Chronic pain has been described as the hidden epidemic in the Western world (Brena, 1978). Nearly one third of the American population has some degree of recurrent pain. Seventy million people endure pain from back injuries; 36 million, from arthritis; 20 million, from migraine headaches; and 800,000, from cancer (Church, 1984). Pain resulting from injury is the single largest cause of worker absenteeism in the United States, Sweden, Great Britain, and Canada, accounting for billions of dollars each year in medical costs (Gilbert, 1982). Pain is a complex phenomenon affecting many systems of the body, and its management is controversial. Pelletier (1979) suggests that physicians have relied too much upon drugs and surgery for pain management. Franklin (1984) reports that some combinations of analgesics can cause irreversible side effects and renal damage. Melzack (1973a) suggests that the surgical excision of peripheral or sensory pathways can increase abnormal activity of pain-related neurons.

However, there is little doubt that analgesic drug therapy and surgery are of benefit for chronic pain caused by terminal conditions. Furthermore, conservative use of narcotic analgesics and minor tranquilizers has been found to be useful for the management of anxiety and emotional tension (Fields, 1987). Surgical implantation of neurostimulators provides hope for patients with intractable pain (Kraus, 1981).

The occupational therapist can contribute to pain management by providing noninvasive techniques and purposeful activities that have been shown to potentiate physiological mechanisms associated with pain reduction (Swendlow, 1981). Pain management should be of interest to occupational therapists because success in therapy may depend on the patient’s ability to learn new skills. Studies have shown that pain may disrupt the learning process by interfering with reverberating circuits in the cerebral cortex and hippocampus (Kandel & Spencer, 1968; Thompson, 1986). In addition, pain is a subjective experience greatly influenced by an individual’s moods, emotions, and perceptions. Occupational therapy can modify these variables by engaging the patient in activities that stimulate the mind and physiological mechanisms in the body.

In this article, the physiological mechanisms for reducing pain at three levels of the central nervous system (CNS) are reviewed. Based on a review of the literature and the author’s clinical experience, a program of occupational therapy emphasizing the use of purposeful activities to obtain pain reduction is proposed.
Literature Review

Skin

The positive effects of manually stimulating the skin to relieve pain are well documented (Fields, 1987; Marx, 1977). Massage has been used to alleviate sore muscles since 3000 B.C. by the Chinese, and since 1000 B.C. by the Greeks (Woody, 1980). Various counterirritation techniques used in folk medicine, such as coin rubbing, cupping, ice packs, mustard plasters, acupressure, and blistering agents have been studied in recent years (Melzack, 1981). The evidence suggests that deep pressure to specific sites on the skin can relieve chronic pain for long periods, sometimes permanently (Melzack, 1973b; Mayer, Price, & Rafii, 1977). The exact physiological mechanism that causes the pain relief is unclear, but some researchers attribute the relief to the activation of sensory receptors (Gerhart, Yezierski, Giesler, & Willis et al., 1981). Increased mechanoreceptor input to the skin will activate many sensory receptors and cause physiological changes in the skin.

One such sensory receptor is the Pacinian corpuscle, one of the receptors commonly associated with touch and pressure (Vallbo et al., 1979). Each corpuscle consists of a capsule, intermediate concentric lamellae, and a central core containing a single nerve fiber. The nerve fibers are well myelinated and are derived directly from peripheral nerves. (Within most of the concentric lamellae are capillaries that form loops in the intercapsular spaces. Pacinian corpuscles derive their blood supply from capillaries adjacent to the nerve fibers entering the central cavity.) These receptors are usually found in deep layers of skin surrounding joints and are abundant in the palms of the hands and the soles of the feet (Roland & Nielsen, 1980). Pacinian corpuscles contribute to the detection of the conscious perception of vibration (Roland & Nielsen, 1980). Sato and Ozeki (1966) found that when activated by vibration, the Pacinian corpuscles depressed the discharge of free nerve endings in subjects who were exposed to painful electrical stimuli. Available evidence suggests that the terminals of free nerve endings are sensitive to pressure, heat, and chemicals released from surrounding tissues. Vibration and pressure are the best stimuli to cause action potentials in Pacinian corpuscles, which transmit afferent impulses along myelinated fibers. Increased activity in the myelinated axons produces a long-lasting inhibition of pain transmission neurons in the dorsal horn of the spinal cord (Adriaesen, Isybel, Handiverkin, & Van Hees, 1983; Eldred, 1967; Gerhart et al., 1981; Pertovaara, 1979).

