

Book Review

The Scientific Basis of Integrative Medicine

Len Wisneski, MP, FACP¹ and Lucy Anderson, MSW

¹George Washington University Medical Center

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Introduction

The Scientific Basis of Integrative Medicine (CRC Press, 2005) is one of the first books to elaborate on the nascent field of subtle energy medicine. First, a summary of the classic physiological systems serves as a review and provides uncommonly known facts regarding cellular and, thus, systems communication. The book examines the scientific underpinnings of the mind–body connection or psychoneuroimmunology (PNI), documenting the numerous interactions of the endocrine, immune, nervous and stress systems that so profoundly impact human functioning. Utilizing PNI research (i.e. from the perspective of the physiology of the mind–body connection), the book next explores the mental and emotional issues pertaining to stress and relaxation and how each impacts the physical body. Stress and relaxation not only are underlying factors in much illness, costing millions of dollars in health care, but these conditions currently also are conventionally acceptable areas for discussion with regard to their impact on a patient's physical health (e.g. Dean Ornish's work on reducing heart attack risk) (1). Scientific justification for broad integration of mental/emotional issues into the practice of medicine is presented. Stress and relaxation also are ideal precursors to looking at the role of spirituality in health care.

A chapter on the pineal gland segues the reader from the well-established fact that the mind and body are inextricably connected to the cutting-edge field of subtle energy medicine. The authors take this line of research to uncharted territory, making the case that the pineal, not the pituitary, is the body's master gland and presenting the pineal gland as the physiological

site of the interface between that which exists outside of the body and the hormonal and electrical cascades that are experienced as thought, emotion or spiritual in nature.

The authors pull together recent medical research and ancient philosophical concepts to establish that comprehensive health care must involve thorough attention to the mind and spirit—not just the body. A novel paradigm for health care that incorporates the mental, emotional and spiritual facets in a practical but integrative manner is elaborated. The paradigm is based on literally hundreds of studies and over 20 years of research. Most books currently addressing emotional or spiritual components of health care tend to be inspirational or religious in nature—an area generally considered 'hands-off' to physicians. *The Scientific Basis of Integrative Medicine* uses hard science to tackle the gnawing issues of how physicians should address these aspects of their patient's care.

The authors present a theory of the physiology of spirituality—or, in medical terms, a theory of how subtle energy impacts physical as well as mental or emotional functioning. In order for Western medicine to have a cohesive physiological system, it must account for the existence of energy fields within as well as outside of the human body. *The Scientific Basis of Integrative Medicine* looks at how various forms of energy (e.g. light, sound, electromagnetism or even prayer) translate into the chemical and electrical signals that orchestrate our physical health and mental well-being. It has been scientifically documented that factors, such as faith, prayer and love, influence our recovery from illness. These partially understood modalities currently are spoken of in terms of 'energy', 'healing energy' or 'subtle energy'. *The Scientific Basis of Integrative Medicine* borrows from the emerging field of energy medicine to present what is already known about subtle energy as well as to offer a theoretical model for the biological energy exchange that occurs with subtle energy healing.

The Classic Body Systems

The first chapter of *The Scientific Basis of Integrative Medicine* familiarizes readers with human anatomy and the

For reprints and all correspondence: Lucy Anderson, Medical Writer,
Tel: +1 413 369 4229; Fax: +1 413 369 0110;
E-mail: landerson369@comcast.net

basic hormonal and electrical functions that will be needed in order to understand concepts presented in later chapters. It provides a concise overview of the parts of the major body systems (i.e. nervous, endocrine and immune) required to understand subsequent discussions on PNI and systems integration. In addition, the concept of a human stress system is developed in this chapter, laying the groundwork for the introduction of the human relaxation system in Chapter 4. Emphasis is placed on areas of the brain found to be instrumental in the mind–body connection, such as the limbic system and the amygdala. The reader is given enough information to appreciate the relationship between human behavior and a corresponding physiological response. Engaging anecdotes (e.g. individuals who have right-side prefrontal cortex dominance patterns and negative affect have greater decreases in their natural killer cell activity levels during exam periods than do their counterparts with predominantly left-sided prefrontal cortexes) are interwoven into the text. Finally, the chapter lays the groundwork for understanding the physiological components that appear to be involved in consciousness and, perhaps, in experiences of a spiritual nature.

