

Maintaining a Healthy Immune System: *What you can do to help*



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About the Author

Dr. Len Calabrese is a Professor of Medicine at the Cleveland Clinic Lerner College of Medicine and the director of the R.J. Fasenmyer Center for Clinical Immunology. He has been practicing clinical immunology and engaging in research and education at the Cleveland Clinic for over 35 years. He is the author of over 300 manuscripts, chapters and editorials on the subject of clinical immunology.



A personal note from Dr. Calabrese

“I created the first version of this monograph on immune health over 15 years ago and have updated it several times. It is not comprehensive, but more of a bottom line on what you can do to tune and maintain your own immune system. There is no way, in the context of such a booklet, to provide all or even most of the evidence in this field and in many areas, the evidence is inconclusive. Unfortunately for you and me, we still need to make choices about our lifestyle even when we don’t know all there is to know about everything that affects the immune system; all we can do is make our choices based on the best information available. This latest version is a bit more personal, although I have left in the scientific background and a number of key references and resources (including the wonderful programs offered by the Cleveland Clinic Wellness Institute). I have still tried to word it in a way that would be similar to how I would talk to a patient if we were chatting in my office. The 2017 version includes tips from two local experts in the fields of nutrition and yoga - enjoy! Lastly, this version remains more comprehensive than previous versions in that I reveal how I make my own choices in trying to achieve optimal immune health. I hope you read and enjoy this monograph. Let me know what you think.”

~ Dr. Len Calabrese, August, 2017

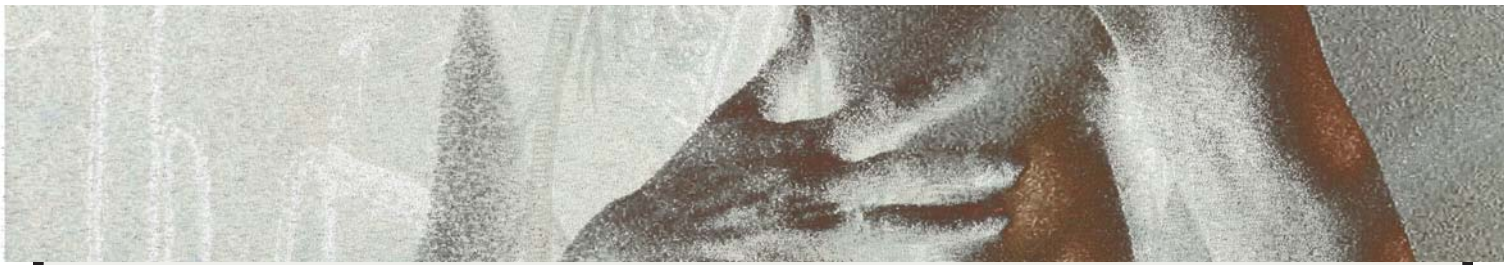


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Betsy is a Nurse Practitioner in the Department of Rheumatic and Immunologic Diseases at Cleveland Clinic, and she is the Director of Patient Care for the R.J. Fasenmyer Center for Clinical Immunology.

Betsy graduated summa cum laude with a Bachelor's degree in English Literature and Medieval Studies from Ohio Wesleyan University in 1992. She received her Master of Science in Nursing from the Frances Payne Bolton School of Nursing at Case Western Reserve University in 2000. She received Board Certification in Rheumatology Nursing in 2016.

Betsy is passionate about patient education and is the Education Chair of the Board of Directors of the Rheumatology Nurses Society. She is also very active in outcomes measurements for the department and has spearheaded quality measures that ensure patient safety such as screening for latent infections and maximizing vaccine use in a vulnerable patient population.

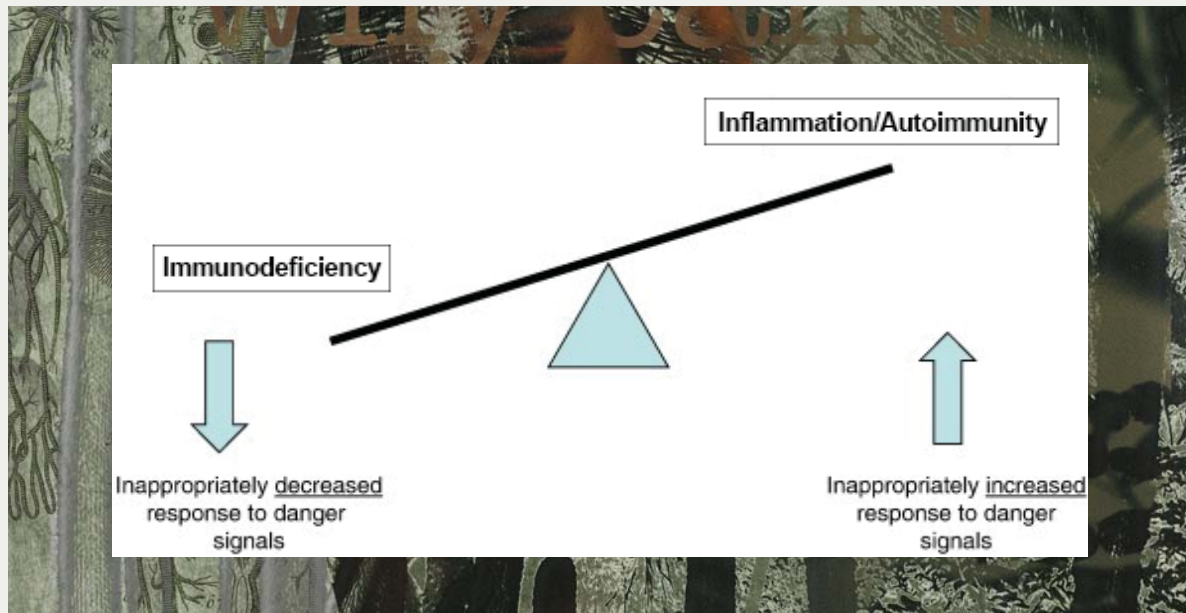


The Immune System from 30,000 Feet

Your body's immune system is a remarkable machine designed to protect you from harmful threats which may arise from outside or inside your own body. While it was always assumed that our immune system is there to protect us from infection, we eventually realized that we are living in a sea of microbes in our gut, our skin, our mouths and nose -- but our immune system is not angry with them and seems to accept these foreigners quite well. So for many years immunologists wondered and hypothesized about why we even have an immune system. In the mid-1990s, an immunologist named Polly Matzinger put forth the 'danger model hypothesis' which proposed that our body's immune system is really designed to ward off danger from harmful infections, the environment (i.e. too much sun, pollution, tobacco, allergens, etc.) and our own internal waste, both at the microscopic and macroscopic levels. If this is true, then clearly the most important external threat - as far as the immune system is concerned - is the threat from dangerous infectious agents including viruses, bacteria, fungi and parasites. The immune system also serves a role in providing surveillance for internal threats such as protecting us from the development of cancer. The immune response accomplishes these vital functions through its amazing ability to scan and determine when something foreign poses a clear and present danger to us. Thus, it is continuously monitoring our body for evidence of structures known as 'immunogens,' which represent not only foreignness or non-self, but also contain an element of danger. Collectively, a healthy immune system is essential for normal growth and development and maximized longevity. Like all other physiologic systems, it is designed to peak in our reproductive years and then decline.

When our immune system fails it can have a variety of adverse consequences, including a compromised ability to defend us from infections. At the mild end of this spectrum may be an increased frequency of viral-like infections that, while not life-threatening, may seriously reduce one's quality of life. More severe degrees of immune dysfunction may result in unusual complications or failure to recover from infections in a timely manner. At the farthest extreme of immune failure, as experienced by those with advanced HIV disease, the body is attacked by organisms not usually capable of causing disease in healthy individuals; the resulting infections are known as 'opportunistic infections' since they exploit a failing immune defense network. Failure of immune surveillance may also lead to an increased rate of certain cancers such as lymphomas and other types of tumors that thrive in an immunosuppressed milieu.

In contrast to what can happen when our immune system is under active, another type of failure of our immune system is over-activity or immune dysregulation. This over-activity can lead to the development of autoimmune diseases. These disorders are characterized by hyperactive immune responses that cannot clearly differentiate self from non-self. Examples of these types of disorders include rheumatoid arthritis, connective tissue disease (e.g. systemic lupus erythematosus, vasculitis, Sjogren's syndrome), multiple sclerosis, autoimmune endocrine diseases (e.g. autoimmune thyroid disorders, Type 1 diabetes), inflammatory bowel disease, celiac disease, inflammatory lung disease, and a variety of poorly understood diseases including chronic fatigue syndrome and related disorders.



Understanding why our immune system malfunctions is difficult, but research has revealed the remarkable intricacies of the immune system, including how it relates to other vital bodily functions. Think about your immune system not as an isolated organ, but a highly integrated system of cellular responses intimately related to other physiologic systems. For example, there is abundant evidence that immune responsiveness is practically hard-wired to our central nervous systems through a variety of neurochemical pathways. Understanding this relationship is critical to appreciating that maintaining neuropsychological health in the form of minimizing stress and maintaining good sleep hygiene is vital for optimal immune health. Additionally, cardiovascular health is also tied to the immune system in a variety of ways. The mere ability of our circulatory system to move or ‘traffic’ immune competent cells to points of conflict is evidence of such. Similarly, the immune system is represented in virtually every other organ system, including gastrointestinal, pulmonary, endocrine and dermatologic, providing ample evidence of why immune health is critical to overall health.

