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# Relaxation *REVOLUTION*

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Enhancing Your  
Personal Health Through the  
Science and Genetics  
of Mind Body Healing

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Herbert Benson, MD

#1 BESTSELLING AUTHOR OF *THE RELAXATION RESPONSE*

and William Proctor, JD

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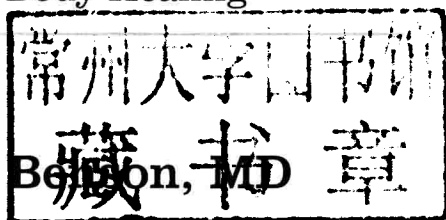
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**To Marilyn and Pam,  
who, together, have rewarded us with nearly 90 years of  
married support, inspiration, and wisdom**

## Preface

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A mind body revolution is under way in the medical world. This revolution is regularly punctuated by research breakthroughs, including our most recent findings that mind body strategies can actually “switch off” or “switch on” gene activity or gene expression associated with disease.

My professional life over the past four decades has been devoted largely to furthering our understanding of the science and the exciting treatment possibilities of these mind body phenomena. For me, it all began back in the early 1970s with my identification of the relaxation response, the term that I coined to describe the physiologic reaction that is the exact opposite of the stress (fight-or-flight) response. The fight-or-flight response is a reaction that prepares the body to act upon fears and physical challenges through the secretion of such stress hormones as adrenaline and noradrenaline.

Since that foundational moment, much of my research—along with that of colleagues I have worked with at the Harvard Medical School, its affiliated hospitals, and other research centers—has focused on understanding the relaxation response phenomenon. Among other things, we have established the first effective therapy to counteract the harmful and pervasive effects of stress. We have also explored how the relaxation response relates to other mind body phenomena, such as the placebo effect, a mechanism that may produce healing through belief and expectation.

In fact, we believe that mind body science has now reached a stage

where it should be accepted as the *third major treatment and prevention option*, standing as an equal alongside drugs and surgery in the clinical medical pantheon. Hence, it seemed quite appropriate to call this book the *Relaxation Revolution*. But like most true revolutions, this one has taken on a life of its own.

In the beginning, I never anticipated that the physiologic effects we were seeing with the relaxation response—including reduced metabolism, blood pressure, heart rate, and respiratory rate—would be accompanied by molecular changes, such as an increase in exhaled nitric oxide. I had no idea that experts in fMRI technology would find a calming and “opening” of the brain to healing possibilities. I didn’t foresee that scientific and treatment links would be established with other mind body phenomena, such as the therapeutic power of expectation and belief. Most recently, I was as surprised as many of my scientist colleagues when we found that the relaxation response can actually alter gene activity—the way that genes express themselves and thus influence the body. Although the genes themselves are not changed through this process, the genetic activity that we have discovered will almost certainly have profound implications for your personal health and our medical practice.

Furthermore, this revolution reaches beyond the treatment of disease to the *prevention* of disease. In particular, mind body medicine has significant implications in the vast, burgeoning field of stress management; according to a growing body of research, stress has a huge impact in causing or exacerbating many diseases. The potential is enormous for preventing such stress-related conditions as insomnia, lower-back pain, hot flashes, premenstrual syndrome, and various types of tension and migraine headaches.

Finally, there is the potential for a revolution in reducing the cost of medical care. Increasingly, medical studies are showing that employing mind body treatments and prevention strategies could save billions of the dollars now being spent on medications and surgeries.

The *Relaxation Revolution* is unique not only in presenting the lat-

est scientific findings, but also in describing how this science can be applied—and, in fact, *is* being applied—to treat patients with specific medical complaints and diseases. Our treatment recommendations, which are based not on speculation or wishful thinking but on scientific fact, focus on a wide variety of conditions, including high blood pressure, many types of chronic pain, various phobias, arthritis symptoms, depression, and anxiety. Yet these conditions are just a sampling of what is possible when the *Relaxation Revolution* is employed in a clinical setting.

Chapter 7—the treatment chapter—is especially long because the list of medical conditions that can be treated by mind body strategies is long and growing longer. This section has been designed for use as a health manual. It functions as a “book within a book,” which may be consulted again and again by readers who want to put the *Relaxation Revolution* to work in treating or preventing a wide variety of health conditions.

But a word of caution is in order: In this new role as the third major treatment option, mind body treatments must always be evaluated and used with the same care that is accorded other medical treatment options. Before you try any of the treatments suggested, you should consult your personal physician and seek his or her guidance. This book is not intended to provide independent medical advice or to operate as a substitute for your personal physician.

