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STRESS, PERSONALITY, AND ARTHRITIS

Arthritis comes from the Greek words *arthron*, for joint, and *itis* for inflammation, and thus means "joint inflammation". Since the tendons and ligaments that connect the joints are frequently affected, it is also termed a "connective tissue" disorder. Arthritis can be seen in over 100 diseases that produce either inflammation or degeneration in joints and their surrounding tissues. The most common forms are osteoarthritis and rheumatoid arthritis, and rheumatism is frequently used as a synonym for these conditions. Joint inflammation may also occur in gout, pseudogout, ankylosing spondylitis, juvenile rheumatoid or Still's disease, lupus, psoriasis, inflammatory bowel disorders, and various infections ranging from rheumatic fever, to gonorrhea and Lyme disease. Although fibromyalgia does not primarily affect the joints, it is also included under the heading of arthritis.

Arthritis is the leading cause of physical disability, and in a 1990 survey, more than 12 per cent of everyone over the age of 65 in the United States complained of limited activities due to arthritis. Seven million listed arthritis as the major contributing cause of restricted movement, and it was the most common cause of limited motion in women older than fifteen. Compared to men, women have double the rate of osteoarthritis, three times more rheumatoid arthritis, are seven times more likely to suffer from juvenile rheumatoid arthritis, and have a nine fold increase in systemic lupus. In contrast, men are much more likely to suffer from gouty arthritis, ankylosing spondylitis, and Reiter's syndrome.

The History, Health And Financial Toll Of Arthritis

Arthritis has existed as long as man has. There is evidence of arthritic deformities in the bones of our earliest ancestors, as well as in X-rays of ancient Egyptian mummies. Rheumatoid arthritis-like deformities can be seen in early 15th century paintings, but when it was first described around 1800, it was believed to be the result of relatively recent environmental changes. Anthropologists also theorize that rheumatoid arthritis may be a new world disease that represents an adaptive response to the stresses of progressive civilization. The widespread outbreak in Europe of crippling inherited rheumatoid arthritis occurred primarily among the poor masses during the 19th century industrial revolution, and was thought to be due to poor sanitation, overcrowding, and inadequate nutrition. Others believed that the disorder was related to planetary influences, and that those born under the sign of Cancer were more vulnerable.

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The first written descriptions of arthritis and its treatment were made by early Greek and Roman physicians. It was apparently very common in Rome, some sources placing the figure at more than 70% of those over thirty. One of the chief functions of the Roman baths was to ease aching painful joints, and physicians still prescribe heat and hot water therapy for arthritis. Other cures were avoiding mead and fortified wines, which helps many patients with gout, and possibly some with rheumatoid disease. Another treatment was having arthritic extremities shocked by placing them on electrical eels. It is conceivable that this might have provided benefits similar to those seen with transcutaneous electrical nerve stimulation therapy (TENS) that is currently used to relieve pain.

Osteoarthritis is by far the most common form of arthritis, and although everyone older than 60 has some X-ray evidence of this, only a third have symptoms. Rheumatoid or inflammatory arthritis causes far more serious health and financial problems, and has been estimated to reduce life expectancy to the same extent as smoking or diabetes. One out of every three patients attending an outpatient clinic for rheumatoid disease is likely to be severely disabled within 20 years, and this soars to 80 per cent for those who have to be hospitalized. Patients with thirty or more joints involved have mortality rates equivalent to that reported for untreated triple vessel coronary artery blockage, or the most serious stage of Hodgkin's disease. The estimated lifetime costs for the treatment of rheumatoid arthritis are similar to those for coronary heart disease. Therefore, exploring the role of stress and the benefits of stress reduction are particularly important in this disorder.

The Role Of Stress In Arthritis

There are many reports linking emotional stress with the onset or aggravation of rheumatoid arthritis. Most of these are anecdotal observations, that are dismissed by critics as "old wives' tales", because of lack of any scientific proof or explanation to justify such speculations. Although the cause of rheumatoid arthritis is not known, it is believed that a disturbance in immune system function is the most likely culprit in many cases. As the important effects of stress on immune system function have increasingly been demonstrated, its powerful potential as a contributing factor seems much more plausible. Further support has also come from objective scientific studies utilizing sophisticated imaging and biochemical techniques that confirm a variety of other possible links between stress and arthritis.