Checkpoint Therapy:

An Immunology Breakthrough

A truly remarkable recent advance has been made in the field of oncology, where the immune system is being harnessed to fight cancer with a new class of medicines called “checkpoint inhibitors.” These drugs have revolutionized the treatment of certain cancers; they work by taking the brake off the body’s immune system, leading to aggressive anti-tumor effects with minimal collateral damage. Being able to see what happens to the immune system from this perspective will undoubtedly lead to important insights into autoimmune diseases. We are far closer to the beginning than the end of this remarkable story so stay tuned!



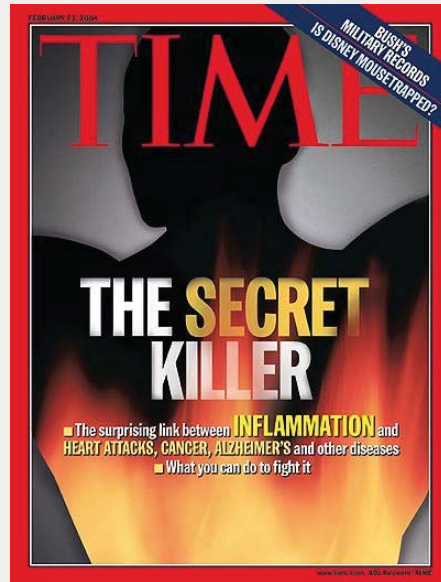
The Immune System: The Basics

The human immune system is a remarkable product of evolution that has spanned hundreds of millions of years. Some of the same molecules found in one-celled organisms that existed when life was first found on our planet are represented in our immune system. Over millennia, the human immune system evolved, adding additional layers of defenses to eventually display what immunologists call ‘immunologic redundancy.’ This feature provides additional layers of protection or back-up in the event that one of our critical defense systems fails.

Visualize your immune system as a group of separate but highly integrated defense networks — each serving a particular role but all cooperating with each other. The armamentarium consists of a variety of different cell types and hundreds and hundreds of proteins, each of which provides a specific function. The immune response is divided into the innate and adaptive immune responses. Our innate immune system is the older of the two, being found in our most primitive ancestors. This is one of our first lines of defense from both external and internal attack. Critical members of the innate immune system include cells known as ‘natural killers’ named for their ability to seek and destroy a wide range of foreign cells including those arising from infection or malignancy. Other cells, known as dendritic cells and macrophages, also participate in early immunologic defense. All cells of the immune system are capable of communicating with each other through direct cell contact and/or the production of cellular messengers known as cytokines, capable of inducing or suppressing inflammation. A complex system of proteins known as the ‘complement system’ also provides a layer of defense. Following triggering of the innate immune response, the adaptive response takes over. This is a more refined or specific system of defense, designed to seek out and destroy infections, toxins and tumors without causing harm to the host. B-cells produce specific proteins known as antibodies, which circulate and bind to specific targets similar to how a heat-seeking missile seeks and destroys a hot target while leaving the cold surrounding environment undamaged. Finally, the T-cells serve as the command and control center for this integrated response, providing not only defense against the most stealthy of invaders but also providing signals to end the battle before harm is done to the host. This ability to shut down in a timely manner is a vitally important characteristic of our immune systems.

Overall, the immune system serves to generate an ‘inflammatory response’ that can be localized (e.g. a boil) or generalized (e.g. fever, elevated pulse) and serves as the basic mechanism for protecting and ridding us of foreign invaders. In the past few years, much has been said of the negative effects of inflammation including everything from premature cardiovascular disease, premature neurocognitive decline and in general premature aging. We now have clinical measurements of this phenomenon such as high sensitivity CRP, which can inform us of some of these risks, at least in terms of vascular disease. Inflammation increases with disorders such as obesity, diabetes and autoimmunity and is made worse by a sedentary life style.

In the past few years, one of the newest horizons in immune research is the recognition that our own gastrointestinal system harbors the richest repository of immunologic weapons in the entire body. This system is now referred to as ‘the microbiome,’ the totality of micro-organisms that live in harmony with us. In fact, the majority of cells in our body are not of human origin if we count the microbes we carry around! I will return to the significance of this when we discuss nutrition and immunity. Clearly in such a complex system, so highly regulated and intricately constructed, there is ample room for things to go wrong.



Aging and Immunity: ‘Inflammaging’

‘Inflammaging’: When your immunologic clock runs out, you’re dead!

Immune dysfunction arises from a variety of factors, many of which are out of our direct control. In particular our immune system, like other bodily systems, runs down over time. This phenomenon is known as immune senescence and is believed to be responsible for the increasing incidence of infections, cancers and diseases of the immune system we face as we age.

The reasons for immunosenescence are unclear but think about it: if we view our lives in evolutionary terms, nature really only wants us to live long enough to reproduce! Maybe 18-25 years! Yes, that may seem disappointing but it is probably close to reality. Life extension does very little for our species, so much of our “equipment” (i.e. heart lungs, brain and immune system) just wears out.

A lot of work over the past few years has implicated several additional factors contributing to the running down of our immunologic clock. I will mention two: inflammation, leading to the coining of one of my favorite words (“inflammaging”), which clearly implies that inflammation is bad for a long-lived and healthy immune system; and infections - particularly certain forms of viral infections such as CMV - against which our immune systems must work harder and harder over time to defend us. This is a tough problem without a simple solution at the moment.

Fortunately our immune system, like other bodily systems, can be protected and enhanced through a careful application of training principles that I will outline for you in the following pages. Adopting these habits will neither guarantee perfect health nor protect us from the inevitability that we are all growing older; however, we will be enriched by knowing we are doing everything we can do to optimize our immune response, delay immune senescence and fight immune-based diseases. The principles espoused in this monograph are based on the best possible external evidence derived from research in peer-reviewed publications as well as the experience of 35 years of practicing clinical immunology.

A Training Program for Immune Health

Unfortunately, and despite what you may be exposed to or enticed by, there is no medication or supplement capable of optimizing the immune system. There are, however, techniques, supported by experimental evidence, capable of boosting our immune systems, resulting in improved health and improved quality of life. These techniques largely fall into three areas: exercise/training and immunity, diet/nutrition and immunity, and mental/spiritual health and immunity. I will discuss each technique in detail; but before I do, I want to reinforce that no system of training for the immune system or any other physiologic system can supersede an unhealthy lifestyle. Thus, I am taking as a given that as part of your training regimen you will ask yourself a few simple questions in anticipation of improved immunologic health:

♣ ***Do you smoke?***

If so, quit now. Smoking is the single greatest avoidable negative influence on immune health. If you need to be provided with scientific rationale for this you are not ready to begin training. Stop now or get help doing so.

♣ ***How much alcohol do you drink?***

While some alcohol is thought to be beneficial, avoid excess alcohol and all drugs capable of compromising health in general.

♣ ***What are your environmental risks?***

Avoid carcinogens including excessive sun exposure and other environmental factors that can be avoided.

♣ ***Are you significantly overweight?***

There are now abundant data to suggest that being significantly overweight contributes to increased inflammation and compromise of the immune system. We will discuss approaches to this later, but remember it's important!

Having done these simple but important assessments, you are now ready to commence training your own immune system and achieving optimal immunologic health.



Diet, Nutrition and Immunity

There is no doubt that diet influences general health and immune health, but I can tell you clearly that there is no prescription to “boost” your immune system to supernormal levels. I know there is a lot of hype out there and there are many people willing to tell you — and more willing to sell you — easy fixes that offer better immune health and enhanced protection from diseases. If there were an easy fix, I would be selling it too! On the other hand, there are clear data to support the connection between a ‘healthy diet’ and better overall health. Our genes are encoded to meet the challenges of a diet that we no longer eat. We now favor a diet with increasing amounts of meat, which is high in energy but also high in fat compared with agriculturally-based diets. Moreover, the past two centuries have seen the rise of the “Western” post-industrial diet with increasing amounts of refined carbohydrates and foods that are nutritionally depleted -- both through genetic drift and the fact that they need to travel many miles to our tables. The past two centuries have also introduced dramatic ecologic and environmental changes that we are less than fully equipped to deal with. So just what is a healthy diet? Is it to go vegan? Eliminate gluten? Eat fish? Take mega-vitamins and anti-oxidants? I have studied this topic over the years and I will share with you not only my interpretation of available research but also my own personal beliefs and practices. A strong case has been made by researchers that diet influences our immune health at the level of our intestines -- and remember, there are more immune cells and antibodies in the gut than in all of our other tissues combined!

Suggested Reading:

- For a high science (very high science) read: “Dietary Influences on Intestinal Immunity” by Veldhoen and colleagues (Nature Reviews: Immunology Vol 12, p696-708, 2012).
- For a great read that summarizes the important facts of nutrition and eating read: In Defense of Food by Michael Pollan.

