practice, even if there are changes they should make.

3. Even if more sessions aren't needed, there's concern that chiropractors keep asking their patients to return. In general, the chiropractic practice model suggests that several treatments over a period of weeks or months is needed to get the most benefit. A trial period is usually six to eight visits.
- But these same concerns could be applied to physical therapy, acupuncture, and massage therapy. Although some chiropractors may look to their business models—more than they do clinical evidence—when they're deciding on a patient's treatment, most chiropractors limit treatment to what's needed for each individual patient based on their response to care.
 - Despite these concerns, Dr. Gay said in his interview that he sees medical doctors slowly changing their view of chiropractic care. They're not necessarily referring patients to chiropractors because they have a degree in chiropractic care; they're referring them in circumstances that they feel such care could be helpful and when they personally trust that a specific chiropractor will take good care of the patient.
 - In terms of chiropractic care, there are things you can do as a consumer to make sure that you're getting the right kind and amount of care. In his interview, Dr. Gay suggests watching out for chiropractors who recommend initial treatment that lasts more than three to four weeks, who ask for lump-sum payment, or who want to treat you for a condition that's not related to the spine or other common joint or muscle conditions.
 - If you're thinking about seeking chiropractic care, be sure to do the following.
 - Ask about the chiropractor's education and licensure.
 - Bring up any medical conditions you have. Ask whether chiropractors have specialized training or experience in the condition you're looking for them to treat.

- Ask how much you'll be expected to pay and if insurance covers your treatment. Chiropractic adjustments are covered by many health maintenance organizations and private health plans, as well as Medicare and state workers' compensation systems.
- Tell the chiropractor about any medications (prescription or over-the-counter drugs) and dietary supplements you take. If a chiropractor suggests a dietary supplement, ask about potential interactions with your medications or other supplements.

Suggested Reading

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Bronfort, et al, "Effectiveness of Manual Therapies."

Clarke, et al, "Trends in the Use of Complementary Health Approaches among Adults."

Cutshall, et al, "Effect of Massage Therapy on Pain, Anxiety, and Tension."

Deardorff, "A Medical Doctor's View of Chiropractic Care."

Dion, et al, "Development of a Hospital-Based Massage Therapy Course."

Dion, et al, "Effect of Massage on Pain Management for Thoracic Surgery Patients."

Dion, et al, "Massage Therapy Alone and in Combination with Meditation."

Drackley, et al, "Effect of Massage Therapy for Postsurgical Mastectomy Recipients."

Dreyer, et al, "Effect of Massage Therapy on Pain, Anxiety, Relaxation, and Tension."

Engen, et al, "Feasibility and Effect of Chair Massage."

Engen, et al, "The Effect of Chair Massage on Muscular Discomfort."

Keller, et al, "Feasibility and Effectiveness of Massage Therapy."

National Center for Complementary and Integrative Health, "Spinal Manipulation's Effects."

Pruthi, et al, "Value of Massage Therapy for Patients in a Breast Clinic."

Rodgers, et al, "A Decade of Building Massage Therapy Services."

Wentworth, et al, "Massage Therapy Reduces Tension, Anxiety, and Pain."

Living Well

From eating the right foods and exercising regularly to meditating and even spending time at a spa, every effort you make to improve your overall physical and mental health helps not just you, but also your family and even your community. In this lecture, you will learn how wellness centers and spa experiences may fit into your overall health and wellness program, and you will discover how happiness can positively affect your health.

Mayo Clinic's Healthy Living Program

- The Healthy Living Program at Mayo Clinic started with some observations by a longtime Mayo Clinic patient, Dan Abraham. In his visits to the clinic, he noticed that some of the Mayo Clinic staff looked stressed and unhealthy, and he wanted to do something about it.
- Over the years, through Dan Abraham's generosity, Mayo Clinic has been able to open a wellness center on its Rochester campus for employees and their families. The center was recently expanded to offer a wellness experience for Mayo Clinic patients and their families.
- A true wellness center, the Healthy Living Program brings together different areas—nutrition, fitness, and resiliency—along with spa activities, to help people feel better about themselves, improve their quality of life, and meet their goals with a comprehensive wellness plan that's unique to each individual.

- After visiting the Healthy Living Program, patients can go home and incorporate the tools and techniques they've learned into their lives, just as Mayo Clinic employees do when they visit the Healthy Living Center.