Numerous studies suggest that stress can play an important role in the precipitation of rheumatoid disease, as well as causing a flare-up of symptoms in patients who had been relatively stable and pain free. In one British report, almost every female patient interviewed reported an emotionally stressful event prior to the onset of symptoms. This was usually some disruptive personal relationship, such as the breakup of a love affair with a live-in lover who abruptly left for someone else, having a seriously depressed mother who had to move in with the family, an only child getting married in a foreign country to an unknown and possibly undesirable individual, the death of a close friend, having to change to an unpleasant job, or a spouse's sudden loss of employment. In another study, almost two thirds of patients identified some stress provoking situation, again usually due to disturbed family relationships. A study of juvenile rheumatoid arthritis patients similarly revealed that a much larger percentage came from "broken homes", compared to a control population. In about half of these, the death of a parent or a divorce had taken place within two years of the onset of symptoms. As in

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many other disorders, stress may not be the sole cause of rheumatoid arthritis, but rather a precipitating factor which serves to ignite the fuse of a firecracker.

The stress of repeated or numerous seemingly minor irritating daily hassles may be even more significant. Examples might include such things as financial arguments with friends or acquaintances, concerns about owing money, not enough sleep or energy, frequently misplacing or losing things, filling out forms, meal preparation problems, time consuming, unpleasant and overdue jobs around the house or yard work that must be done, inconsiderate smokers, having to wait in long lines and shopping difficulties, getting stuck in traffic, unpleasant weather, frequent fights with customers or co-workers, etc. An increased occurrence of such daily hassles has been clearly associated with a greater subsequent risk for a variety of diseases, with a predictive power similar to that seen following major life change events, and this seems to particularly apply to rheumatoid disease.

In one study, rheumatoid arthritis patients were asked to keep a daily diary for 75 days, indicating the type and number of such daily stresses. At the end of the day, they also rated pain levels, and described their mood, how they felt in general, and any other relevant factors, such as the degree of social support available. There was a significant relationship between the number of stressful events and same day mood. Those with more active inflammatory disease also reported a correlation with more pain during the next 48 hours. Patients with evidence of less social support appeared to be much more likely to be affected. In another report on patients who entered an arthritis clinic for treatment, in addition to blood tests and X-ray studies, emotional stress levels were rated. At the end of five years, 90% of those who had bone erosion in addition to evidence of swelling, were in the high stress group at the time of entry. For those who still had swelling but no bone destruction, only 40% were in this category.

Comparatively little research has been devoted to emotional and psychological factors in osteoarthritis. One report found a higher incidence of a trouble ridden and loveless childhood. Others have suggested a greater tendency towards aggressiveness in competitive athletics during adolescence, leading to more physical trauma that could cause problems later on. In some instances, the onset of painful symptoms appeared to follow some stressful event, the most common being loss, or separation from a spouse.

"Learned Helplessness" And Arthritis

Just having arthritis can be a significant source of stress, and like the chicken and the egg, sometimes it's difficult to determine which came first. There are financial concerns because of doctor bills and medical expenses, many arthritis medications have adverse side-effects, there are deformities which have a negative impact on feelings of self-esteem and self worth, and arthritis can interfere with many other things, such as the enjoyment of sex. In one study, when 55 arthritics aged 20 to 60 were questioned about their sexual activity, nearly half said that sex not only made them feel better, but actually was a great pain reliever. Some reports were striking, such as "It was not just that the pain was reduced, but I was free of pain for several hours." Another explained that a rewarding sexual relationship provided the feeling that "I'm still wanted, I'm still worthwhile", and not only markedly improved a sense of self-esteem, but also "your whole outlook towards life".

There is also the stress of living with decreased energy, mobility, and function, which leads to difficulties in self-care. This in turn reduces independence, involvement in normal family and social activities, the sense of self-esteem and control, and can cause significant and chronic economic burdens. There is constant uncertainty about how rapidly or severely the disease will progress, and the potential for more serious physical disability, both of which may be beyond control. In animal research, chronic exposure to such uncontrollable stressors has been shown to lead to a characteristic pattern of behavior known as "learned helplessness". Learned helplessness refers to the belief that effective solutions are not available to control or eliminate a source of stress. Since rheumatoid arthritis has no consistent cause or cure, many patients come to believe that they are completely helpless with respect to being able to influence or control their present situation, or more importantly, their future. As a result, they lose confidence in their abilities to cope, become less compliant with their treatment program, and may even abandon this for

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various unproved methods. Such tendencies can be measured with the Arthritis Helplessness Index, a self-report questionnaire designed to assess the patient's perception of control over arthritis. Research studies show that those with high helplessness scores have more severe psychological disturbances and disease related symptoms. Conversely, patients who believed that they had greater control over their health, had fewer problems in these areas.