Practical Tips on Diet and Immune Health: MY Recommendations

First of all, there is nothing that you cannot eat! It is all a matter of moderation and balance.

My recommendations for healthy eating and immunity are largely based around the advantages of what is commonly referred to as the Mediterranean Diet. There is copious evidence in the scientific literature supporting the merits of this type of diet in such diverse areas as cardiovascular health, brain health and musculoskeletal health. The essential elements of this diet are listed below:

- ♥ Minimally processed, seasonally fresh, and locally grown foods
- ♥ Olive oil as the principal source of dietary lipids
- ♥ Abundant plant foods (fruits, vegetables, beans, nuts, seeds)
- ♥ Dairy products (mainly cheese and yogurt) consumed in low to moderate amounts
- ♥ Fewer than four eggs consumed per week
- ♥ Red meat consumed in low frequency and amounts
- ♥ Wine consumed in low to moderate amounts, generally with meals

Why this diet and why not a vegan diet, or even going to a more extreme no-fat diet? While there is ample evidence that a vegan diet is healthful, there are no data to demonstrate it is healthier than a diet with limited meat intake. A study in 2013 demonstrated that vegans as well as pseudo-vegetarians (fish and veggies) and “semi-vegetarians” (or what Michael Pollan calls “flexitarians”) all experienced reduced all-cause mortality¹. As for the virtues of the Mediterranean Diet, there are extensive scientific studies supporting the healthful effects of this diet including beneficial effects on cardiovascular health. There are also intriguing effects with less data behind them but still very compelling, on prevention of other health problems including hypertension, diabetes, obesity, infectious diseases and a number of ‘age related’ physiologic systems². This type of diet has also formed the basis of the Cleveland Clinic’s Lifestyle 180 Program which has been used successfully to induce meaningful improvements in biometric and laboratory outcomes seen in a number of chronic diseases³. Collectively, there is ample evidence to encourage you to get on board with the Mediterranean Diet. If, on the other hand, you want to go vegan or nonfat that’s all right too! Each of these diets moves us away from the problems associated with the Western industrialized diet which is rich in meat and refined sugars and lacking in healthful elements we have described already.



Evaluate Your Diet

NOW, ask yourself a series of questions:

1. Are you harming yourself with your diet?

Examine your diet. If it is rich (meaning you have frequent portions of such) in lots of processed foods, meat, added fat, sugar and refined grains (i.e. white bread) start cutting down on these things today! If you are a real carnivore, start with meatless Monday and go from there. Ultimately, set a goal of eating meat as a side dish rather than a main course - and do so only a few times per week.

2. Are you missing something important in your diet?

A lack of vitamins (see question 6), phytochemicals (chemical compounds occurring naturally in plants and depleted in processed foods), unsaturated fats and food known to trigger something called the aryl hydrocarbon receptor (AhR) in our intestines can lead to impaired intestinal immunity and inflammation, and can be harmful to our health⁴. Seeking the right balance by not only avoiding bad things, but adding good things, is possible with a Mediterranean-type diet.

3. Are you eating more processed than fresh foods?

I am sure if you live in America the answer could easily be “yes.” Mr. Pollan advises us not to eat anything that qualifies as “processed concoctions” no matter how healthful the label says it is; in fact, he warns us away from anything in a box or can that has to advertise itself as “healthy”! This applies to virtually everything advertised on TV. Eat real food, you know, the stuff your grandmother would recognize. Frequent farmers markets or purveyors that work at getting fresh food from nearby.

4. Do you stuff yourself?

We all do from time to time, but this can be bad for you and it can be changed. A lesson on this comes from another great book I have read, enjoyed and have learned a lot from, called *The Blue Zones* by Dan Buettner. This book studies and describes those populations around the world that are the most long-lived (i.e. centenarians). You know what I learned? First, in none of these areas do people take vitamins or deliberately exercise but they are all physically active and eat ‘healthy.’ Second, there was

no common diet, but most would fit closely to the Mediterranean Diet. Third, and most importantly, a common trait was to not eat until you are full but to stop a little early. In Japan on Okinawa they say hara hachi bu or “Eat until you are 8/10s full.” I am really trying on this one.

5. Do you make poor snack choices routinely or eat desserts?

Snack on good things, like fruits and nuts, and eat treats only when you are really treating yourself. You are not obliged to – nor should you – eat dessert every day!

6. What about vitamins and supplements?

Over the years I have changed my mind on this question. I would first ask if you are at risk for any trace nutrient deficiency. Marginal deficiencies are not uncommon in people who do not consciously craft their diets. If you are vegan, you are at risk for B12 deficiency and perhaps iron as well, unless you are careful. If you avoid dairy, you may not get adequate calcium and if you come from an area of the country like the Great Lakes area, you may be at risk for Vitamin D deficiency (from lack of exposure to sunshine). For bone health, maintaining an adequate intake of calcium is essential (1000-2000 mg per day for adult women and 1000 mg per day for adult men). Low vitamin D has been linked with many health-related issues and trace deficiency states are very common. For example, low levels of Vitamin D have been linked with increased susceptibility to a number of infections. There have been several interventional trials demonstrating the variable effectiveness of modest doses of Vitamin D, including one demonstrating the effectiveness of 4000 units per day to reduce the frequency of respiratory infections⁵. The recommendations from public health and medical societies in the US and Canada are all over the map but are in the range of 600 IU per day to 2000 IU per day. Since I live in the Great Lakes area, I take 2000 units per day of Vitamin D, which is in excess of the Institute of Medicine recommended daily allowance. Other than my concerns regarding calcium and vitamin D, I have no strong recommendations on other supplements.

Anti-inflammatory Diet

There is clear evidence from both animal and human studies that diet can modify the inflammatory response and, in turn, can lead to beneficial anti-inflammatory activity naturally. While the degree of this effect is modest it may be clinically beneficial to certain individuals. The benefits of reducing inflammation are many and may extend to reducing arthritic symptoms as well as reducing the risks of vascular as well as other degenerative diseases. Finally, there is increasing data that inflammation is a central link in aging;

Suggested Reading:

[For more details on healthy eating including more detailed information on this diet and other lifestyle tips, go to the Cleveland Clinic Wellness website. <http://my.clevelandclinic.org/wellness/default.aspx>](http://my.clevelandclinic.org/wellness/default.aspx)

reducing inflammation may reduce or slow some of these associated changes. The basic principles are a) reducing the content of meat and dairy as they contain pro-inflammatory fats (saturated, trans and partially hydrogenated oils) and b) increase sources of Omega -3 fatty acids in the diet which include flax seeds, cold water fish (salmon, herring, sardines and bluefish) and fish oil supplements (1-2 grams per day).

Taking a supplement of Omega 3 is an option, but there are some side effects (particularly dyspepsia) associated with some forms and concerns that some brands of fish oil may contain excessive or unwanted elements such as mercury. If you are going to take one, seek a quality brand. All of this is taken care of naturally, however, if you move steadily toward the Mediterranean Diet.

In terms of a practical list of things to do with your diet and nutrition, try the following:

- ♠ Move to the Mediterranean Diet. I try to accomplish this in a VB6 fashion as outlined in the box, right, courtesy of Mark Bittman.

Note: If you do this, the rest of these tips come easily, if not automatically!

- ♠ Try to eliminate red meat from your diet or, if necessary, eat it no more than once every ten days. Also eliminate or reduce your intake of fried meats. Try to replace the meats in your diet with servings of fish, particularly oily fish such as salmon. Salmon contains a rich form of oil known as omega-3 fatty acids which has natural anti-inflammatory properties.
- ♠ Use only olive oil in your cooking to reduce use of fats. Olive oil is rich in mono-saturated fats. All other oils, with the possible exception of canola oil, have unfavorable types of fats for the immune system. Avoid excessive use of margarine. Though most margarines are unsaturated in their fat content they are artificially prepared and the long-term consequences are really unknown. Try to minimize the use of all fats, but wherever possible use olive oil in cooking and for dressing salads.
- ♠ Eat more fruits and vegetables. A tried and true nutritional recommendation that never changes, but still worth mentioning, because so many of us fall short here on a day to day basis.
- ♠ Green leafy vegetables such as broccoli are extremely rich in antioxidants. Add several servings a week to your diet. Do not overcook them and think of creative ways to prepare them.
- ♠ Add fiber to your diet. Fiber can be found in many types of whole grains. If you are going to add rice, which is healthy, try to add brown rice to your diet. Brans and cereals are also helpful, but avoid those with any form of artificial sugar.
- ♠ Stay well-hydrated.

Collectively, if you follow these guidelines, you will move your diet in the proper direction to protect your immune system. In addition to doing this, there is a bonus. The same diet that is good for your immune system is good for your cardiovascular system.

Vegetarian before 6PM? Worth a Try!