Aromatherapy

- Massage therapy is an important service of most spas, and it's often used with aromatherapy. The idea of aromatherapy is that certain scents can affect our psychological or physical well-being.
- Many people think that aromatherapy is about imagining a smell that makes us feel good, because scent is so connected to memory. That's certainly part of it. But another side to the practice of aromatherapy is focused on the therapeutic use of essential oils extracted from plants.
- Essential oils are concentrated extracts taken from the roots, leaves, seeds, or blossoms of plants. Each essential oil contains its own mix of active ingredients, and this mix determines what the oil is used for. Some oils are used to promote physical healing.
- Other plant oils can help you relax or make a room smell pleasant. Orange blossom oil or lavender oil, for example, contain a large



amount of an active ingredient that's thought to be calming. The highly concentrated oils may be inhaled directly or indirectly, or applied to the skin through massage, lotions, or bath salts.

- Essential oils used in aromatherapy aren't regulated by the Food and Drug Administration, but for the most part, they're considered safe. However, just because they're natural doesn't mean that they don't pose risks if they're used inappropriately. It can be harmful to overuse or ingest essential oils, and they may produce some side effects or interactions.
- With aromatherapy massage, the idea is that your skin is able to absorb the essential oils at the same time you're breathing in their scent and while you're experiencing the physical benefits of the massage. Common aromatherapy scents used for relaxation include lavender, jasmine, chamomile, bergamot, rose, sandalwood, and vanilla.
- Although there have been few formal studies of aromatherapy on humans, those that have been done suggest that aromatherapy may offer a number of health benefits. Some studies have shown aromatherapy can help relieve anxiety and symptoms of depression and improve quality of life, especially for people who have chronic health conditions.

Hot Tubs and Warm Pools

- Hot tubs provide another common spa experience. You can find hot tubs at pools, spas, and hotels. The hot water feels good and relaxes your muscles, lowers your blood pressure, and eases tension.
- Mayo Clinic researchers have found that soaking in a hot tub offers benefits similar to those from exercise, with less stress on the heart. Soaking in a hot tub increases your heart rate while lowering your blood pressure.

- Hot tubs aren't for everyone. Don't use a hot tub if you have any sort of wound, have severe respiratory problems, or are pregnant. In addition, hot tubs can be a breeding ground for dozens of types of bacteria, many of them potential pathogens. The water can be a ground zero for infectious diseases.
- There are many good reasons to approach hot tubs with caution, and for some people, they may make a calm, warm pool or a hot bath better options. Arthritis experts promote the use of warm-water pools as a way to reduce the force of gravity that's compressing a joint, support sore limbs, decrease swelling and inflammation, and increase circulation—all in just 20 minutes.
- Warm water helps by stimulating blood flow to stiff muscles and frozen joints. This makes a warm tub or pool a great place to do some gentle stretching. The flexibility lasts even after you get out.
- Warm water can be helpful in fighting the pain and stiffness of arthritis and fibromyalgia. A variety of studies show that people with both of these conditions who take part in warm-water exercise programs two or three times a week often are able to move more easily and experience significantly less pain. The exercise programs also provided an emotional boost, helped people sleep better, and were particularly effective for people who are overweight.

Saunas

- Saunas offer the opportunity to feel better through heat and sweat. Thomas Allison, Ph.D., director of Sports Cardiology at Mayo Clinic, says that there's no hard data to suggest that the use of saunas has any bearing on your overall health. Saunas can relax your muscles and make you feel good, but you should use them in moderation.
- Infrared saunas, sometimes called far-infrared saunas, use light to create heat. A traditional sauna uses heat to warm the air, which in



turn warms your body. An infrared sauna heats your body directly without warming the air around you.

- The appeal of saunas in general is that they cause reactions, such as vigorous sweating and increased heart rate, similar to those elicited by moderate exercise. An infrared sauna produces these same results at lower temperatures than does a regular sauna, which makes it good for people who can't tolerate the heat of a conventional sauna.
- Several studies have looked at using infrared saunas to treat chronic health problems such as high blood pressure, congestive heart failure, and rheumatoid arthritis and found some evidence of benefit. However, larger and more rigorous studies are needed to confirm these results.