Psychoneuroimmunology and Systems Integration

The theories presented in the book stand on the foundation of PNI, which was the first field of medical research to illustrate the biological workings that are integral to communication between the mind and the body. PNI research is typically published according to discrete areas of study (e.g. by a specific emotion, such as bereavement, or by a particular neurotransmitter). By presenting the PNI research as a coherent unit and, for the first time, bringing together literally hundreds of studies, the scientific basis for the mind–body connection is comprehensively portrayed.

Over a hundred years ago, Sir William Osler wrote about a patient who had an asthma attack after smelling an artificial rose. In 1975, Dr Robert Ader, a pioneer in PNI research, provided the scientific explanation for Osler's curious observation when he demonstrated that mammals are capable of conditioned (Pavlovian) immune responses. Ader's landmark research involved a drug; however, later studies just as effectively used thoughts and emotions to mediate changes in the immune system. Proving that system interaction even existed was an astounding finding, in and of itself, because until recently each body system was considered to function in a pristinely independent manner. Ader's experiments provided the first scientific evidence that our thoughts actually alter our immune system. In other words, scientific research had finally caught up with conventional wisdom: emotional stress indisputably and negatively impacts our physical health.

This chapter contains the scientific and technical information that forms the cornerstone of an integrative approach to medicine. In subsequent chapters, the physiology of both stress and relaxation are used as examples to demonstrate and elaborate on the mind–body connection, detailing known and speculative hor-

monal and neurological cascades and pathways. The chapter on PNI lays the groundwork for a vital transformation in both the theory and practice of health care—reinstating the art and heart of medicine.

Stress

The investigation of the wondrous, if not enigmatic, integration of the body's physiological systems provides the basis for a novel review of stress and relaxation. Stress is the absence of homeostasis or an imbalance in the harmonious workings of the organism, which results in the body's concerted effort to re-establish that balance. The stress response triggers the release of powerful hormones that generate arousal and anxiety. Some of the hormones and neurotransmitters that are active during a stress response are discussed. For example, in humans, elevation of the chemical stress pathway (glucocorticoids) tends to be associated with depression, whereas elevation of the electrical stress pathway (epinephrine) more frequently is correlated with anxiety. The discrete differences in the hormonal response to acute stress compared with chronic stress are elaborated.

PNI research effectively demonstrates that chronic stress is destructive to health, creating an unremitting suppression of the immune system. Landmark studies that describe the effect of attitudes and emotions on health, from physical illness to the impact on memory, are reviewed. Apoptosis is the end-stage of chronic stress. It is programmed cellular death, and it can be the programmed death of the individual. The authors posit that humans are literally capable of worrying ourselves to death.

Relaxation Medicine

It has long been known that there is both a stress response (Hans Selye) and a relaxation response (Herbert Benson). The so-called stress and relaxation responses are essentially epidemiological reports of the factors involved in the body's response to either condition (e.g. stress raises and relaxation reduces blood pressure readings). Since the 1950s, researchers have succeeded in unraveling the precise sequence of hormonal reactions that occur during acute and chronic stress responses, begging the question of whether there is a hormonal cascade that occurs during relaxation as well. Would the body only harbor a hormonal response for stress and not for relaxation? The authors present the first evidence of an endogenous relaxation system and the hormones and neuropeptides that substantiate the existence of this system. The term *theta healing system* was coined because the effect naturally occurs when the body is relaxed enough to allow the mind to enter a state of equanimity—most probably occurring at the transitional point between an EEG reading of alpha and that of theta. While the sequence of hormonal release cannot yet be determined, the theory is substantiated with research on hormones that induce tranquility as well as neuropeptides that are associated with deep relaxation.

As evidenced by treatments varying from biofeedback, to autogenic training, to meditation, deep relaxation leads to and

maintains physical health. The *theta healing system* is the first theory set forth that viably explains, from a Western physiological viewpoint, how and why deep relaxation is beneficial. The book presents research showing that the alpha/theta state of mind spawns a cascade of relaxation hormones that have substantial benefit for physical and emotional health. Specific hormones that comprise this system, including endogenous benzodiazapines, anandamide (and other endogenous cannabinoids), melatonin and *N,N*-dimethyltryptamine (possibly, the chemical responsible for the experience described as spiritual or inner peace), are presented in detail. These hormones provide a physiological explanation for emotions and experiences that Western medicine heretofore has been unable to explain.

