

TM

FP family practice R ecertification



Cl. 13 Bones and organs of movement

Running Injuries: Diagnosis, Prevention, and Treatment

Carl L. Stanitski, MD



Cl. 9 Digestive system

Peptic Ulcer: Postsurgical Management

William G. Abel, MD



Cl. 1 Communicable diseases

Reye's Syndrome

Emily Leach Richie, MD



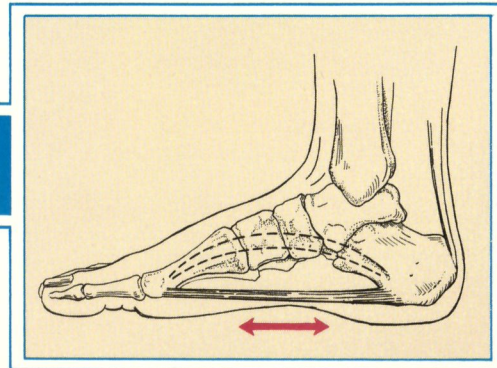
Cl. 5 Mental illness, personality disorders, and psychoneurosis

Nonpharmacological Approaches to Stress

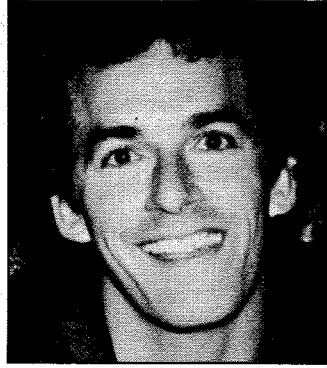
Deane H. Shapiro, Jr., PhD

Johanna Shapiro, PhD

HOW TO SUSTAIN 120 TONS OF FORCE PER MILE RUN



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Nonpharmacological Approaches to Stress

DEANE H. SHAPIRO, JR., PhD

JOHANNA SHAPIRO, PhD

UPDATE—The issues of stress are complex but certain nonpharmacological approaches appear to be effective. The techniques are practical for the family physician because they enable patients to care for themselves.


RECERTIFICATION PRE-TEST

1. In the Holmes and Rahe Social Readjustment Rating Scale, an individual who scores above 300:
 - a) will almost certainly not develop signs of physical illness over the next six months (0% to 10% chance)
 - b) has a 10% to 25% chance of developing an illness
 - c) has a 25% to 75% chance
 - d) has a high probability (90%)
 - e) none of the above; there is no correlation between life events and illness
2. The treatment of choice for primarily somatic stress is:
 - a) meditation
 - b) self-hypnosis
 - c) biofeedback
 - d) exercise
 - e) autogenic training
3. For patients who cannot see a causal relationship between stressful events and their own behavior, the best strategy is to teach:
 - a) the relaxation response
 - b) electroencephalographic biofeedback
 - c) behavioral self-observation
 - d) proper diazepam compliance
 - e) temperature training biofeedback
4. Which statement is false?



- a) meditation causes a more generalized hypometabolic relaxation state than biofeedback
 - b) meditation is effective in reducing stress and tension
 - c) meditation is effective in decreasing essential hypertension
 - d) meditation is the treatment of choice for every patient with a stress-related problem
 - e) meditation is an attention-focusing strategy effective in reducing cognitively related stress
5. The relaxation response, hypothesized by Benson, refers to:
- a) a refinement of the General Adaptation Syndrome described by Selye
 - b) an innate response of the body, producing a hypometabolic state opposite to that posited by Canon
 - c) a fight or flight response
 - d) an effect produced by only one type of relaxation strategy
 - e) a technique effective only for minor stress problems

Answers on page 64

 It has been suggested that between 50% and 70% of patients seen by family physicians have an illness that is either stress induced or exacerbated by stress.¹ Evidence also exists that stress is associated with increased utilization of health care² and with increased morbidity.³ As medical specialists who recognize and advocate treating "the whole person,"⁴ family physicians in particular need to be sensitive to the existence of stress-induced or stress-compounded diseases.

The authors have considered ways in which the physician can identify stressful

events that may be exacerbating disease and nonpharmacological strategies that may alleviate stress. The patient can either be taught these strategies or can be given a well-informed referral.

Drugs should be used as a complement to other therapeutic measures, rather than as an end in themselves.