- On the other hand, no adverse effects have been reported with infrared saunas. So, if you're considering trying a sauna for relaxation, an infrared sauna might be an option.
- There's a lot more to many spas. They may also offer body treatments such as scrubs and wraps that are applied by massage therapists, as well as more conventional beauty treatments, such as facials, manicures, and pedicures.
- As with any complementary treatment, it's important to remember that nothing is without risk. Some cosmetic treatments can be dangerous if not carried out properly. You should never undergo any kind of spa treatment if you have an open cut or wound—that's how bacteria get in.
- Pay attention to how the spa cleans its equipment. Spas should use new or sanitized instruments on your hands and feet. See if they have an autoclave or sanitizing liquid, at the very least. If you see the technicians using the same files and clippers on each person, that's a sign that they aren't very clean, and you're taking a risk of getting an infection.

Spa Treatments

- A true, comprehensive spa can provide elements of wellness that go beyond the concept of pampering. And even if your doctor recognizes the importance of NESS (nutrition, exercise, stress management, and social support), he or she may not have the resources in his or her office to teach you tai chi or offer a massage. So, finding providers of these services in your own community is key—and so much the better if they have a working relationship with your health-care team.
- When you're looking for a great spa, look for a focus on stress management via massage or meditation training, aromatherapy, or yoga, as well as exercise opportunities and healthy eating.

- Think of the time spent in spa treatments as an investment in your health, not simple pampering. Even something as simple as a manicure or pedicure can be part of a wellness program.
- What you want from a “destination spa” may be different from what you need in your everyday wellness routine. Mayo Clinic’s Healthy Living Center offers programs that Mayo Clinic employees and their families can participate in on an ongoing basis year-round, such as weight management, resiliency training, or thriving as a cancer survivor.
- But Mayo Clinic’s Healthy Living Program is designed for people who are able to be there only for a short time. If you’re thinking of participating in a destination spa program, look for one that will teach you what you need to know to continue with your program once you get home.
- You may be lucky enough to find a comprehensive wellness center in your community that offers massage, meditation training, maybe acupuncture, some nutrition coaching—all the things you have learned about in this course. Look for a place that can teach you some self-care skills, and maybe a place where you go once or twice a week for a massage or a class. In some areas, you may need to put together your program à la carte.
- Most massage and other spa treatments are not covered by insurance. Some are covered by health savings accounts, and many people are willing to pay for the treatments themselves, which speaks to how helpful they find them. When thinking about the cost of a yoga class or a massage, evaluate it against what you are willing to pay for coffee at a chain store.

Happiness and Health

- By increasing your level of happiness, you can improve your health and overall well-being. It’s a big part of living well. The services you experience in a spa are designed to help you feel good, which



is certainly something that can help boost your happiness, but happiness means much more than that.

- Research shows that people who have a positive outlook on life do better in the long run than do those who see things negatively. In fact, a Mayo Clinic study found that optimists live about 20 percent longer than do pessimists.
- Changing your attitude can have direct effects on your health. By seeing life in a positive light, your health may benefit in many ways.
 - You may be less likely to be depressed.
 - You may have lower levels of distress.
 - You may be less likely to get the common cold.
 - You may have better psychological and physical well-being.
 - You may have a lower risk of death from cardiovascular disease.
 - You may be better able to cope with hardships and stress.
- It's not completely clear why people who have a positive outlook on life experience these health benefits. One theory is that a positive attitude enables you to cope better with stressful situations, reducing the harmful health effects of stress on your body. It's also thought that positive and optimistic people tend to live healthier lifestyles; they get more physical activity, follow a healthier diet, and don't smoke or drink alcohol in excess.
- Like stress, negative self-talk can also have harmful effects on your health. That's bad news if you naturally tend to feel depressed. But the good news is that this seems to be a personality trait that you can change with practice. For many people, that means putting

a stop to the negative messages they mentally tell themselves. Constantly reinforcing those negative messages just increases the chances that you won't succeed.

- Look at the areas of your life you want to change and start small by identifying incremental changes you can make to get yourself moving in the right direction. Surround yourself with positive people who will help provide encouragement rather than undermine you or make you doubt yourself and your ability to achieve your goals.
- It may take a bit of practice to get into the habit of more positive self-talk. Try to not say anything to yourself that you wouldn't say to anyone else. Most people tend to be their own harshest critics. At the same time, don't forget your NESS program. Eat a healthy diet and exercise regularly to positively affect your mood and reduce stress.

Suggested Reading

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Buettner, *The Blue Zones*.

Maruta, et al, "Optimism-Pessimism Assessed in the 1960s."

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