Pain and persistent discomfort are of prime importance, particularly pain. Chronic stress can make individuals much more sensitive to pain, causing additional stress which then intensifies the pain. A common example of this is seen in some patients with low back pain due to an arthritic spur on the spine. This can cause muscle spasm and pain from nerve root pressure. Stress induced muscle tension further increases this pressure, making the pain more severe, which in turn leads to more stress and even greater discomfort and lack of mobility. The ability to relieve pain and/or to reduce stress, can relax tense muscles, breaking up this vicious and self perpetuating cycle. Pain and all the stressors noted above also makes it more difficult to deal with other life stresses. As indicated, stressed out patients may become lax about taking their medications, and have a harder time sticking with prescriptions for exercise or physical therapy. This is especially true for patients who become depressed. Depression is a common characteristic of rheumatoid arthritis, and in one study, 17-21% of patients had symptoms of depression or anxiety severe enough to warrant treatment. Here again, it is often difficult to distinguish between cause and effect. Apart from depression, psychiatric disturbances do not seem to be any more frequent in rheumatoid disease, than in patients with other forms of arthritis or medical conditions. When psychiatric problems do occur, they do not seem to be related to the severity of arthritis, but rather with the lack of strong social support, and/or greater exposure to stressful events.

However, certain stresses may be associated with an increased production of endorphins, the body's natural opiates, which have powerful pain relieving and mood elevating effects. This may explain the "runner's high", and why some continue running despite broken bones which would normally be severely painful. Acute stress can also increase the secretion of cortisone-like hormones used to treat arthritis, resulting in the transient relief of symptoms in some patients.

Personality And Repressed Anger In Arthritis

As noted previously, rheumatoid arthritis patients are frequently depressed. They also tend to be fearful of criticism, have a poor self-image, try extra hard to be nice to other people, avoid leaning on others for emotional support, and suppress their anger and true feelings. As with stress, many times in trying to determine the relationship between personality factors and illness, it is difficult to distinguish between cause and effect. Just being sick is stressful, and can cause changes in behavior. However, the traits noted above are often referred to as the "rheumatoid personality, since they more often seem to precede the disease rather than result from it. In one survey, the typical rheumatoid patient was described as an individual who repressed his hostility by enacting rage against his body, and was more apt to exhibit self-punishing, obsessive-compulsive, perfectionist tendencies. There was often a history of interpersonal difficulties with parents, the most common being complaints about less loving mothers, and more authoritarian fathers.

Personality is difficult to define because it has complex components. In general, it may be viewed as representing a fairly consistent pattern of coping mechanisms. These appear to result from a combination of genetic influences, early environmental experiences such as the loss of a parent, or exposure to abnormal parental and family relationships. Some research suggests that rheumatoid arthritis patients consistently show more compliance, subservience, nervousness, restlessness, depression, conservatism, and sensitivity to anger than their siblings. There was a striking difference between patients and their siblings both with respect to how they described themselves in terms of denial and hostility, and the amount of rejection and/or strictness they perceived from one or both parents.

Alexithymia is another trait that is frequently found. This term refers to a diminished awareness of inner feelings, and an inability to identify and express

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emotions verbally. This lack of self-communication, which has been described as "emotional illiteracy", hampers the ability of affected individuals to recognize or acknowledge particular events as being distressful. Since they are unable to express their feelings verbally or by other external means, they are channeled inward, causing disturbance and damage internally.

Of all the emotions that tend to be internalized, anger is the most harmful. There are several types of anger, ranging from violent and uncontrolled rage, which is outwardly expressed, to resentment and indignation, where people tend to keep their angry feelings bottled up. It is the latter situation which tends to cause the most physiological and psychological damage. There are numerous things that may particularly make arthritic patients angry, including innocent or well meaning advice such as, "If you didn't play so much tennis, you wouldn't have arthritis problems", or, "If you had only lost a little weight, this wouldn't have happened to you." There is also the resentment and loss of dignity that comes from a poor self-image due to physical deformities, inability to participate in usual activities because of limited mobility, or simply the constant need for assistance in walking.