Also, more often than not, the mind body approaches in these pages should not be used alone but should be employed *in combination* with drugs and surgery prescribed by your physician. With your doctor overseeing your entire personal health plan, including the mind body treatments you may be using, you are much more likely to be given advice that may enable you to reduce or eliminate medications or avoid surgical procedures.

The research cited in this book has been conducted at a wide variety of venues. These include the Harvard Medical School, the Mind/Body Medical Institute, the Benson-Henry Institute for Mind Body Medicine at Massachusetts General Hospital, the Beth Israel Deaconess

Medical Center in Boston, and other leading medical centers around the world.

A further word about the Benson-Henry Institute: At the writing of this book, as the director emeritus, I am confident that the Institute ([www.massgeneral.org/bhi](http://www.massgeneral.org/bhi)), under the superb current leadership of Gregory Fricchione, will continue the advancement of the revolution that began with the discovery of the relaxation response in the early 1970s. The Institute is even now building upon the long history that is presented to you in these pages and, in conjunction with modern medicine, will continue to help you utilize your innate capacity to help and heal yourself as you journey through life.

Here are a few stylistic considerations to keep in mind as you read:

First, we use the term *mind body medicine* without a hyphen or slash. This choice reflects a personal preference that has developed at the Benson-Henry Institute for Mind Body Medicine. Others may prefer *mind-body* or *mind/body*, and we certainly recognize that these spellings are grammatically and stylistically acceptable.

Second, we most often use the terms *gene expression* and *gene activity* to refer with some scientific precision to the new genetic research into mind body exercises. It would not be accurate to refer to the changing of genes themselves, because such mutation does not occur with the elicitation of the relaxation response. Rather, our studies with sophisticated genetic analysis have shown that what *can* be changed is the way that genes interact or express themselves, especially in relation to a variety of medical conditions. Also, we have chosen the more familiar term *genetic* rather than *genomic*.

Third, when we use the first person singular—*I*, *me*, or *my*—the reference is to Herbert Benson. When we use the first person plural—*we*, *us*, or *our*—the reference is to the authors of this book, Herbert Benson and William Proctor, or to Herbert Benson and his research colleagues, depending on the context.

Fourth, we have consciously employed redundancy at different points, both to emphasize important concepts and to facilitate the use



## Preface

of the text as a reference manual for those who want to apply mind body treatments to specific medical conditions.

Fifth, we have avoided using actual names in the case studies described in this book and have also changed some identifying details. But we have paid particular attention to accuracy in describing medical symptoms and the results of mind body treatments.

Finally, we want to emphasize that this book is in many ways a current status report on what is possible in the field of mind body medicine. Interdisciplinary research continues, even as we write. We believe that other medical conditions will be added to the steadily expanding array of those that are already responding to mind body healing. Pending work in the genetics field, which links mind body treatments with the healing of specific diseases, is on the horizon. For the sake of your health and that of your loved ones, we urge you to join us in this exploration of the future of medical knowledge and treatment.

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Herbert Benson, MD, Boston, Massachusetts  
William Proctor, JD, Vero Beach, Florida

## Part I

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# ***The Science of Mind Body Healing***



## **The Making of a Revolution**

**W**e now have scientific proof that the mind can heal the body.

This means that *you* have the innate ability to self-heal diseases, prevent life-threatening conditions, and supplement established drug and surgical procedures with mind body techniques that can improve your physiology, biochemistry, brain functioning, and genetic activity. Furthermore, these benefits have the potential to reduce individual health costs and the broader societal expenses of health care.

How can you take advantage of these revolutionary advances in medical science? The best way to answer this question is for us to introduce you to Caroline, a 47-year-old accountant and mother of three, who started out with some skepticism about mind body medicine. After she became my patient, she soon learned the tremendous personal benefits of this burgeoning field of medical treatment.

### **How Caroline Conquered Her Back Pain**

Caroline, an experienced squash player, considered her forehand her best shot. But as she whipped forward into the ball, she felt something

“give” in her lower back. She thought nothing of the discomfort, which subsided as she continued to play. The morning after the match, however, she awoke with lower-back pain that hardly allowed her to stand.

Caroline decided that the pains were somehow related to her habit of bending her back excessively when she was serving. Because she had experienced lower-back pains before—and thought she knew how to deal with them—she immediately reached for an over-the-counter painkiller. Sure enough, after about 20 minutes the pain began to subside. But the discomfort didn’t completely disappear, and she went to bed that night struggling to find a position that would allow her to go to sleep.