Chemical and hormonal physiological mechanisms may also contribute to pain reduction in the skin. When pain is experienced, tissues surrounding the free nerve endings liberate substances such as potassium, histamine, and bradykinin (Fields, 1987). The presence of pain-related substances combined with vibratory stimuli may set off synergistic reactions in local tissues that cause increased blood flow, release of histamine from mast cells, and migration of lymphocytes and macrophages (Fields, 1987). Hormones are then released into the bloodstream to centers regulating the endocrine system, immune system, and limbic system, which release neuropeptides (the biochemical components of emotions) and endogenous opiates (opioids) such as endorphins, enkephalins, and substance P. The endogenous opiates are believed to inhibit the transmission of pain-related impulses (Adler, 1982; Basbaum & Fields, 1985; Herbert, 1983; Marx, 1977; Snyder, 1984).

Several investigators have studied point stimulation to the skin to relieve pain (Chan, 1982; Dalet, 1980; Melzack, 1975, 1981). Point stimulation for pain works best when applied over “trigger points.” These are small, tender spots concentrated on the surface of skeletal muscles of the neck, shoulders, trunk, and legs (Kraus, 1981). They are also found in the small muscles of the face, fingers, and feet. Trigger points have been studied, but are not fully understood. Research suggests that they may be pockets of accumulated lactic acid, calcium deposits, or an aberration of the autonomic nervous system (Melzack, 1981; Melzack, Stillwell, & Fox, 1977; Travell & Ringler, 1952). It has been hypothesized that trigger points result from muscle trauma, disease, emotional stress (Simmons & Travell, 1983) or from endocrine imbalances (Kraus, 1981). When trigger points are active, muscles go into spasm. A spasm tightens the muscle, producing more pain. Pain messages are transmitted through nociceptive pathways to the thalamus and cortex, which have efferent inhibitory pathways to the spinal cord. The thalamus and cortex send back impulses that cause muscles to contract further. This phenomenon is called “splinting” and produces a pain cycle (Fields, 1987). Clinical and laboratory research has shown that deep pressure and vibration applied over trigger points can abolish the pain cycle and provide prolonged relief of myofascial or visceral pain (Melzack et al., 1977; Pertovaara, 1979).

Spinal Cord

Another explanation of pain reduction stems from the “gate control” theory (Melzack, 1973a; Wall & Melzack, 1978). Simply stated, the theory proposes that pain impulses travel from free nerve endings along thin fibers and pass through a cluster of cells in the dorsal horn of the spinal cord called the substantia
gelatinosa. According to the theory, only a limited amount of sensory information can pass through this “gateway” at any given movement. Information such as pressure, vibration, discriminative touch, and proprioception that travels along thick fibers must also pass through this region. When too much information converges upon the substantia gelatinosa, the signal is blocked as if a gate were being closed, and the level of perceived pain is thereby diminished.

Although knowledge of neurotransmitters is incomplete, the neurophysiological mechanism that blocks the pain transmission at this juncture appears to involve a chemical mediator called substance P. This substance acts as a neurotransmitter in sympathetic ganglia. It is a vasodilator and causes the release of histamine from mast cells (Fields, 1987; Hokfelt, Ljundahl, Terenius, Elde, & Nilsson, 1977). Substance P is also a putative excitatory neurotransmitter found in nociceptive pathways. The synapses with the secondary neuron in the substantia gelatinosa are usually mediated by substance P. Increased input to mechanoreceptors in the skin inhibits the release of substance P (Hokfelt et al., 1977; Piercey & Folkers, 1981). Pain transduction, the process by which noxious stimuli evoke electrical activity in the appropriate sensory nerve endings (Fields, 1987), is diminished when the skin is stimulated (Melzack, 1975, 1981). For example, when the skin comes in contact with a hot iron, according to the gate control theory the free nerve endings would discharge impulses along unmyelinated thin fibers to the dorsal horn of the spinal cord to open the gate and allow the pain messages to reach the thalamus where a network of relay neurons ascends to regions of the cerebral cortex. However, if the skin area is stimulated by rubbing or deep pressure, impulses would be sent along the myelinated thick fibers, causing a synaptic overload of impulses on the cells in the dorsal gray matter of the spinal cord. Thus the gate control theory provides one explanation of how counterirritation techniques diminish pain transmission.