Mark Bittman is one of the finest food writers in America. His editorial columns in the New York Times on food and society have been truly enlightening. He does not actually recommend frank diets, but more shifts of lifestyle involving food and routines. In recent years he has referred to his diet as “flexitarian,” meaning eating a diet high in plants and lower in animal products and hyper processed food. The very word flexitarian also suggests a regimen that includes more fish, whole grains, legumes, fruits, and vegetables. He eschews strict rules and thus allows moderation in most areas. Yes, it’s a bit tricky but believe me it works! In 2013 he wrote a wonderful book I recommend to many patients called: [VB6: Eat Vegan Before 6:00 to Lose Weight and Restore Your Health ... for Good](#)

In this book, he is strict in recommending a plant based diet, low in processed food and refined carbohydrates and one which is truly vegan but... only before 6PM each day. He was unwilling to give up the joys of all the rest of the food world but compromised by eating them in MODERATION and only after 6. I started this diet in 2013 and found it terrific, but very difficult to adhere to a truly vegan diet, so I compromised as well. I am officially a vegetarian before 6 and maintain this 97% of the time (except vacations or special occasions). After 6, I am like Mr. Bittman, mostly plant based but fish and meat in moderation. With these changes, my weight which was steady for a decade dropped 5-7 lbs and it has stayed that way. Call it Dr. C’s mini VB6 diet!



Roxanne B. Sukol, MD MS FACP

Steps to Relief: an **Anti-Inflammatory** Diet

Joints, guts and brains function best on whole foods, like vegetables, beans, fruits, whole grains; nourishing fats like avocados, olive oil, dark chocolate, deep-sea fish, nuts + seeds. Processing, added sugar, preservatives, and partially hydrogenated oils cause inflammation and chronic illness. **Perfection is the enemy of progress**, so don't try for perfect. Instead, try unsweetened iced tea instead of soda (both sweet + diet); homemade cookies instead of store-bought; more vegetables, less pasta. Remember that real food nourishes you.

1. Avoid processed items.

Processed items include commercially baked goods, fast food, soda, sweet breakfast cereals. These are high in sugar, white flour, corn starch/syrup, trans fats (partially hydrogenated oils), and/or unhealthy oils. **TIP:** Think about food on a spectrum, with whole foods at one end and highly processed items at the other.

2. Slash your sugar consumption.

Sugar is a stripped carbohydrate that spikes blood sugars. Other stripped carbs include white flour, white rice, corn starch, corn syrup, fruit juices. Satisfy your sweet tooth with **fruit** or **dark chocolate**. If you desire, make your own or find a source for homemade cookies with whole ingredients like rolled oats, whole-grain flour, raisins and dark chocolate chips.

3. Eat the rainbow.

Try for at least 6-8 servings of vegetables daily, and 2-3 servings of fruit. Diversity in your choices helps strengthen your immune system. Enjoy leafy greens, crucifers (broccoli, cabbage, Brussels sprouts, cauliflower, arugula), root vegetables (yams, beets, carrots). “Eat the **rainbow**.”

- a. **Red-orange:** carrots, kumquats, pumpkin, apples, sweet potatoes, apricots, kidney beans, adzuki beans, raspberries.
- b. **Yellow:** pineapple, split peas, chickpeas, parsnips, squash, persimmon, golden beets, onions.
- c. **Green:** Brussels sprouts, broccoli, cabbage, pears, dark leafy greens (collards, lettuce, Swiss chard, kale, bok choy, spinach).
- d. **Purple-blue:** blueberries, blackberries, red beets, plums, raisins, red cabbage.

TIP: Add disease-fighting phytonutrients. Add herbs (**parsley** or **rosemary**), or aromatics (like garlic). Drink black, **green** or herbal tea. Sprinkle colorful spices (like **paprika** or **cumin**).

4. Add more nourishing fats.

You will find these in avocados, olives + olive oil, dark chocolate (72% cacao), nuts and nut butters, oily fish like salmon, sardines, anchovies. Go for diversity. Stay away from processed oils made from soybeans, cottonseeds, corn.

5. Eat a variety of whole grains.

Delicious grains include barley, buckwheat, oats, quinoa, brown rice, rye, spelt, bulgur (cracked) wheat. Limit white flour (cakes, cupcakes, bread) to occasional celebrations.

6. Choose high-quality protein sources.

Eat fish 2-3 times a week, plus plenty of beans, which are also rich in fiber. When you eat meat or poultry, make it pastured, free-range, grass-fed. Why? You are what you eat - and also what what-you-eat eats.

7. Limit Alcohol.

That means maximum one drink daily for women, two drinks for men. And you can't save up! (P.S. one drink is 1 oz. distilled spirits or 5 oz. wine or 12 oz beer).

Roxanne B. Sukol, MD, MS, Dept. of Preventative Medicine, Wellness Institute, Cleveland Clinic ©2017



Your Immune System needs to get its Zzz's

- The Importance of Sleep for Immunity

Prioritizing sleep is one of the most important things you can do in order to stay healthy. Lack of sleep can negatively affect your immune system. Research shows that people who don't get enough sleep are more likely to get sick after being exposed to a virus and that lack of sleep can also slow your recovery if you do get sick. One of the most striking studies found that after subjects were exposed to the common cold virus, those who slept less than 6 hours a night during the previous week were 4 times more likely to get a cold than those who slept 8 hours a night. Studies have also shown that people who are sleep deprived get less protection from vaccinations than those who get adequate sleep. Evidence overwhelmingly supports that our immune response is suppressed when we are sleep deprived.

During sleep, your immune system releases proteins called cytokines, some of which help promote sleep. Certain cytokines increase when you have an infection, inflammation, or when you're under stress. Sleep deprivation may decrease production of these protective cytokines. In addition, infection-fighting antibodies and cells are reduced during periods when you are sleep deprived. For those with autoimmune disease, studies have shown that losing sleep for even part of one night can trigger tissue-damaging inflammation.

So, lots of evidence supports the idea that your body needs sleep to fight infectious diseases and keep autoimmune disease from flaring. Long-term lack of sleep also increases your risk of obesity, diabetes, and heart and blood vessel (cardiovascular) disease.

How much sleep do you need to bolster your immune system? The optimal amount of sleep for most adults is seven to eight hours of good sleep each night. But more sleep isn't always better. For adults, sleeping more than nine to 10 hours a night may result in a poor quality of sleep, such as difficulty falling or staying asleep.

Some Essential Tips for Better Sleep:

1. **MAKE SLEEP A PART OF YOUR TO-DO LIST.** Plan your “bedtime appointment” just like other important appointments in your life. You probably wouldn’t miss a doctor’s appointment in order to binge watch your favorite Netflix series. But think about how often you have put off bedtime because of watching your favorite TV show or movie despite being sleepy and ready for bed. Make sure you allow yourself enough time to get an adequate amount of sleep. Your “bedtime appointment” can be just as essential for your health and wellbeing as your doctor’s appointments!
2. **CONSISTENCY IS KEY.** Stick to a consistent sleep schedule, even on the weekends. Keeping the same bedtime and wake up time will help to regulate your body’s sleep clock and may help you fall asleep more quickly and stay asleep for the night. People who have significantly later bedtimes/waketimes on the weekends may experience “social jet lag”, as switching sleep schedules this way feels like changing time zones when traveling. Even people who have good sleep often note that they may have more difficulty falling asleep on Sunday evenings due to this delayed sleep schedule on the weekend.
3. **NAPS: NAUGHTY OR NICE?** Depends. Taking a nap might seem counter-intuitive to good nighttime sleep, but short power naps of 10 to 30 minutes actually help you gain extra energy during the day and lead to minimal disruption in your sleep. However, if you have trouble falling asleep at night, avoid napping, especially long naps in the late afternoon and/or evening.
4. **IMPLEMENT A “BUFFER ZONE” BEFORE BEDTIME.** The last 30-60 minutes before bed should be devoted to winding down and relaxing to prepare for sleep. A relaxing bedtime routine away from bright lights while doing a calming activity such as reading can make it easier to fall asleep and get sounder sleep.
5. **PULL THE PLUG.** For many people, using an electronic device such as a laptop/tablet/cell phone can make it harder to fall asleep, because the particular type of light emanating from the screens of these devices is activating to the brain. Blue light, which is emitted in large amounts from our electronic devices, impact your circadian rhythm, tricking your brain into thinking it is still daytime. If you have trouble sleeping, avoid electronics for the last 1 hour minimum before bed and avoid any use in the middle of the night after awakening.
6. **AVOID THAT NIGHTCAP.** Although alcohol is a depressant and may help you fall asleep faster, it also contributes more disruptions/awakenings and poor quality sleep. Alcohol blocks REM sleep which is often considered the most restorative type of sleep. It also causes your entire body to relax, including the muscles in your throat, which makes you more prone to snoring and sleep apnea. Finally, it can lead to extra trips to the bathroom. Alcohol is a diuretic and can make you need to get up and go more, interrupting your normal sleep pattern.
7. **ANOTHER BENEFIT FOR EXERCISE.** Physical activity improves sleep quality and increases sleep duration. Exercise may also have positive impact on sleep in other ways, because it helps one cope with stress and tires you out. For some people, working out within a few hours of bedtime may cause problems getting to sleep, but for other people, late-day exercise isn't a problem.
8. **CREATE A DREAMY SLEEP ENVIRONMENT.** To optimize your bedroom environment, try to minimize external noise, light and artificial lights from devices like alarm clocks. Make sure your bedroom

is a quiet, relaxing, clean and enjoyable place. It is best to keep work materials, computers and televisions out of the bedroom. Your bedroom should be cool, dark and quiet, with the ideal bedroom temperature for most being between 60 and 67 degrees. Consider using blackout curtains or eyeshades to avoid exposure to light that might make it more challenging to fall asleep. Evaluate your room for noises that can disrupt your sleep, including a bed partner's snoring or disruptive pets. Consider using ear plugs or white noise machines which can help drown out sounds which might otherwise disrupt sleep.