The emphasis on nonpharmacological approaches here is not intended to exclude the use of drugs, but merely to view them as an alternative. At times drugs may be essential in treating patients with anxiety, tension, or other stress-related reactions. But medication can become an end rather than a means to reestablishing the equilibrium to deal with necessary lifestyle changes. Moreover, research indicates that medication may become a problem due to side effects, addiction, or dependency.^{5,6}

There are several advantages to a nonpharmacological approach. Besides alleviating the symptoms of stress, it can be used to effect positive lifestyle changes. For example, patients can be taught that misperceptions may cause them to "reflexively" activate their emergency response systems at inappropriate times.

The techniques can be learned by the physician and are easy for the patient to learn as well. They can provide the patient with a sense of competence and the calm peacefulness associated with relaxation. There are few adverse side effects.⁷ For patients with many problems, like the psoriasis patient with a sleep disturbance, the effects of some of these techniques are nonspecific. Thus several different conditions may be positively affected by the same treatment. Finally, nonpharmacological strategies



place responsibility on the patient and teach something about participation in health care.

Stress has been defined as an environmental stimulus (stressful event), as the individual's response to that stimulus (stress response),⁸ and as the interaction of the two.⁹ Selye defined stress as a non-specific (stereotyped) response of the body to any demands made upon it. This standard response of the body to events involves heightened sympathetic arousal and adrenocortical secretion. Selye describes the way stress affects the body over time as the General Adaptation Syndrome. After an initial "alarm" response, the body becomes resistant, but if the stress continues, the body's resources will be exhausted. This syndrome, empirically confirmed by Selye, had been hypothesized by Canon in his work on the "fight or flight" response, the emergency response of the body to danger, real or imagined.

It should be noted that stress is not always a pejorative concept. In this article, what we refer to as "overstress," or dysfunctional stress, is what Selye calls *distress*. Clearly, however, stress can be a motivator, generating a sense of excitement and heightened well-being. At times it may be necessary to activate the fight or flight system. Selye refers to this positive aspect as *eustress*. One of the tasks of the physician is to help the patient distinguish functional stress responses from destructive ones.

Stress is measured in terms of an individual's "person-specific" response to stressful events.

It is important to distinguish between stress as an independent variable, as a dependent variable, and as a moderating/

mediating variable. When stress is viewed as an independent variable, we look for the effects of different levels of stress on a dependent variable, such as illness.¹⁰ One of the best ways of measuring stress as an independent variable is the Social Readjustment Rating Scale, developed by Holmes and Rahe in 1967. It gives a numerical score to certain "change events" in an individual's life. If the person has a score of less than 150 points during the preceding year, there is a 30% likelihood that his or her health will change during the next two years. A score of 150 to 300 indicates a 50-50 probability, and more than 300 a 90% chance. A health change is defined as a psychological disorder, a serious illness, or an injury.

Stress may be measured as a dependent variable by a number of psychological tests, including Spiegelberg's State-Trait Anxiety Scale, the Taylor Manifest Anxiety Scale, and Bendig's Anxiety Scale.¹¹ Each of these scales attempts to establish whether perceived stress decreases as a result of intervention. Physiological measures used to assess stress as a dependent variable include galvanic skin response, muscle tension, blood pressure, and metabolic indicators such as oxygen consumption.

Finally, stress may be conceptualized as a moderating variable, hypothesized to explain *why* a certain intervention has an effect. It has been argued, for example, that teaching relaxation to type A personalities or to individuals with bronchial asthma, hypertension, psoriasis, or allergies will decrease the severity of symptoms accompanying the disease.¹ The assumption is that if the dependent variable changes in the desired direction (e.g., a decrease in blood pressure), it may be attributed to the patient's having successfully learned a self-control/relaxation strategy.

Mahoney,¹² who defines self-control as a



social label differentially applied to some behavioral patterns, says it has four conditions: (1) A behavior pattern is considered self-regulatory if it operates independently of external reward or punishment. (2) Credit for self-control is not given for something done effortlessly over a lifetime. (3) The term self-control is reserved for performances considered socially appropriate or desirable. (4) More often than not self-control involves some self-sacrifice.

Self-control is not will power. It is better explained by principles of social learning than inherited strengths. It involves awareness of circumstances that affect behavior and the skills to arrange them.