Anger can have very damaging effects on health, both physically and mentally. This can be best appreciated by visualizing anger as some sort of energy, which has to be directed somewhere. If it is not expressed outwardly, it can be either suppressed or repressed. An example of suppressed anger might be that you deliberately stifle your emotions because you don't want to precipitate a fight. Repressed anger is much more subtle, because it is apt to represent situations in which you may have harbored hostile or angry feelings against someone like your father since you were a little child, but they never surfaced because you were never completely aware of them. Repressed anger tends to be more damaging because it is chronic and concealed while it continues to smolder. There is mounting evidence that such hostile feelings can contribute to cardiovascular disease and cancer, as well as rheumatoid arthritis.

When personality traits were scrutinized in over 5,000 rheumatoid patients, inability to express anger was high on the list. Many patients are completely unaware of this. One woman first insisted that her husband was marvelous, but cried when questioned further. She said she had to stand inspection before going out, and he would often brush her hair and tell her she needed to make herself look better. Such individuals may have so much suppressed anger that it "eats them up". This may be literally true for those with autoimmune disturbances.

Why Do Women Have More Arthritis Than Men?

Some authorities suggest that the higher incidence of rheumatoid arthritis in women may stem from our tendency to teach little girls that it is wrong to show that you are angry. For macho men, blowing up and getting things off your chest is an acceptable or even admirable trait. Women are much more likely to respond by crying, or alternatively, to keep their feelings suppressed, while they seethe with resentment. They are also more apt to believe that their anger is out of proportion to the problem that caused it, and to be more embarrassed when they do express their feelings. Females similarly complain of less pain and other arthritic symptoms to doctors than men with the same severity of disease. This is important, since treatment is usually based on reported levels of pain and disability. Men often view female crying as an exaggerated expression of sadness, or a tactic designed to win an argument. However, it frequently represents the only outlet for pent up tensions, frustration, or rage.

Osteoarthritis is also more common in the hands of older women, and little bony lumps, called Heberden's nodes, may develop in the joints nearest the end of the fingers. They occur ten times more frequently in females, and often appear to be inherited, although there may be a traumatic component. Women do more work with their hands, like sewing, cooking, cleaning, and washing dishes, and Heberden's nodes are more prominent in the right hand of right-handed individuals, and typists. Hormonal factors may also be relevant, since estrogen replacement therapy helps prevent osteoarthritis in post-menopausal women. Fibromyalgia occurs five times more frequently in women than men, usually between the ages of 25 and 40. The characteristic complaints are chronic and diffuse aches and pains, marked fatigue,

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waking up more tired than when you went to sleep, and early morning muscle stiffness which occasionally persists throughout the day. Severe pain can be elicited by applying deep pressure to tender trigger points about an inch or so wide, often around the buttocks, knees, upper back and neck. The cause of fibromyalgia is not known, but as in rheumatoid arthritis, may be triggered by some stressful event or infection that sets off an aberrant immune system response. There is often difficulty in sleeping, and it has been shown that when healthy volunteers are significantly sleep deprived, they develop tender trigger points, muscle aches, morning stiffness, and other complaints very similar to those seen in fibromyalgia. The condition tends to be chronic, but can have very varying degrees of severity and duration. X-rays and laboratory tests are usually normal.

About half of fibromyalgia patients link the onset or aggravation of their illness to stress. In one report, they completed questionnaires describing daily symptoms, emotionally significant events, and mood, for ten weeks. They were examined for tender trigger points every other week, and there was a clear correlation between the number of tender points and severity of pain, with daily stress ratings. Another study showed higher stress levels than comparable rheumatoid arthritis patients, and this appeared to be related more to increased hassles than major life-change events. There was also a higher incidence of irritable bowel disease, tension headache, menstrual discomfort, and other conditions which often have a strong emotional component. Up to 15-20% of patients who attend rheumatology clinics suffer from fibromyalgia, rather than joint disease. Although many with milder forms of the disease never seek medical attention, 6.3% of fibromyalgia patients described themselves as disabled in one report.

Palindromic rheumatism is a disease that causes irregular attacks of joint pain and swelling, especially in the fingers. Although it may occur frequently, there is no evidence of any permanent damage to the joints. In psychogenic rheumatism, there are complaints of pain in various musculoskeletal locations that cannot be substantiated by physical examination or laboratory tests. It often responds to reassurance and antidepressant medications. These disorders are most common in women between the ages of 40 and 70.