The next morning, the pain was still present. Furthermore, when she made a seemingly innocuous movement to turn on the hot water in her bathroom, an excruciating back pain immobilized her. The attack began in the same general area, in the small of her back just above her buttocks, but now seemed to spread across her entire lower back.

After suffering the next day at work and finding she couldn’t concentrate, Caroline decided to make an emergency appointment with her physician. Her doctor, an internist, immediately prescribed a strong prescription painkiller, a narcotic-like opioid. But within a couple of days of taking the medication, Caroline began to experience side effects, including constipation, nausea, and intermittent stomach pains. Although the doctor switched her prescription to another painkiller that had fewer side effects, the new drug continued to upset her digestive system with occasional cramps.

More important, the second medication didn’t help as much with the back pain, which returned in force in a day or so. The fact that Caroline was not improving provided additional stress, triggering the “fight-or-flight response.” This physiologic condition, which comes into play when a person is subjected to stress, caused her body to put out excess adrenaline and noradrenaline, secretions that actually increased her sensitivity to pain. The end result was the creation of a vicious mind body cycle of escalating pain, discomfort, and anxiety.

Furthermore, the pain was spreading, moving down into her right leg. According to her physician-internist, this change might be a sign that she was dealing with sciatica. This tentative diagnosis, he explained, meant that the pains might involve her sciatic nerve, which runs from the lower back into the buttocks and the back of the upper leg.

Now at the end of his medical options, the internist sent Caroline to an orthopedic surgeon who specialized in diseases and health conditions related to the spine and back. The surgeon scheduled a magnetic resonance imaging examination, which required Caroline to undergo a nuclear scan of her spine in an enclosed, tubelike structure. The computerized MRI images revealed some herniation (abnormal bulging) of one of her disks and the beginnings of osteoarthritic bone buildup in her lower spine. (Osteoarthritis is a wear-and-tear form of bone and cartilage deterioration that occurs in all of us to one extent or another as we place stress on our bones and joints during the aging process.) But these findings weren't necessarily conclusive about the cause of her pain.

"A lot of people have MRIs that look like yours," the orthopedist explained. "But most aren't experiencing the kind of pains you're having. In fact, most aren't in pain at all. They may have slightly stiff lower backs, but that's about it."

He also noted that he could find no tumor or other systemic problem that might be causing the pain. So, unable to identify the source of Caroline's complaint but well aware of her distress, the orthopedist prescribed an even stronger narcotic painkiller. He also referred her to a physical therapist, who prescribed regular massages and an exercise plan. The new pain medication and the physical therapy helped enough to provide some temporary relief. But side effects from the new drug, including a tendency for Caroline to become drowsy at her desk, forced her to cut down on the dosage. As a result, by the end of the year, Caroline's back pain had returned.

Another MRI and additional diagnostic procedures suggested some deterioration in the condition of the disk in her lower spine.



These findings—along with Caroline’s reports that the time she was able to spend at work had steadily decreased—convinced the orthopedist that she was a candidate for back surgery. As a result, she underwent two operations over a two-year period to relieve pressure that the damaged disk might be exerting on nerves around her lower back.

Unfortunately, the surgeries seemed to make matters worse. During her recovery and afterward, Caroline found that she was rarely able to go in to work because of the pain she experienced while driving her car. When she did make it to the office, she couldn’t sit for any extended period in the chair at her desk. The only place she could operate in reasonable comfort was on a sofa in her office, but that wasn’t a location from which she could project proper authority when advising clients. Finally, Caroline elected to work entirely at home, a decision that effectively placed a cap on her client interactions and on her ability to bring in extra business to her firm—and added markedly to her already high stress levels.

She spent most hours during the day on her bed and found that her normal patterns of enjoyment in life had evaporated. Of course, she was unable to play squash: she had given that up even before the surgeries. But there were other issues. An accomplished cellist, she could no longer sit with the instrument for even a few minutes without being immobilized by pain. Finally, she was unable to interact effectively with her teenage children.

Fortunately, despite all the medical setbacks and the deterioration in her lifestyle, Caroline was not willing to give up on her treatment options. The surgeon had told her that her pains could be idiopathic—that is, they could not be linked to any identifiable cause.

“We’ve done all that’s medically possible for you,” he said. “We’ve operated on your herniated disk, but you still experience pain. That may mean the pain is coming from some other source, some place that we just can’t identify, given our current medical knowledge.”

That conclusion might have been discouraging to some people, but it was actually *encouraging* to Caroline because she figured, “If he can’t find a cause, that doesn’t mean there isn’t one. Maybe he just