Benson has referred to the general pattern of physiological change that occurs during the practice of self-control, or stress-management, strategies as a hypometabolic state, or "relaxation response."¹³ This response is the opposite of the fight or flight response and involves a lowering of blood pressure, a reduced heart rate, and a decrease in oxygen consumption. The relaxation response is considered incompatible with the physiological changes that accompany stress. Inducing the relaxation response counteracts the effects of stress.

Meditation, one strategy for counteracting stress, involves the conscious effort of focusing attention in a nonanalytical manner.¹⁴ Two general types of meditation have been identified,¹⁵ understanding of which can be facilitated by consideration of brain neurophysiology.¹⁶ We know that in terms of awareness the brain can focus either like a wide-angle lens or like a zoom lens. One type of meditation, concentrative meditation, focuses like a zoom lens on one

particular object (word, phrase, picture, sound) to the exclusion of all other stimuli in the external and internal environment. The second type, opening-up meditation, focuses like a wide-angle lens on all sensations, feelings, and inputs that are occurring simultaneously outside and inside the meditator. The object of both meditative practices is simply to observe. Subjects are instructed not to become caught up in dialogue with their own thoughts and images, but merely to watch them and let them "flow down the river."¹⁴

Clinical research suggests that meditation is a promising strategy for management of stress, tension and hypertension, and even for addictive behavior.^{11,14} Its effectiveness appears to be primarily a result of reduction of internal cognitive chatter and of physiological change. Effects seem clear within four to 10 weeks.¹⁷

Biofeedback uses electronic monitoring instruments to augment the body's internal signals, magnify them, and provide either auditory or visual feedback.¹⁸ The goals are to increase awareness of relevant physiological functions, to develop control over these functions, and to transfer this control from the laboratory to the real world.¹⁹

Biofeedback measurements include electroencephalograms, electromyograms, galvanic skin response, and temperature. Electromyograms and temperature training are the most commonly used as they are the easiest to learn and give the quickest positive response. In temperature training, each time the individual causes his or her temperature to rise, a tone sounds. The individual tries to make the tone frequency increase by whatever means works.

Biofeedback, like meditation, appears to be promising, although research suggests it may be more effective with cyclic disorders such as headache than with persis-



tent problems such as hypertension.¹⁹ Moreover, relaxation of one muscle group (e.g., relaxation of the frontalis muscle for headache) does not necessarily generalize to other muscle groups.^{20,21} More relaxation of a particular area but less overall relaxation is achieved than with meditation.

Which type of biofeedback is better for which type of clinical problem is still being examined, although it has been established that temperature biofeedback is more effective for certain types of headache.^{22,23} Still a matter of concern is whether control established in a laboratory can be achieved in the natural environment where no biofeedback equipment is available.^{19,20}

Autogenic training involves statements that an individual makes internally: "My hands are feeling warmer." "My heart is slowing down." They are designed to develop relaxation sensations in various parts of the body. Often autogenic training is used in conjunction with biofeedback.

Progressive relaxation, developed by Jacobson,²⁴ involves telling the patient to tense and then relax large and small muscles, progressing, systematically from one end of the body to the other. Cues are given along the way to alert the patient to the contrast between tension and relaxation and to identify the warmth and heaviness of the relaxation experience. This technique is sometimes combined with positive imagery and visualization techniques to enhance relaxation.

Systematic desensitization is often used in conjunction with deep muscle relaxation.²⁵ It may be used to address unhealthy panic or an anxious response. The individual is instructed to list a hierarchy of anxiety-producing or stress-inducing events and is then taught to combine systematically the visualization of these with a state of deep muscle relaxation.

Hypnosis is experiencing renewed popularity in medical settings,²⁶ although researchers and practitioners still disagree on an all-encompassing definition. Some maintain that hypnosis produces an altered-state trance experience; others assert that most achievements accomplished with hypnosis are in the range of normal human capabilities so the concept of trance is unnecessary. In any event, hypnotic techniques involve, to a greater or lesser degree, suggestibility, deep relaxation, placebo effect, and intense transference. Hypnotic induction may include cognitive statements, attentional focus (e.g., on the palm of the hand), and sometimes imagery.²⁷

Hypnosis may be therapist-induced or self-induced, and may be direct or indirect. The ability to experience hypnotic suggestion depends on the person's response, which some believe to be a relatively stable attribute.²⁶ Others suggest that hypnotic susceptibility can be learned.²⁸ With respect to stress, hypnosis can produce feelings of calm and tranquility.