The understanding of neural and neurochemical mechanisms of pain transmission has increased since the gate control theory was proposed. Several chemical substances acting as intermediaries in pain transduction have since been identified (Adler, 1982; Basbaum & Fields, 1985). Although research supports the concept of presynaptic inhibition in the dorsal horn of the spinal cord, there appear to be descending inhibitory mechanisms as well (Kruger & Liebeskind, 1984).

**Subcortical and Direct Cortical Modulating Systems**

In 1975, researchers discovered substances that possess opiate-like properties, including analgesia, in the CNS, sympathetic ganglia, gastrointestinal tract, and adrenal medulla (Pert & Snyder, 1973; Loh, Tsen, Wei, & Li, 1976). These endogenous, opiate-like substances are divided into endorphins, enkephalins, and substance P. Endorphins are morphinelike chemicals found in the cells of the hypothalamus, midbrain, medulla, dorsal horn of the spinal cord, and pituitary gland (Adler, 1982; Fields, 1987; Snyder, 1984). Enkephalins are found in neurons of the amygdala, hypothalamus, midbrain, reticular formation, and dorsal horn of the spinal cord (Fields, 1987; Pert & Snyder, 1973). Substance P is found in primary unmyelinated afferent neurons and in a variety of pain-sensitive tissues (Piercey & Folkers, 1981).

These opiate-like substances are activated in two pain-modulating systems in the CNS, the direct cortical and the subcortical modulating systems. The direct cortical modulating system originates in neurons of the frontal cortex and the hypothalamus and descends via the contralateral motor pathways directly to the excitatory and inhibitory neurons in the dorsal gray matter of the spinal cord. The second pain-modulating system, the subcortical modulating system, involves the limbic system and is an indirect system. It has two major descending pathways. One pathway originates in several regions of the cortex and descends to the periaqueductal gray matter of the midbrain, projects to the reticular formation, and finally to the inhibitory dorsal horn nociceptive neurons. The second pathway may originate in the amygdala of the limbic system and send projections to the hypothalamus, midbrain, medulla, and dorsal gray matter of the spinal cord (Fields & Heinricher, 1985; Paklovitz, 1984; Ruda, Bennett, & Dubner, 1986).

The direct cortical modulating system is activated by increased physical activity, by stress, and by suggestion. The second system, the subcortical modulating system, is responsive to affect, emotions, and changes in mood (Fields, 1987). Degrees of physical activity, stress, laughing, crying, and depression release the natural, opiate-like substances described above, which then modify or inhibit the transmission of pain impulses (West, 1981). Pomeranz, Cheng, and Law (1977) as well as Melzack (1973b) have demonstrated a connection between acupuncture analgesia and endorphins.

Since 1975, other nonopiate neurotransmitters such as serotonin, norepinephrine, and dopamine have been associated with the neurochemistry of pain. Booker (1982) has hypothesized that imbalances in catecholamines such as serotonin and norepinephrine produce systemic physiological effects that exacerbate pain perception and produce states of depression.
Implications for Occupational Therapy

The occupational therapist is one member of the interdisciplinary team for the treatment of patients with chronic pain. The goal of the occupational therapist is not to treat pain per se, but to mobilize patients in an effort to occupy their minds and bodies in purposeful activities. By involving the patient in activities that are successful and purposeful, the therapist promotes movement, alters moods, diverts the mind from pain, and provides a controlled amount of stress. These processes help the patient with chronic pain by stimulating natural physiological mechanisms in the endocrine system, immune system, and nervous system. The natural physiological mechanisms that are of concern to the occupational therapist are in the skin, in the spinal cord, and in the cortical modulating systems. The proposed program will be described in a stepwise fashion, leading up to the introduction of purposeful activities.

Before the therapist can facilitate engagement in purposeful activities, pain must be alleviated. Procedures for alleviating pain can be regarded as “enabling activities.” Pedretti (1985) defines enabling activities as “procedures that prepare the patient for purposeful activities, but are preliminary to the use of the performance skills in treatment” (p. 2). According to Pedretti, it is important for the occupational therapist to plan the progression of treatment so that performance skills are the ultimate outcome of enabling activities.