9. CUT DOWN THE CAFFEINE. Make caffeine a morning-only drink and stick to other beverages in the afternoon and evening. Caffeine (found in coffee, tea, chocolate, cola and some pain relievers) stays in your system longer than you might think and can disrupt your sleep.

10. BED = SLEEP. If you can't fall asleep after about 20-30 minutes and your mind feels like it won't shut down, get out of bed and go into another room and do something relaxing/distracting until you feel sleepy. Using the bed only for sleep and sex will help strengthen the association between bed and sleep.

11. LIGHT IT UP! Although as stated above, avoiding bright light in the evening is beneficial for sleep, the opposite is true for the morning. Expose yourself to sunlight in the morning after awakening to help keep your circadian rhythm in check. An additional benefit to light exposure is that it tends to give a boost to your mood as well.

12. TOO HARD, TOO SOFT, JUST RIGHT. Just like Goldilocks and the Three Bears, make sure your mattress is comfortable and supportive. The average life expectancy for most quality mattresses is about 9-10 years. Finding the right mattress isn't about searching for the newest technology or the most expensive brand. Selecting a mattress is a very personal decision; some people prefer a firmer mattress while others prefer a softer variety.

13. DOC, WHAT'S UP WITH MY SLEEP? There are many common conditions that can cause poor sleep. Talk to your doctor if poor sleep is a consistent problem in your life. One common issue is sleep apnea, which causes interrupted breathing while sleeping and disrupted, unrestorative sleep. Other commonly diagnosed issues include sleep movement disorders and circadian rhythm sleep/wake disorders. An overnight sleep study may be indicated to help assess/diagnose your sleep problems accurately.

Exercise

Even more so than nutrition, exercise has the capacity to protect and even enhance the immune response. Just as exercise can influence other physiologic systems and organs such as our heart, lungs, circulation and endocrine systems, the immune system is similarly influenced. It has been demonstrated that excessive exercise may be deleterious to immune function, but this is at intensities and volumes practiced mostly by endurance athletes. Experimental studies have shown that more modest regimens, such as brisk walking done on a regular basis, can enhance multiple limbs of the immune system including the antibody response and natural killer response. Fortunately, the intensity and duration of exercise needed to support the immune system is less than that needed to provide optimal cardiovascular training. Thus, even relatively low levels of aerobic exercise can protect your immune system. A weekly program of 20-30 minutes 5 days per week is ideal training for the immune response.

For the past two decades, the relationship between immunity and training has been explained on the basis of the J curve shown on page 22. While not a perfect model, it basically asserts that if you are sedentary, you are more susceptible to common infections and if you are ‘overtrained,’ you are similarly susceptible to such illnesses. This is reasonable because every system has its limits. The right amount of training (i.e. moderate training) can be highly beneficial and that is what we strive toward.

Exercise also has the advantage of providing a psychological buffer. A regular program of aerobic exercise has been demonstrated to be a useful treatment for mild to moderate degrees of depression and anxiety. People who exercise have less depression, loneliness, anger, and have a better capacity to control their own destiny. It is not clear whether exercise boosts the immune system directly or works via a neuropsychiatric immunologic link. Whatever the mechanism, exercise is a vital component of any program designed to help the immune system heal the body.



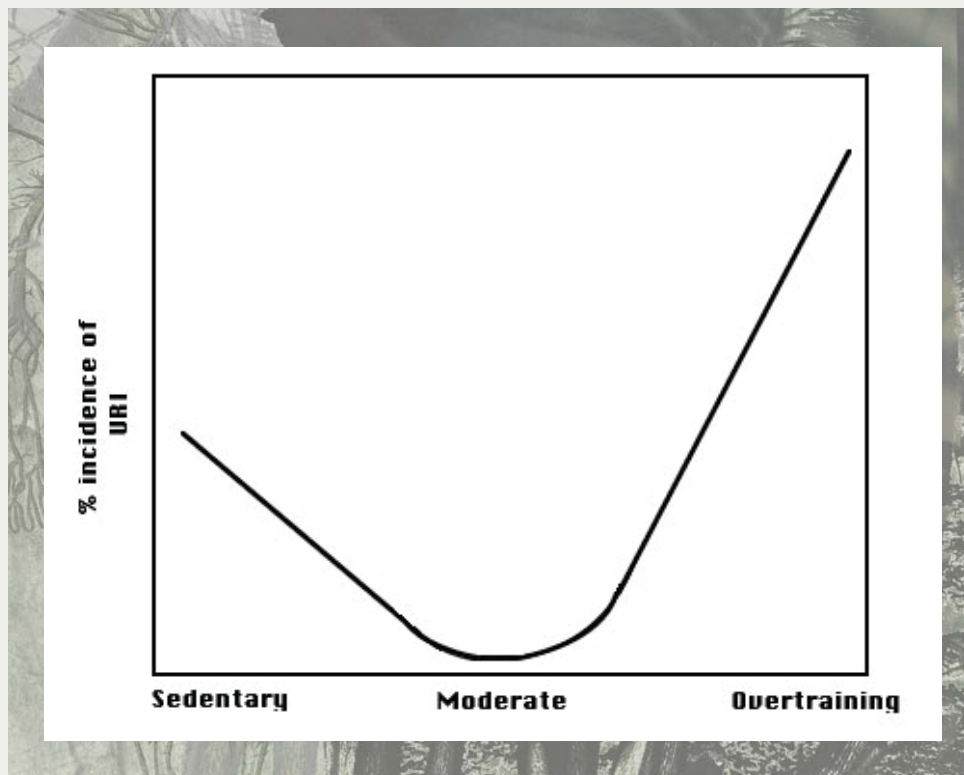
Another form of exercise known as mind-body movement techniques can also be beneficial. These techniques, including yoga, Tai Chi and Qi Gong, all require a harmony of relaxation skills and physical exercise. Studies have also demon-

Not every activity requires food!

Especially in the US, we have been conditioned to expect that every social activity and many work-related activities must revolve around food. How many times have you gone to a meeting at work and there is a bowl of bagels or chips on the table? Or wanted to meet up with old friends and immediately thought “Let’s go out to dinner”?

Don’t make food part of every activity! Turn down the carbohydrate-laden snacks at the office. Invite your friends to play tennis, go for a walk, visit a museum, or some other activity that doesn’t revolve around food. And when you do need a snack, make it fruit or vegetables!

strated the effectiveness of Tai Chi in improving chronic conditions such as osteoarthritis, low back pain and fibromyalgia with long-lasting benefits. There are also some preliminary data that yoga may improve certain immune functions. These forms of exercise can benefit the mind and body and will be discussed in the next section.