Behavioral self-management techniques are derived conceptually from social learning theory. The initial self-management strategy is self-observation,²⁹ a technique designed to teach the patient to monitor his or her own behavior in relation to the environment. For example, behavioral self-observation can be used to help the patient become aware of his or her specific response to stress: physiological cues (tension in the neck, sweaty palms), cognitive statements ("I feel out of control, helpless"), and images (visualization of falling or disintegration).

The individual is then instructed to observe the persons, events, places, thoughts, and feelings that trigger stress, and the consequences—how he or she copes with stress regarding eating, drinking, avoidance,



or depression. At this point, the individual may be instructed to practice a variety of coping^{21,30} techniques, specifically tailored strategies that focus on a more beneficial rearrangement of cues and consequences. These techniques include environmental planning (rearranging the environment) and behavioral programming (appropriate reinforcement and punishment).³¹

In coping strategies, the individual learns to make stress a cue for relaxation rather than anxiety. Then he or she practices stress inoculation,³⁰ which emphasizes modification of internal dialogue through practice. The goal is to modify stress-related reactions by talking differently internally, substituting analysis and relabeling for the panic reaction.

Multimodal behavior therapy attempts to cover the wide range of variables controlling any disorder in a systematic fashion. Lazarus' BASIC ID³² addresses seven areas (which make up the acronym) applicable to stress-related intervention: behavior, affect, sensation, imagery, cognition, interpersonal relations, and drugs.

Paradoxically the patient may view stress as beneficial. The physician's evaluation of motivation, therefore, is an important aspect of treatment.

Before introducing any of the strategies mentioned above, it is necessary, at least informally, to assess patient motivation. Does the patient want to decrease or manage stress? Some people may feel that stress is the "glue" that holds them together, or they may fear the effects of not having stress as a motivation. Stress reactions, or the illnesses exacerbated by stress, may have a secondary gain. Moreover, the patient may

resist change, despite apparent misery, because of the attention he received from an otherwise preoccupied family.

The concept of self-control implies individual responsibility. The old model of the dependent, passive patient and the omnipotent physician is antithetical to the employment of self-control skills.³³ However, the physician must use his or her traditional high status to support the importance of self-responsibility in the health-care process.

Successful self-control strategies, indeed any successful medical regimen, depend in part on the patient's rapport with the physician.³⁴ By adopting a warm, sincere, and empathetic attitude toward the patient, the physician can facilitate teaching these skills and encouraging their practice. Attention to "the whole person"³⁵ stimulates the development of individual responsibility and successful adoption of the strategy.

Generally, if the patient appears dependent, with a high locus of external control, the physician needs to take a stronger posture in teaching self-control.³⁶ He may also have to work on the patient's belief in his own ability to master himself and his environment.³⁷ The physician should also assess the patient's attitudes toward the different self-control strategies being considered. The techniques described have gone through popular phases and are generally known. Some patients may not like the scientific precision of biofeedback, whereas some may be attracted to it for this reason. Similarly, the terms hypnosis and meditation may evoke positive or negative responses. With the few exceptions mentioned, all self-control techniques appear to work equally well. All work better than a placebo, but none is better than another.¹⁴ Therefore the patient's attitude is a factor in the choice of a strategy.



Specific therapy is recommended for specific kinds of stress.

One reason for the effectiveness of these strategies is that they involve attention, cognitive statements, and imagery. A general antistress response has been posited.^{7,38} It seems that self-control techniques share a common denominator—that is, all promote a psychobiological response antithetical to the stresses of daily living. Generally, selection of a particular technique depends on the individual practitioner's familiarity with it, pragmatic considerations (access to biofeedback equipment, for example), and the patient's attitude.

Preliminary research indicates, however, that the following strategy differentiations can be made: (1) For detecting a relationship between the patient's environment and stress, behavioral self-observation is the treatment of choice.³¹ (2) For tension headache, the electromyogram type of biofeedback is the treatment of choice, and for migraine it is temperature training.^{22,39} (3) For general relaxation, use meditation; for a specific stress area, use biofeedback.²⁰ (4) For cognitive stress, hypnosis or meditation appears more effective than a somatic strategy.⁴⁰ (5) For somatic stress, exercise or progressive relaxation appears to be most effective.⁴⁰ (6) For a patient whose response is primarily auditory, a visual feedback stimulus is preferable when using biofeedback. When using meditation or hypnosis, an auditory stimulus is preferred.⁴¹

In addition to assessing initial motivation, the physician should be sensitive to decreasing motivation and negative experiences. Once initial enthusiasm for the technique is dissipated, patients may not structure practice periods unless they receive

continuous encouragement and attention from the physician.³⁹ Also, because negative experiences occasionally occur (feelings of sadness, depression, withdrawal, unpleasant images), the physician must be vigilant in monitoring the self-control practice and dealing with it. If the disturbance appears severe, referral for psychotherapy may be indicated.