Prior to treatment, the therapist conducts an evaluation to determine the intensity, quality, and location of pain (McGuire, 1981). Pain can be located by having the patient mark the place of pain on an anatomical drawing with anterior and posterior views (see Figure 1). If the patient marks the drawing accurately, the therapist will know the topographic location and perhaps the origin of the pain. Pain intensity can be measured on a scale of 0 to 10 with 10 being pain of intensity equal to a toothache. The quality of pain is evaluated by finding descriptive terms that characterize the pain experience. Some typical terms are the following: sharp, dull, aching, burning, throbbing, irritating, and sore. When a patient describes the quality of pain in his or her own terms, it gives the therapist insight into the type of pain the patient is experiencing and a vocabulary that both therapist and patient understand.

Potential contributory agents to pain can also be explored during the evaluation. For example, consumption of certain foods such as cheese, citrus fruits, chocolate, shellfish, fried food, and iced drinks contributes to pain. Alcohol, caffeine, nicotine, and sugar contain sympathetic amino acids that stimulate overproduction of norepinephrine (Booker, 1982). Too much norepinephrine can trigger the pain response and interfere with endorphins and other substances that help control pain naturally (Booker, 1982).

Once the baseline evaluation is complete, treatment can begin. Placebo studies have shown that subjects obtained more pain relief when the care giver appeared confident and conveyed a positive attitude toward the treatment (McGuire, 1983; Sobel, 1985). Therapists can use these findings to adopt attitudes that can influence their therapeutic approaches with patients.

Treatment plans can be made to stimulate one of the three levels of the nervous system where pain is inhibited. For example, for a patient with a right cerebrovascular accident who has severe muscle pain in the left shoulder, treatment can start with an enabling activity to stimulate the mechanisms that alleviate pain at the skin level of the nervous system. This enabling activity often involves (a) cutaneous stimulation caused by low-frequency vibration and (b) localized point stimulation. The vibratory stimuli activate the Pacinian corpuscles in the deep layers of the skin and suppress free nerve endings, thereby diminishing localized pain (Pertovaara, 1979; Sato & Ozeki, 1966).

As noted earlier, point stimulation for pain works best when applied over trigger points. To find trigger points, the therapist examines an anatomical pain chart (see Figure 1) and applies pressure with the thumb and index fingers over the designated area of pain to locate highly sensitive spots. The patient may grimace, groan, or twitch when a spot has been found. The spot may be charted on the anatomical drawing or marked directly onto the skin with a water-soluble marker. Several trigger points may be found on one muscle group. Systematically palpating along the muscle, proximal to distal, can help locate additional trigger points (Sarno, 1986).

To discharge or release the trigger point, fingertip pressure or vibration is applied for 7 seconds with a pointed battery-operated vibrator (60 Hz). For large muscles of the extremities, Kraus (1981) recommends application of 15 to 20 lb of pressure. Small facial muscles require about 6 lb of pressure. The muscles of elderly patients and children will require less pressure to activate the response. A bathroom scale covered with a towel is useful to develop a sense for the appropriate amount of pressure. By placing the thumb and index finger on the scale, the correct amount of force can be manually conceived.

The use of pressure over trigger points will elicit some pain. However, some counterirritation pain in the skin is necessary to activate the physiological response in the spinal cord that inhibits pain (Melzack,
Circle ONLY the words that best pertain to your pain.

I. Pain Intensity
   How strong is your pain?
   1 Slight (troublesome)
   2 Mild (discomforting)
   3 Moderate (distressing)
   4 Severe (horrible)
   5 Unbearable (excruciating)

II. Pain Quality
   What does the pain feel like?
   1 Burning (hot)
   2 Sharp (piercing)
   3 Aching (dull)
   4 Penetrating (radiating)
   5 Nagging (agonizing)
   6 Cramping (gnawing)
   7 Throbbing (pulsing)
   8 Tingling (stinging)

III. Pain Location
   Where is your pain?
   (Please mark on the drawings the areas where you feel pain.)

Figure 1. Anatomical Pain Chart

If the patient fears being touched near the pain site, the technique can be demonstrated on the opposite side of the body. It is theorized that contralateral stimulation releases endorphins from descending fibers of the brainstem (Mayer et al., 1977). For the best results in reducing pain, pressure should be applied bilaterally (Chan, 1982).

Immediately after the pressure has been applied for 7 seconds, the muscles should be slowly stretched by directing the patient through three or four repetitions of active range-of-motion exercises. Patients with hemiparesis or paralysis can be assisted through a passive range of motion, which increases circulation and releases muscle fibers from their constant state of contraction (Sola & Williams, 1956).