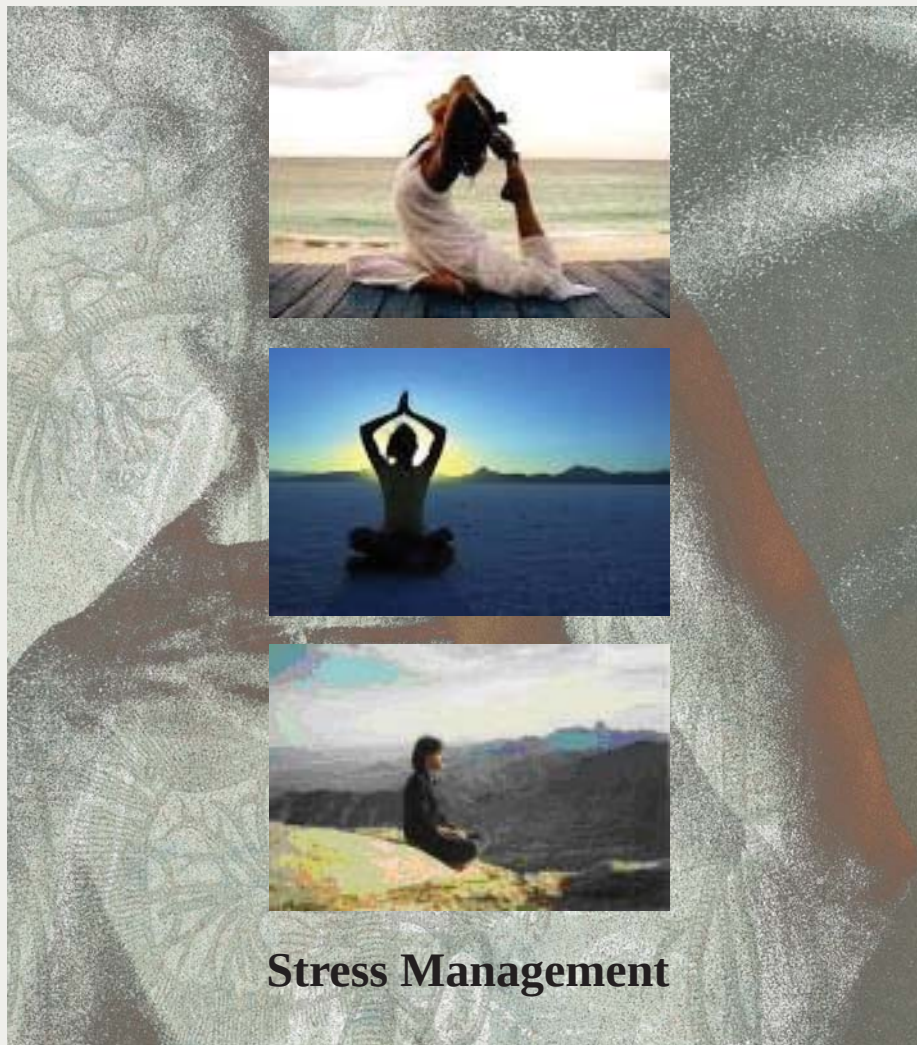


Lastly, what about Chronic Fatigue Syndrome (CFS) or Chronic Fatigue and Immune Dysfunction Syndrome (CFIDS) and exercise? While it is far beyond the scope of this monograph to address the issues surrounding these complex and important conditions, I am convinced – through working with hundreds and hundreds of patients over the years and the results of rigorous clinical trials – that especially when combined with cognitive behavioral therapy (The PACE Trial; see additional reading), a program of very gradually escalating moderate intensity aerobic exercise is the cornerstone for improvement. I know there is controversy here but my experience tells me this is key.

**THE SOLUTION to Your Exercise Needs:
Courtesy of Dr C. and Betsy**

Ok, I know what you are thinking. Yes, all this sounds good but it takes so much time. I am a busy person and my schedule is daunting. I am too tired at the end of the day, blah blah, blah. Yes I said the same thing and so did Betsy Kirchner, NP with whom I share the practice. So, what to be done?

A few years ago, I read an editorial (Changing Physical Activity Participation for the Medical Profession Journal of the American Medical Association 309:141-143,2013) by the late Dr Atronette Yancey, that blew me away. It espoused the value of brief bouts of MVPA (moderate to vigorous physical activity). MVPA has long been recommended for 30 minutes per day, 5 days per week. MVPA can be brisk walking or other similar activities. I tell my patients I would like to see their heart rate rise but be breathing easy enough to carry on a conversation. Ok, but that is still a lot of time isn't it? Well, the point brought home in this editorial is that MVPA can be achieved in little tiny bits as brief as 3- 5 minutes at a time. Instead of taking a break and sitting, take a break and walk. Is it effective? You bet, and she has the data to prove it (read: [Instant Recess: building a fit nation 10 minutes at a time](#) U of California Press 2010). This led us to a new and enduring strategy in our clinic of taking multiple brief spins around the sprawling Cleveland Clinic campus every day. We can do the big loop of 21 minutes or the brief skyway walk in under 10. I cannot tell you how this has changed our work lives and has improved our own fitness. Try it! Take a fitness break at your next meeting. Take a walking meeting with one or two others rather than sit (and frequently eat). We tell our patients about this all the time: just do it!



Stress Management

The final frontier in achieving optimal immunologic health is maintenance of stress in our lives. Being out of harmony with our inner selves has physiologic consequences for the immune system. Scientific study over the past 20-25 years has clearly demonstrated that the central nervous system, the endocrine system and the immune system interact with each other in complex ways. Various stresses, whether acute (e.g. taking an exam) or chronic (mood disorders, bereavement, etc.), can adversely affect the immune system by dysregulating these physiologic interactions. Psychological stress can be broadly defined as a state that results when events in our lives exceed our ability to cope. These stressors can be categorized by duration and severity and can have a variety of deleterious effects. Experimental studies have shown that people under chronically increased levels of stress are more predisposed to develop viral infections such as cold sores or the common cold. Excessive stress can adversely affect the outcome of acute and chronic illness; studies over the past several decades have demonstrated the benefits of stress modification for individuals undergoing surgery or dealing with acute illness. Furthermore, negative emotions from stress can augment inflammatory pathways, which have broad implications for health, being linked to a variety of age-related diseases such as arthritis, atherosclerosis, osteoporosis and premature aging with functional decline. Thus, eliminating or modifying these factors in one's life is vital to protect and augment the immune response and to buffer the inevitability of the aging process.

We all know that there are formal ways of dealing with stress, particularly when it is severe. Interventions such as seeing a counselor or other mental health professional and the use of adjunctive medications such as antidepressants and related drugs can be very helpful. Most of us feel, however, that we are not in need of formal intervention and are looking for less formal modalities to help us achieve spiritual harmony.

We also know that there is a vast array of offerings and techniques promising to make us feel at peace with ourselves, but we generally feel uncertain how to select and begin such a journey. I have shared this uncertainty and now want to tell you there is a lot of good news for de-stressing coming from scientifically creditable studies.

I am not a psychologist, but I do recognize that many people have achieved harmony by employing techniques that are hardly new; in reality these techniques are actually ancient, and the products of timeless wisdom. Mind-body exercises such as Tai Chi and yoga, when practiced faithfully, have been linked with numerous salutary health benefits. Exercise can also help achieve spiritual harmony if engaged in mindfully, and particularly when performed in groups.

The most exciting area to me in stress modification is mindfulness training, also known as meditation. I know what some of you are already thinking: “This is too new age/Are you kidding? I don’t have time for this stuff!” or, if you are like me, “I am too ADD to sit there and do nothing!”

Well, just listen to me while I tell you why mindfulness or meditation is now ready for you. First, over the past three decades or more, a formal program of mindfulness training known as mind body stress reduction, developed by Dr Jon Kabat-Zinn, has been tested in numerous settings; it has clearly been demonstrated to be effective at alleviating all types of stress and to have numerous (and potentially anti-inflammatory) effects on the body. There is only one ‘problem’ as far as I can see and that is that it is intensive. It runs over eight weeks, it takes a professional facilitator and requires an hour per day (not to mention the “day of silence”). When I suggest this to busy people, they have retorted “If I had an hour a day to meditate I wouldn’t be stressed!” Good point, well taken, thank you. Also, for someone with a short attention span like me, I could never get traction with mediation. It was scary and I didn’t know what I was supposed to feel or not feel. It was actually deflating and depressing, and I cannot even guess how many times I tried unsuccessfully to embark on such a program. I was a failure.

More Meditation, Less Cold and Flu?

Let me share with you some incredible science. In 2012, a remarkable study was published; it was known as MEPARI (Meditation or Exercise for Preventing Acute Respiratory Illness, BarrettB et al Ann Fam Med 10:337-346,2013). The bottom line of this carefully performed study was that training in meditation or exercise (moderate exercise at that) were both effective at reducing the frequency of colds and flu, but meditation seemed to have the edge. When I read it, as an immunologist, I was blown away. I immediately invited the principle investigator, Dr. Bruce Barrett from the University of Wisconsin, to visit my immunology center at the Cleveland Clinic. It was a fabulous visit and has stimulated me to continue to pursue investigations into the role and capacity of training the mind to heal the immune system.

Fortunately, that is no longer the case and I now want to share with you my answer. Before I do, I want to assure you that I approached the problem scientifically and asked a study design question of many people working in the field. I wanted to know why is it you need to do this an hour per day to achieve spiritual harmony and reap the health benefits of meditation? Why not 30 minutes or 3 minutes or less? As it turns out, I was not the first to ask this question about “dose effect” of meditation but there was no solid answer to be sure. Then, right under my nose I found a remarkable program called “STRESS FREE NOW” (<http://www.clevelandclinicwellness.com/Programs/Pages/StressFreeNow.aspx>) which was developed right here at the Cleveland Clinic in our Wellness Center and is available on line for a nominal charge. This program,

which lasts 6 weeks, uses daily brief (a few minutes) readings and then provides guided meditation sessions on-line that the user can do at his or her convenience. They generally are 15-20 minutes, and in a scientific study, they demonstrated that doing the practices 3 - 4 times per week was highly effective at reducing stress and improving wellbeing!⁶ To cut to the chase, I tried it and I liked it and most importantly, I was successful at doing (and enjoying!) the meditation sessions and I have been doing it ever since. Not every day, but enough to feel a major difference in how I see the world, so you have to pardon me if I sound like a zealot. If not this program, there are others as well. I love “Head Space,” an app which I carry on my mobile phone. There are plenty: just check them out and find what’s right for you.

Self Care Practices

Julie Konrad, AYS, RYT

The importance of a daily self care routine is vital to your well-being and the functioning of all the systems in your body. Making simple changes can reset your natural biorhythms and support you in feeling your best!

Here are a few things to try.

Do just one, or try them all!

Be consistent for at least two weeks and enjoy the benefits.

Sleep

Implementing and maintaining a regular wake / sleep cycle (going to bed by 10 pm and waking by 6 am) keeps your body in sync with nature’s rhythms. Insomnia, heartburn, anxiety, and depression are directly linked to the lack of balance in our lives. Matching your mealtimes, wake / sleep cycle, and general activities helps restore balance in your life.