Maintaining the self-control behavior may often be facilitated by the pleasurable nature of the experience itself, or by reduction in symptoms. It may be useful to enlist the family or social contacts as support. It is often possible to make the practice of meditation or progressive relaxation a family exercise, which may improve family harmony. Setting up a contract with the client⁴² giving specific instructions and reminders⁴³ also ensure compliance.

No one strategy is right for every patient. Physicians, as scientist-observers, must evaluate the efficacy of the self-control strategies carefully. Is the patient following instructions? Adhering? Making progress? If not, why not? Might not another strategy be more beneficial? How will a decrease in stress in one family member affect the entire family? These and similar questions deserve careful attention, and will contribute to a more complete science of the clinical management of stress. §

RECERTIFICATION POST-TEST

1. On the Holmes and Rahe scale, an individual who scores below 150:
 - a) will almost certainly not develop signs of physical illness over the next six months (0% to 10% chance)



- b) has a 25% to 75% chance of developing a health change in six months
- c) has a 30% chance of developing a health change in two years
- d) none of the above; there is no correlation between life events and illness
- e) has a 90% chance of developing a health change over the next six months

2. The treatment of choice for primarily cognitive stress is:

- a) exercise
- b) exercise plus deep muscle relaxation
- c) progressive relaxation
- d) hypnosis or meditation
- e) all of the above

3. Which statement about behavioral self-management is false?

- a) it involves self-observation
- b) it is more effective with hypertensive patients than hypnosis
- c) it emphasizes both environmental planning and behavioral programming
- d) it is based on social learning theory
- e) it has been used successfully with stress-related problems

4. The antistress response refers to:

- a) the relaxation response
- b) a refinement of Selye's General Adaptation Syndrome
- c) psychobiological responses antithetical to the stresses of daily living
- d) stress inoculation training
- e) the fight or flight response

5. One drawback in biofeedback is:

- a) it is not effective with cyclic

disorders

- b) it is too complicated for the average patient to understand
- c) it is just the same as meditation
- d) techniques learned in the laboratory often do not generalize to the natural setting
- e) it only provides generalized muscle relaxation

Answers on page 64

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CME CALENDAR continued

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ing Center, American College of Cardiology, 9111 Old Georgetown Rd, Bethesda, MD 20014. **Method:** TBD. **Fee:** TBD. **Credit hours:** 21 AMA.

February 28 to March 8

Eleventh Annual Pediatric Postgraduate Program. Marbella, Spain. Office of Continuing Education, Long Island Jewish-Hillside Medical Center, New Hyde Park, NY 11042. **Method:** TBD. **Fee:** \$185. **Credit hours:** 18 AMA.

March 2-6

Update in Obstetrics and Gynecology: 1981. San Juan, PR. Program Coordinator, Continuing Education, The Johns Hopkins University, Turner Auditorium, Room 19, 720 Rutland Ave, Baltimore, MD 21205. **Method:** D, AV. **Fee:** TBD. **Credit hours:** TBD.

March 4-7

Fifth Annual Course in Immunology and Clinical Practice of Allergy. San Diego. Contact: Dr. Robert Hamburger, Office of Continuing Education, M-017, UCSD School of Medicine, La Jolla, CA 92093. **Method:** TBD. **Fee:** TBD. **Credit hours:** 20 AMA.

March 11

Hypertension. Breese. Office of Continuing Medical Education, Southern Illinois University School of Medicine, PO Box 3926, Springfield, IL 62708. **Method:** L. **Fee:** \$25. **Credit hours:** 4 AMA.

March 11-12

A Refresher Seminar in Pediatrics for the Pediatrician and Family Physician. Cleveland Clinic Educational Foundation, 9500 Euclid Ave, Cleveland, OH 44106. **Method:** L, W, D. **Fee:** \$100. **Credit hours:** 12 AMA.