Stress and personality influences in rheumatoid arthritis are much more prominent in women, where the onset frequently follows some stressful event. Increased stress is also associated with a more rapid progression of the disease, greater disability, and poorer response to treatment. Such individuals have been described as more quiet, distant, introverted, conscientious, conforming, self-sacrificing, and sensitive to criticism. They tend to suppress anger, allow themselves to be imposed upon, and to deny any dependency on others. However, this so-called rheumatoid personality is much more of a sketchy silhouette, than a picture quality portrait.

Stress And Other Types Of Arthritis

There is considerable evidence that rheumatoid arthritis may represent an autoimmune disorder in which the body begins to manufacture antibodies against its own tissues. The resultant formation of immune complex proteins can initiate an inflammatory reaction in joints around which they become deposited. This might follow some infection, and recent reports also suggest that the administration of broad spectrum antibiotics for several weeks can significantly improve certain patients. The incidence of rheumatoid arthritis is higher in the spouses of affected individuals, further suggesting some infectious component, although it is clearly not very contagious, and stress may be an important factor in determining this. A very similar condition can be produced by injecting various foreign proteins into experimental animals. This is blocked by drugs which are routinely given to transplant recipients and cancer patients to suppress immune system responses, and are now increasingly being found effective in severe rheumatoid disease resistant to other treatment. Approximately 8 out of 10 rheumatoid arthritis patients have an autoantibody in their blood known as rheumatoid factor. Its significance is not clear, since it can be found in unaffected relatives and other perfectly healthy individuals. However, its presence appears to predict a much greater susceptibility to develop arthritis due to stress, based on long term studies of siblings with and without rheumatoid factor.

As indicated, there can be 100 different causes of arthritis, ranging from gout to Lyme disease. Stress may play an important role in all of these, because of its influence on dietary and other lifestyle habits,

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immune system resistance to infection, pain perception, endocrine function, or by causing increased muscle tension. Osteoarthritis of the spine is common, and often produces low back pain as a result of muscle spasm due to nerve root pressure. Bony spurs that encroach on the sciatic nerve can cause sciatica, an excruciating pain radiating down the leg. Low back pain is a major problem that affects some 7 million people every day. Numerous studies show that emotional, as well as physical stress, can play an important role in its onset and course. We often unconsciously use certain phrases, such as, "I wish he'd get off my back", or "She is really a pain in the butt (or neck)." One well known physiatrist states that possibly 90% of all backaches are triggered by stress in his book, *Backache, Stress, and Tension*. More importantly, stress reduction can provide remarkable relief and prevent needless surgery, as illustrated in *Back Away From Back Pain*, by another physical therapy authority.

Just as distress can have harmful effects, other emotional influences can provide significant benefits. Developing a strong sense of control is a powerful stress reducer. In one study, patients with tension headaches were told that they would receive biofeedback to teach them to relax their tense scalp muscles to decrease the frequency and severity of their pain. In half the patients, the signals were reversed so that the more they tensed their muscles, the more the feedback signals indicated that they were relaxing. Those who were led to believe that they had been very successful, where they unknowingly had been taught to increase their muscle tension, reported a 53% reduction in headache pain. Others, who had actually learned to relax quite well, but were informed that they had been only somewhat successful, reported only a 26% reduction. This suggests that the belief, valid or not, in the ability to control pain, may directly reduce the stress that causes it.

This has important implications in arthritis. Although there are genetic as well as various environmental roots, the perception of lack of control, loss of self-esteem, inability to express emotions, poor social support, and the development of certain personality traits, may also be contributing factors. A preponderance of any may precipitate the illness, but in most instances it is a combination of factors, and stress pulls the trigger of a loaded gun.

What You Can Do

Stress is often self generated because of faulty perceptions that you have the power to change. Stress also differs for each of us, but the feeling of not having any control is always distressful. Developing a strong sense of control that improves feelings of self sufficiency is extremely important. In one study, patients with tension headaches were told that they would receive biofeedback to teach them to relax tense scalp muscles and relieve their pain. In actuality, the signals were reversed, so that the more they tensed their muscles, the more the feedback signals indicated that they were relaxing. Those in this group who were told they had been very successful in learning the technique reported a 53% reduction in headache pain, although they unknowingly had actually been increasing muscle tension. This improvement was more than twice that seen in subjects who were practicing the procedure correctly, but were informed that they had been only somewhat successful. This suggests that the belief, valid or not, in the ability to control pain, may directly reduce the stress that causes it.