Activating the *theta healing system* requires the participation of both the mind and the body in some type of relaxation therapy. Therefore, an extensive review of currently available modalities capable of reducing stress, of alleviating symptoms caused by chronic stress or of enhancing wellness is provided. Some of the modalities discussed are well known; others will be new to most readers. The treatments presented can be viewed as practical applications of the basic science discussed in the prior chapters.

The Pineal Gland

The chapter on the pineal gland, arguably, is the pivotal point of the book. This chapter presents an analysis of how events outside of the body are translated, commonly referred to as transduced, to a form that the body can *read*. The pineal gland is the way station or link between our external environment and the network of internal body systems—the tiny but mighty gland that is a liaison with the world around us. The pineal gland takes environmental information and converts it into chemical and electrical signals within our bodies.

In the last 20–30 years, a more accurate understanding of the functions of the pineal gland has emerged, largely as a result of the isolation of melatonin, the major pineal hormone. Convincing evidence is presented showing that the pineal, and not the pituitary, is the master gland of the endocrine system. It converts light, temperature and magnetic environmental information into neuroendocrine signals that regulate and orchestrate body functions. It regulates our internal clock—determining our daily sleep–wake patterns and influencing our broader lifetime rhythms.

The pineal gland is draped in ancient lore as the mysterious *third eye* and the site of the *sixth sense*. Curiously, it may well be the physiological interface between the mind–body connection and subtle energy experiences—the likely gatekeeper of experiences that transcend the five senses. The book offers a theory regarding the way in which the pineal gland may interface with bodily energy portals discussed in Eastern medical systems. In brief, while the pineal is the energy transducer that sends hormonal and electrical messages throughout the body, the chakras, as described in Eastern religious and medical

systems, may well be the energy transducers for subtle energy. Therefore, various forms of energy, such as light, sound, electromagnetism and the putative energy behind the healing effects of prayer, are translated into electrical and chemical signals within our bodies. Many little known subtle energy modalities and treatments are reviewed, which by this point in the book can be understood in a more scientific light. In addition, scientific studies on prayer and distant healing are presented, substantiating the impact of spirituality on physical health. The reference section provides resources and contact information.

Soul Medicine—Crossing the Border

According to Eastern medical systems, the body contains channels through which flows an invisible but nutritive energy called chi, loosely translated to mean vital energy or life force. Furthermore, there is a purported energy surrounding the body, referred to as *subtle energy*. Subtle energy both informs and transcends the faculties of the five senses. It is taken into the body via openings, called chakras, and translated into a form of energy that the body can use, literally use, at the cellular level. Just as the pineal is the energy transducer for environmental information, the chakras are the energy transducers for subtle energy. Subtle energy is a healing energy that anyone can learn to perceive and utilize. It is a crucial, but often missing, component in health care.

Subtle energy is the foundation of *integral physiology*, which is a medical paradigm that unites the enormous contributions of Western medicine with the profound insights of Eastern systems of health—a truly integral philosophy of healing. Supported by scientific research, *integral physiology* bridges belief systems and offers a neutral language that people of myriad backgrounds can use to communicate with one other about experiences that extend outside of known science. *Integral physiology* steps beyond the, so-called, body–mind connection to recognize the importance of experiences traditionally called ‘intuitive’ or ‘spiritual’. The theoretical model utilizes a chosen set of thinkers to explain the subtle energy component of a truly integral physiology. Unifying the valuable contributions of Western medicine and the knowledge of ancient energy systems, the theory of *integral physiology* is a harbinger to the hard science that is beginning to emerge. It bridges rigid belief systems of both medical and religious institutions by offering a neutral language and providing a framework by which to discuss the non-physical aspects of healing. Before long, the scientific means to prove the theory and the technology to employ it will be established. Understanding human subtle energy is undoubtedly the next frontier in medical research.

Reference

- Ornish D *et al.* Intensive lifestyle changes for reversal of coronary heart disease. *J Am Med Assoc* 1998;280:2001–7.