Chan (1982) recommends some clinical precautions such as keeping one's hands warm and clean and keeping fingernails trimmed to prevent injury. Also,
The American journal of Occupational Therapy was observed in wartime when the danger and excitement was well understood. For example, cognitive distraction structures are involved in pain modulation because of possible autonomic or endocrine system imbalances. The treatment should be stopped if it aggravates the symptoms and brings no relief from pain.

Deep pressure to specific areas of the skin has been used successfully in Chinese and Japanese folk medicine for centuries (Dalet, 1980). It has been called acupressure, shiatsu, myotherapy, or myofascial release (Chan, 1982; Dalet, 1980; DeCrosta, 1984). These deep-pressure techniques have been validated by Western researchers and found to be an effective noninvasive form of pain relief (Kenyon, 1977; Warren, 1977).

Chinese folk medicine also suggests that patients with chronic pain should not eat sour foods (Chan, 1982). This may be because sour foods are acidic and norepinephrine is more readily produced in an acid environment, or because such an environment can increase the neurotransmission of pain impulses (Booker, 1982).

**Subcortical Modulation**

Studies show that pain transmission can be inhibited by subcortical structures. Neurons in the amygdala, hypothalamus, brain stem, pituitary gland and dorsal horn of the spinal cord produce enkephalins and endorphins (Fields, 1987). These natural opiates bind to specific neurons in the brainstem and spinal cord to inhibit the transmission of pain. Laboratory experiments have confirmed that various types of stimulation ranging from physical activity, emotional excitation, and even placebos lead to the release of endorphins and enkephalins (Herbert, 1983; Terman, Shavit, Lewis, Cannon, & Liebeskind, 1984).

It is difficult to identify which neuroanatomic structures are involved in pain modulation because of the complexity of the systems. The nervous system, immune system, and endocrine systems seem to be integrated through chemical, enzymatic, and hormonal substances (Newburger & Sallan, 1981; Snyder, 1984). Therefore, the body seems to have more than one way of achieving pain relief.

**Cortical Modulation**

Distinct pathways arising from cell bodies in the cortex have been found to inhibit pain transmission selectively (Fields, 1987). These pathways are activated by stress or by endogenous substances that are not yet well understood. For example, cognitive distraction was observed in wartime when the danger and excitement of battle diverted wounded soldiers from thinking about injuries that normally would have debilitated them (Beicher, 1946). This phenomenon can also be stimulated by using purposeful activities.

Purposeful activities provide cognitive distraction that can activate the cortical modulating system (Fields, 1987; Newburger & Sallan, 1981; Paklovitz, 1984; Swendlow, 1981). DeCrosta (1984) refers to cognitive distraction as a kind of “sensory shielding.” By directing attention to activities other than pain, patients are unconsciously shielding themselves from the awareness of the pain, thereby increasing their pain threshold. McCaffery (1980) observed that pain relief lasts as long as the patient is distracted. Useful activities to promote cognitive distraction are group sessions that encourage patients to give detailed accounts of exciting events, such as a stimulating movie or book. Active listening to music is useful when patients are encouraged to sing loudly, exaggerating their lip movements and concentrating on the words and rhythm of the song.

Auditory distraction also has been found to be effective when pain increases slowly and steadily (DeCrosta, 1984). When earphones (headsets) are worn, the patient can turn up the volume as pain increases, or turn it down as it decreases. This allows personal choice of the type of music and a chance to respond to the intensity of pain (McCaffery, 1980).

Background music can be used to promote muscle relaxation. Studies have shown that pitch and tempo have the greatest effect on skeletal muscles (Gennandy & Hartlow, 1964; McGunigle-Reardon & Gill, 1970). Electromyographic studies show that high-pitched music increases muscle tension whereas low-pitched music tends to produce muscle relaxation (McGunigle-Reardon & Gill, 1970). Tempo can also affect the physiological mechanisms of the body. A tempo of 70 to 80 beats per minute is soothing, but a faster tempo raises blood pressure, respiration, heart rate, and speech responses (McGunigle-Reardon & Gill, 1970). Muscle contraction followed by a relaxation response can be achieved in patients by first increasing and then modifying the pitch and tempo of music played to them. I have observed this sequence of responses clinically when using electromyogram biofeedback and in monitoring the rate of respiration.