Northern Kentucky Seminar. Kentucky Academy of Family Physicians, 2200 Medical Arts Bldg, Louisville, KY 40217. **Method:** L, Sem. **Fee:** \$20. **Credit hours:** 8 AMA.

March 12

Gynecology Symposium. Jacksonville. Office of Continuing Medical Education, Southern Illinois University School of Medicine, PO Box 3926, Springfield, IL 62708. **Method:** L. **Fee:** \$25. **Credit hours:** 4 AMA.

March 12-13

Gland Rounds (What's New in Endocrinology). Office of Continuing Education, Washington University School of Medicine, Box 8063, 660 S Euclid, St. Louis, MO 63110. **Method:** L, W, AV. **Fee:** \$150. **Credit hours:** 13 AMA, 13 AAFP Prescribed.

March 13

Traumatized Hand. Office of Continuing Medical Education, Southern Illinois University School of Medicine, PO Box 3926, Springfield, IL 62708. **Method:** L. **Fee:** \$25. **Credit hours:** TBD.

1. In the Holmes and Rahe Social Readjustment Rating Scale, an individual who scores above 300:
 - a) will almost definitely not develop any signs of physical illness over the course of the next six months (0-10% chance)
 - b) has a low probability (10-25%) chance of developing a physical illness.
 - c) has a moderate probability (25-75%)
 - d) has a high probability (90%)
 - e) none of the above: there is no correlation between life events and illness.

2. For an individual complaining of primarily somatic stress, the treatment of choice is:
 - a) meditation
 - b) self-hypnosis
 - c) biofeedback
 - d) exercise
 - e) autogenic training

3. For an individual patient who has difficulty seeing a causal relationship between stressful events and his own behavior, the most effective strategy to teach is:
 - a) the relaxation response
 - b) EEG biofeedback
 - c) behavioral self-observation
 - d) proper valium compliance
 - e) temperature training biofeedback

4. Which of the following statements about meditation is false:

- a) meditation causes a more generalized "hypometabolic" relaxation state than biofeedback
- b) meditation has been shown to be effective in reducing stress and tension
- c) meditation has been shown to be effective in decreasing essential hypertension
- d) meditation is the treatment of choice for every patient with a stress-related problem
- e) meditation is an attentional focusing strategy, and therefore effective in reducing cognitively related stress

5. The relaxation response, hypothesized by Benson, refers to:

- a) a refinement of the general adaptation syndrome discovered by Selye
- b) an innate response of the body, producing a "hypometabolic state" opposite to that posited by Cannon
- c) a fight or flight response
- d) an effect produced by only one type of relaxation strategy
- e) a technique which is effective only for those who have minor "stress" problems

Post-Test Questionnaire

1. In the Holmes and Rahe SRRS Life Stressor Test, an individual who scores below 150:
 - a) will almost definitely not develop any signs of physical illness over the course of the next six months (0-10% chance)
 - b) has a moderate probability (25-75%) of developing a health change in the next six months.
 - c) has a 30% probability of developing some health change in the next two years.
 - d) none of the above: there is no correlation between life events and illness
 - e) has a high probability (90%) of developing a health change over the next six months

2. For an individual complaining of primarily cognitive stress, the treatment of choice is:
 - a) exercise
 - b) exercise plus deep muscle relaxation
 - c) progressive relaxation
 - d) hypnosis
 - e) all of the above

3. Which of the following statements about behavioral self-management is false:
 - a) behavioral self-management involves the use of self-observation
 - b) behavioral self-management has been demonstrated to be more effective with hypertensive patients than heterohypnosis
 - c) behavioral self-management emphasizes both environmental planning and behavioral programming
 - d) behavioral self-management is derived theoretically from social learning theory
 - e) behavioral self-management has been used successfully to deal with stress-related problems

Post-test questionnaire (continued)

4. The antistress response refers to:

- a) the relaxation response
- b) a refinement of the general adaptation syndrome discovered by Selye
- c) the existence of a common pathway which promotes a pattern of psychobiological responding antithetical to the stresses of daily living
- d) stress inoculation training
- e) the fight or flight response

5. One potential drawback in biofeedback training is that:

- a) it is not effective with cyclic disorders
- b) it is too complicated for the average patient to understand
- c) it is really just the same as meditation
- d) techniques learned in the laboratory often do not generalize into the natural setting
- e) it only provides generalized muscle relaxation