Water

We are dehydrated after a full night of rest. Most of us go for a cup of coffee as our first beverage of the day. Try drinking a glass of warm water with lemon to help hydrate and stimulate your appetite before that cup of joe. Keep a water bottle with you at work to sip throughout the day.

Yoga

The body naturally stiffens overnight while the muscles and joints have been at rest. A series of gentle yoga postures and spinal twists first thing in the morning realigns the body and can be extremely invigorating. Visit yogainternational.com for a wide range of helpful videos to guide you, or find a gentle class at your local studio. If you are new to yoga, look for classes at your studio called Yoga Basics, Hatha, Yin or Restorative. Vinyasa classes typically require a little more familiarity with the poses. If you choose to take vinyasa, let the teacher know you are new before class. A good instructor will make you feel safe and confident.

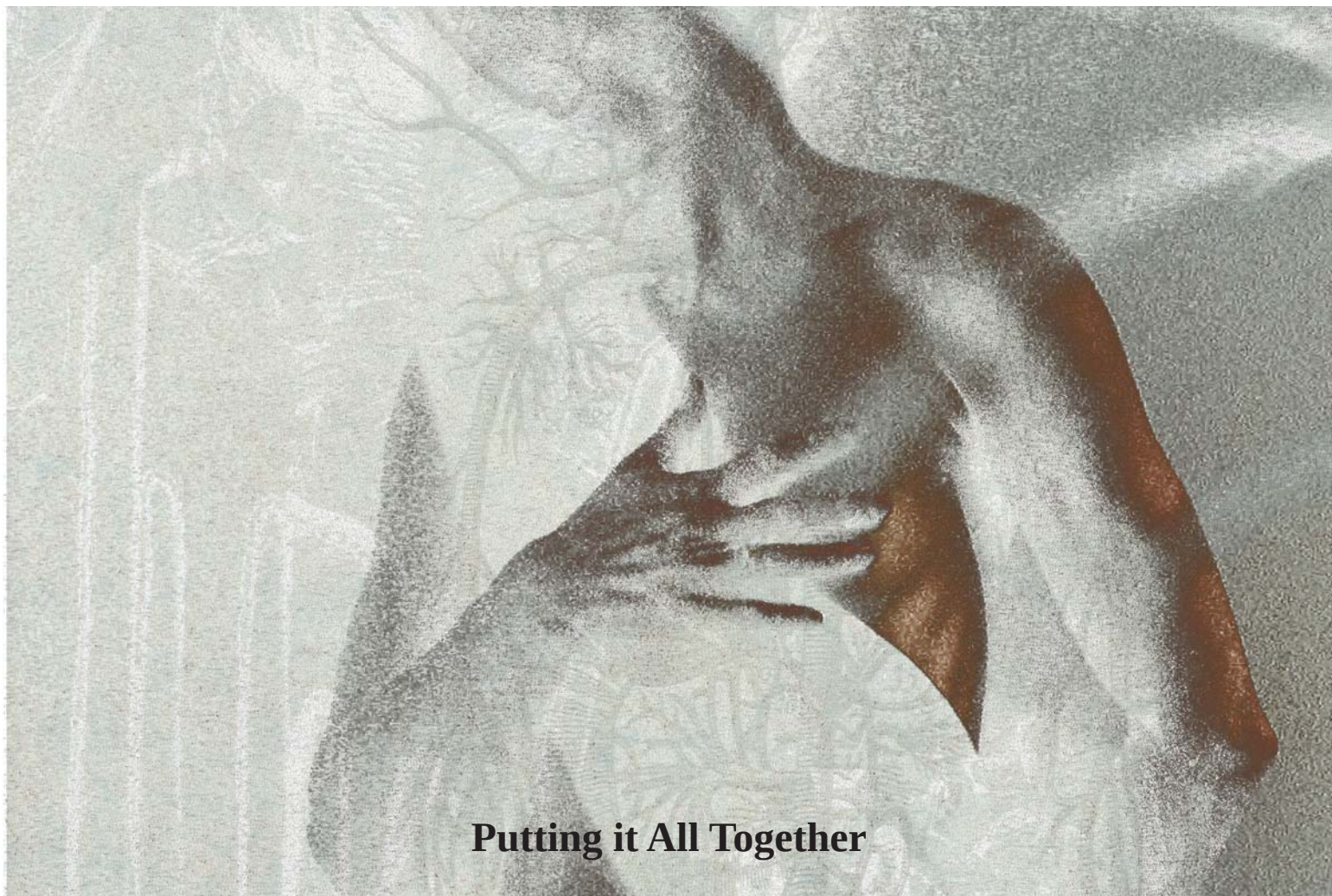
Oil Massage

Apply sesame, almond or coconut oil to the skin in a circular motion around the joints and massage along the limbs for 10-20 minutes followed by a warm shower. The body becomes dryer as we age, the nourishment of the oil penetrates the skin, forms a natural barrier and increases circulation. This practice also creates a feeling of stability, warmth and comfort.



Infection Protection

I know that there are many enticing offers for immune protective supplements and other potions, but I am not convinced of the value of any of these products and I don't use them. I am a frequent flyer and I do believe I am more vulnerable to common ailments when I travel. I think the causes of this are multifactorial and, for the most part, can be blamed on being in close contact with so many people, being over-stressed and over-tired and generally not adhering to all the things we just discussed. My personal tips are try to keep comfortable, schedule periods of rest and use hand sanitizers. Lastly let me make a plea. Please get up to date on your immunization schedule! I know there is always controversy about the safety of vaccines, but I am up to date on mine and my family is as well. We should be so thankful for the advances in vaccine prevention that we all too frequently take for granted. If you have concerns about vaccines because of an underlying condition or your current medicines, just ask your health care provider which vaccines are indicated for you – the guidelines are out there and easily accessible!



Putting it All Together

I cannot emphasize strongly enough how essential it is that each of these critical areas (i.e. diet, exercise and stress reduction) be optimized to achieve improved health. Nutrition must be sound, exercise must be regular and spiritual harmony must be attained. Being successful in one or two of these areas is not enough. There are many individuals who eat an excellent diet and exercise regularly but are so keyed up in their lives that their stress levels overcome all the success they achieve in the first two areas. Other people may have successfully modified their mental and spiritual state but are eating unhealthy diets or are sedentary. Others may make significant advances in all three areas, but are doing foolish and harmful things to their bodies such as smoking or using excessive alcohol which negates their achievements. It is essential to put all of this together to achieve optimal health.

The notion that the body tends to heal itself has been known since before Hippocrates and even in modern day medicine we have all seen examples of people overcoming complex medical illnesses without the assistance of medications. This does not mean that medicines are not vital to overcome many acute illnesses, but they may be less important in overcoming chronic diseases. The body's inner ability to heal can be taken advantage of by paying attention to each of these areas: sound nutrition, regular exercise, and mental and spiritual health. Eliminating other negative factors such as drugs, alcohol, tobacco, and other insults to the body are also important. Only you can put this all together and it can't be done overnight. There is no better time to start than now.

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Additional Reading

Resources on the Web

The Cleveland Clinic's Wellness Institute home page is a gateway to a treasure-trove of information that is in sync with my recommendations and much more. Explore their programs on Lifestyle Medicine, Executive Health, Integrative Medicine and additional resources on guiding yourself to healthful living!

- ◆ <http://my.clevelandclinic.org/wellness/default.aspx>
- ◆ CDC information on vaccines (including recommendations and schedules): [http:// www.cdc.gov/vaccines/default.htm](http://www.cdc.gov/vaccines/default.htm)

Books

- ◆ Michael Roizen and Mehmet Oz, *YOU: The Owner's Manual*, Updated and Expanded Edition: An Insider's Guide to the Body that Will Make You Healthier and Younger (2008)
- ◆ Michael Pollan; *In Defense of Food*, Penguin Books (2009); *Food Rules*, Penguin Books (2009)

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Resources



Go! to SleepSM

A CLEVELAND CLINIC WELLNESS ONLINE PROGRAM

What is Go! to Sleep?

Go! to Sleep is an interactive online program developed by specialists in Cleveland Clinic's Wellness Institute and Sleep Disorders Center. The program's proven methods help patients improve their sleep from the comfort and privacy of their homes.

Go! to Sleep follows treatment plans used in top sleep clinics. A recent study at the University of Manitoba in Winnipeg, Canada, found that 81 percent of patients who completed a similar online program for insomnia reported improved sleep patterns.

Which patients should be considered for Go! to Sleep?

Our Go! to Sleep program is designed to help:

- Patients experiencing short-term insomnia (over the past one to six months)

- Individuals with episodic insomnia that intensifies during times of stress
- People who prefer non-pharmacological treatment for sleep issues
- Individuals who use sleep medications occasionally but are interested in techniques likely to help them sleep better without medication
- Patients with ongoing insomnia (for six months or more) who have yet to adopt sleep-friendly lifestyle habits and consistent sleep patterns

Note: Go! to Sleep is not recommended for patients who take prescription sleep medications on a nightly basis or for patients with severe chronic insomnia. Patients with these sleep problems are better suited for treatment in a multidisciplinary sleep center with a behavioral sleep medicine specialist.

continued



What does the program include?