Another cognitive distraction technique uses the Iso principle to induce relaxation (Cook, 1981). The term Iso means similar. When applying the Iso principle in treatment, music is selected to match the mood or physical state of the patient. If the patient is tense, the background music reflects tension. As time passes, a process called vectoring takes place, which means the therapist controls the pitch and tempo of the music to move toward a more tranquil rate in a stepwise progression (Cook, 1981). This technique...
can be executed with tape-recorded background music during treatment sessions.

Therapeutic relaxation is another type of cognitive distraction. Bernstein and Borkovic (1973) suggest that deep breathing is an effective way to produce relaxation. Rhythmic breathing is another effective technique. The patient is instructed to close his or her eyes, think of a visual image, and concentrate on breathing. The patient inhales and exhales slowly through the nose to the therapist’s count of four. Background music may be used to set the pace for breathing.

Visualization techniques have also been used for relaxation, flexibility, and pain management (Bry, 1979). Through the use of visualization and metaphors, the therapist can empower the patient by harnessing his or her natural ability to relieve pain. Visualization combined with progressive relaxation training can affect skeletal muscles. Bernstein and Borkovic (1973) found by studying electromyographic recordings that if a subject imagines himself or herself jogging, small but measurable contractions take place in the muscles used for running. Paul and Trimble (1965) demonstrated that successful imagery increased heart rate and muscle tension. In another study, Paul (1969) found that relaxation techniques inhibited these physiological responses. Hence visual images created in the mind can have psychological, neurochemical, and endocrinological influences on the body (Pert, 1986; Wechsler, 1987).

Bry (1979) recommended an exercise that begins with deep breathing, relaxation techniques, and visualization. The subject imagines his or her pain as a geometric shape. The shape is then visualized as a color, and then the subject is asked to visualize how much water can be contained within this shape. Through a series of visualizations, the geometric shape is reduced in size until the pain subsides. Another exercise recommended by Bry (1979) asks the patient to visualize a golden ball passing through the body, cleansing it of pain as it goes.

Pain may also be alleviated when the patient feels some control over its symptoms. Laboratory studies suggest that feeling helpless exacerbates pain (Terman et al., 1984). Sarno (1986) believes that pain has both a physiological and a psychological component. He attributes much of the back pain in the United States to a condition called tenstion myositis syndrome. He hypothesizes that tension causes the aonomic nervous system to constrict blood vessels, which leads to muscle spasms and nerve pain. Pavek (1987) suggests that contractility as an automatic response to pain has been observed in all biological life forms. In his medical practice, Sarno (1986) treats patients with chronic pain syndromes without drugs or surgery by getting them to accept consciously the fact that their pain is brought on by tension. Formal lecture discussions teach patients to relax, have confidence, and dispel the symptoms of chronic pain. Massage and exercise are also used to increase total circulation and to stretch tight, contracted muscles.

In occupational therapy, Caruso and Chan (1986) involved patients in managing pain by teaching problem-solving skills and identifying appropriate changes in life-style. They found that patient education and recommendations for adaptive equipment helped their patients with back pain return to a productive style of living. The patients’ capacity to alter the symptoms of pain should never be underestimated (Sarno, 1986).

Summary

The occupational therapist can help patients with chronic pain by facilitating natural physiological mechanisms in the mind and body. Enabling activities, such as cutaneous stimulation, cognitive distraction, and relaxation techniques facilitate activation of the initial physiological mechanisms that control pain. Once these mechanisms are set into motion, the therapist can engage the patient in purposeful activities that are of value to the patient. Activities help reduce pain because the patient, when involved, is no longer attending to the pain; therefore, relaxation responses are induced. The patient’s breathing rate may slow, blood pressure may change, or the patient may experience less muscle tension. These changes are related to release of hormones that block pain. It may also be that activities put patients in a pain-free state by eliminating some stimuli such as an inappropriate sitting posture. As patients experience pain-free activity, their psychological state improves and their self-confidence increases. This breaking of the pain cycle enables patients to learn new methods of controlling pain symptoms such as relaxation responses and visualization techniques. Thus they become more skillful at modulating their pain.

References


Bernstein, D., & Borkovic, T. (1973). Progressive re-

September 1988, Volume 42, Number 9

Booker, J. (1982). Pain: It's all in your patient's head (or is it?). *Nursing*, 82, 47–51.