Having a strong social support system also fosters a feeling of control, and provides other health rewards. It may be defined as information leading the patient to believe that he or she is cared for and loved, esteemed and valued, and is also a part of some network of communication and mutual responsibility and care. Developing a feeling of self efficacy and control over pain and other threats and challenges in your life, and improving social support can provice significant benefits not only in arthritis, but all stress related disorders.

Stress is an unavoidable consequence of life. There are some stresses you can do something about, and others you can't possibly hope to change or evade. The trick is in learning to distinguish between the two, so that you're not constantly frustrated and angered by trying to influence things that are completely beyond your control. If you can't fight, and you can't flee, you have to learn to flow.

Paul J. Rosch, M.D., F.A.C.P.
Editor

Book Reviews • Meetings and Items of Interest

Book Review

Arthritis: What Exercises Work, Sobel, D. and Klein, A.C., St. Martin's Press, New York, 1995, 200 pages, $10.95 Paperback

Doctors often urge arthritic patients to "exercise", but that's about as far as it goes. There is considerable confusion about what kind of exercises are best, how frequently, long or vigorously they should be pursued, whether they might make things worse if they cause increased pain, etc. This pithy offering answers most of these questions, and is particularly important, since many of the most disabling, deforming, and destructive aspects of osteoarthritis and rheumatoid arthritis, result from lack of exercise. Even in the absence of disease, immobilization can result in joint destruction in just a few months.

In addition to carefully outlined exercises for different arthritic problems with helpful explanatory diagrams, there is also a chapter outlining particularly useful stress reduction strategies, such as meditation and deep breathing exercises, progressive muscular relaxation and visual imagery. Mental and emotional factors are also stressed, reminding one of Norman Cousin's story of Pablo Casals, the celebrated cellist whose hands became crippled with arthritis. However, after playing a few exercises on his beloved instrument, his fingers loosened up, and as he began to perform his favorite selections, the pain and stiffness seemed to vanish. On occasion, he could continue for an hour or more, with much of the flexibility and virtuosity seen in his prime.

Walking is a particularly good exercise as well as stress reducer, since its isolation can promote beneficial meditative and creative activities. However, any exercise that can be pursued on a regular basis will increase the sense of control and self efficacy that is so important in arthritis. Patients are in the best position to determine what is best for them, provided they are given a list of available exercises, and correct advice on how to practice them, both of which are provided in this book.

Books Received For Review

Molecular Endocrinology: Basic Concepts And Clinical Correlations, Weintraub, B.D., Raven Press, New York, 1995

Focused Psychotherapy: A Casebook of Brief, Intermittent Psychotherapy Throughout the Life Cycle, Cummings, N., Sayama, M., Brunner/Mazel Publishers, New York, 1995

Mind Over Mood: A Cognitive Therapy Treatment Manual for Clients, Greenberger, D., Padesky, C., Guilford Press, New York, 1995

The New Wellness Encyclopedia: The Best-Selling Guide to Preventing Disease and Maintaining Your Health and Well-Being, Editors of the University of California at Berkeley Wellness Letter, Houghton Mifflin Co., New York, 1995

Comprehensive Health Care for Everyone: A Guide for Body, Mind and Spirit, Collins, T.M., Blue Dolphin Publishing Co., California, 1995

Biofeedback: A Practitioner's Guide, Second Edition, Schwartz, M.S. & Associates, The Guilford Press, New York, 1995

Meetings and Items of Interest

Dec. 6-10 Training in Mind Body Medicine & Ayurveda, Deepak Chopra, M.D., and David Simon, M.D., San Diego, CA, call (800) 757-8897

Dec. 7-9 1995 Meeting of the Pavlovian Society, Radisson Lord Baltimore Hotel, Baltimore, MD, call Dr. Pare (410) 642-2411, ext. 5427

Feb. 27-Mar. 2 Health Promotion: A Balance of Physical, Emotional, Social, Intellectual and Spiritual Health, The Broadmoor in Colorado Springs, CO, call (810) 650-9600

Mar. 13-16 The Fourth International Congress of Behavioral Medicine hosted by The Society of Behavioral Medicine and the Academy of Behavioral Medicine Research, Sheraton Washington Hotel, Washington, DC, call (301) 251-2790

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