Go! to Sleep provides six weeks' worth of effective sleep therapy without leaving home. Participants will receive:

- An online sleep log to help determine their daily sleep score and daily recommendations to improve their sleep
- Activities to help them sleep better
- Daily emails from the program coach
- Daily articles to help them get the most from the program
- Personal progress charts
- Six specially crafted relaxation practices
- Motivational tips
- A mobile app for easy sleep-tracking

How does Go! to Sleep work?

The program explains the basic science of sleep and why certain behaviors are detrimental to sleep. Activities, articles, tips and progress charts reinforce participants' learning to help them get the sleep they need. Each day, participants complete an online sleep log that calculates a daily sleep score. They receive individualized feedback and sleep improvement recommendations based on their log and score. Throughout the program, they gain access to six effective relaxation practices and other strategies designed to improve stress management and sleep.

For further information, visit ClevelandClinicWellness.com/sleep.





Stress Free Now

A CLEVELAND CLINIC WELLNESS PROGRAM

What is Stress Free Now?

Findings from the 2010 Stress in America survey show that the majority of Americans are living with moderate or high levels of stress.

Stress Free Now is a clinically-based, six-week online program that contains the tools you need to reduce stress and improve your well-being and your health. The program was developed by experts at the world-renowned Cleveland Clinic and is based on mindfulness practice, which is what research shows is most effective in mitigating the impact of stress on your quality of life.

By following this program, you will become more in control of your stress, reduce your risk of developing stress-related diseases and live a happier, more fulfilling life.

It Works!

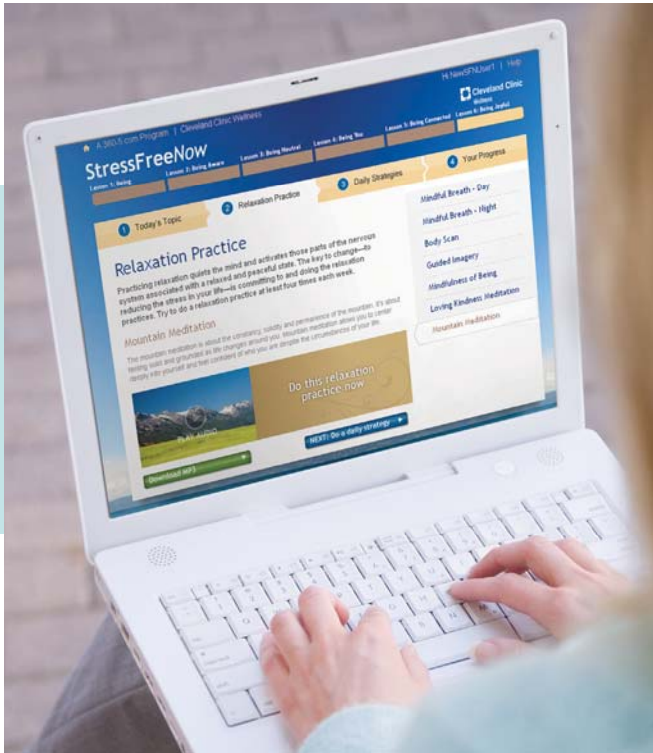
Through our research studies with participants following Stress Free Now, we found that this stress management initiative drove down perceived stress from very high

levels to average. We also saw impressive gains around emotional well-being, with participants who completed the program and performed the relaxation practice regularly showing the most dramatic improvements.

What Dr. Roizen Says...

"Stress is the greatest ager of your body in general, especially the nagging, unfinished-tasks kinds of stress that hang over you day after day or the stress of things that are out of your control...Just as chronic stress can damage your heart, actively working at reducing stress will keep your heart healthier. Therapies like meditation and relaxation techniques can teach you how to tolerate the stressful elements in your life...and how to tone down your body's physical response to stress."

Michael F. Roizen, MD, is Chief Wellness Officer at the Cleveland Clinic and co-author of *You: The Owner's Manual* with Dr. Mehmet C. Oz.



What does the program include?

Stress Free Now provides six weeks' worth of effective stress therapy without leaving home. Participants will receive:

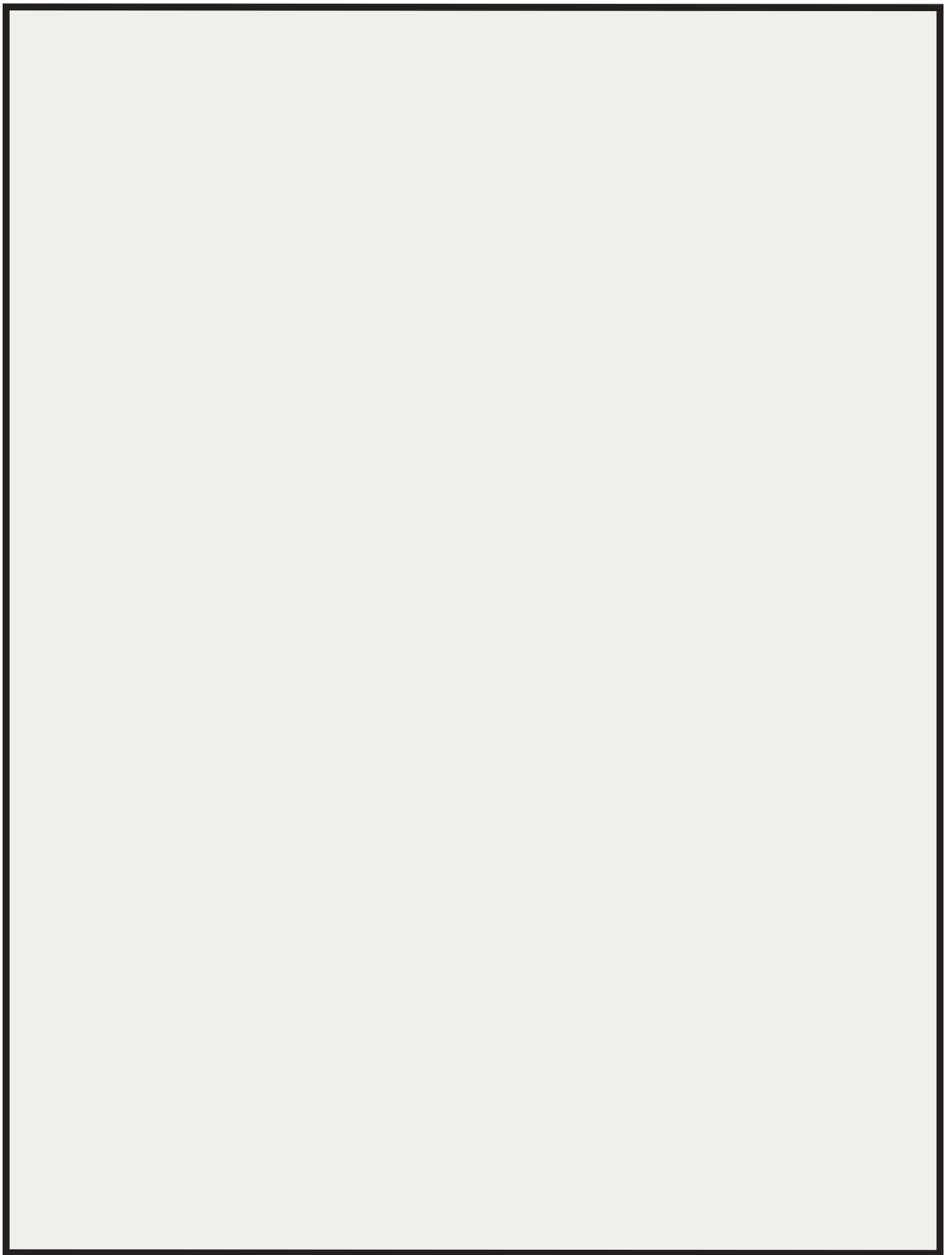
- Six specially crafted relaxation practices – the heart of the program
- Daily strategies with step-by-step instructions that will help you more effectively respond to life's stressors and move toward feeling happier
- Daily e-mails that highlight the topic of the day, offer an inspiring quote, and remind you to do the relaxation practice
- A stress assessment designed to measure your perceived stress and overall well-being at the start and end of the program
- Daily topics that help you get the most out of the program by providing you with information on the science of what you are applying to your life
- Personal progress chart

How does Stress Free Now work?

When you repeatedly feel exhausted and unable to meet life's demands, you are experiencing chronic stress. Relaxation techniques such as mindfulness meditation can help. Stress Free Now is based on mindfulness practice because research shows that it is what is most effective in mitigating the impact of stress on health and quality of life. It is a systematic approach to developing new clarity and peace through deep relaxation. In addition to mindfulness practice, it's important to engage in a lifestyle that protects you from stress, including getting regular exercise and eating a healthy diet. If you work to change these factors — your exercise habits, your diet and your mindset about life's challenges — you will be setting the stage for a calmer, healthier, happier you.

For further information, visit 360-5.com/relax.





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**Please consider supporting immunology research and
education; this monograph is one example of our
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Thank You!



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