Fibromyalgia

Goals & Objectives

Course Description
“Fibromyalgia” is an online continuing education course for physical therapists and physical therapist assistants. The course presents updated information about fibromyalgia syndrome including sections on history, diagnostic criteria, epidemiology, etiology, associated conditions, and treatment.

Course Rationale
The information presented in this course is critical for physical therapy professionals in all settings who work with individuals who are afflicted with Fibromyalgia Syndrome. A greater understanding of this condition will facilitate the development of effective treatment programs that address the specific challenges faced by these patients.

Course Goals
Upon completion of this course, the therapist or assistant will be able to
1. recognize fibromyalgia from a historical perspective.
2. list the diagnostic criteria established by the American College of Rheumatology.
3. identify who is at risk for fibromyalgia.
4. differentiate several of the past and current theories of etiology.
5. identify and understand the numerous associated co-conditions that are prevalent among fibromyalgia patients.
6. identify and differentiate the recommended treatments for fibromyalgia including medications, physical/occupational therapy, massage therapy, acupuncture, and behavioral therapies.

Course Provider – Innovative Educational Services

Course Instructor - Michael Niss, DPT

Target Audience - Physical therapists and physical therapist assistants

Course Educational Level - This course is applicable for introductory learners.

Course Prerequisites - None

Method of Instruction/Availability – Online text-based course available continuously.

Criteria for issuance of CE Credits - A score of 70% or greater on the course post-test.

Continuing Education Credits - One (1) hour of continuing education credit
## Fibromyalgia

### Course Outline

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*(begin hour 1) (end of Hour 1)*
Historical Overview

Fibromyalgia syndrome (FMS) is a common and chronic disorder characterized by widespread pain, diffuse tenderness, and a number of other symptoms.

For many years a lack of unifying etiology and universal terminology hindered the understanding and recognition of fibromyalgia. In the early 1800’s physicians wrote about a condition they called “muscular rheumatism” that involved fatigue, stiffness, aches, pains and disturbed sleep. An Edinburgh physician documented tender points in 1824. A psychologist in the United States wrote in 1880 about a collection of symptoms consisting of fatigue, widespread pain, and psychological disturbances. He called it neurasthenia and attributed the problems to the stress of modern life. In 1904, a pathologist by the name of Ralph Stockman reported (erroneously) that he had discovered evidence of inflammatory changes occurring in the fibrous, intra-muscular septa on biopsies from afflicted patients. This led Sir William Gowers to introduce the term “Fibrositis” to describe the condition. Numerous subsequent studies of similar biopsies have failed to replicate the inflammatory findings of Stockman and the term “fibrositis” is no longer considered an accurate descriptor for the pathology.

Hench was the first to document the term fibromyalgia in the early 1970’s. In his writings he noted that muscle as well as ligamentous and tendonous connective tissues are usually subjectively involved. Later, in the 1980’s, Yunus proposed a unified classification system, and the first diagnostic criteria. And it was in 1990 that the American College of Rheumatology first established firm criteria for the classification and diagnosis of the disease.

Symptomology

The defining symptoms of fibromyalgia are chronic, widespread pain, fatigue, and heightened pain in response to tactile pressure. Other symptoms may include:

- tingling of the skin
- prolonged muscle spasms
- weakness in the limbs
- nerve pain
- muscle twitching
- palpitations
- functional bowel irregularity
- chronic sleep disturbance

Many patients also complain of cognitive dysfunction (known as "brain fog" or "fibrofog"), which may be characterized by impaired concentration, problems with short and long-term memory, short-term memory consolidation, impaired speed
of performance, inability to multi-task, cognitive overload, and diminished attention span.

**Epidemiology**

It is estimated that fibromyalgia affects up to six million people in the United States. Females outnumber males at an almost nine to one ratio. Most frequently symptoms are reported between the ages of forty and fifty. Caucasians appear to be the most affected race.

**Etiology**

Initially, fibromyalgia was believed to be an inflammatory condition. Early researchers pursued this theory, but were unable to substantiate any findings of inflammation. Boland in 1947 noted the strong association with depression and stress and proposed the theory of “psychogenic rheumatism”. Subsequent studies disproved this line of thinking and established that fibromyalgia is neither a psychosomatic, nor a somatoform disorder; and that when depression and anxiety are present, it is more likely the result of fibromyalgia than the cause of it.

It has been suggested that the pain of FMS is related to microtrauma in deconditioned muscles and that exercise works by conditioning these muscles. However, reports of muscle biopsy abnormalities other than disuse atrophy have been difficult to replicate, and some tender points are not over muscles or tendons, such as the one over the medial fat pad of the knee. Muscle energy metabolism is normal in FMS.

FMS may be due to non-restorative deep sleep. Patients with FMS often report insomnia or light sleep as well as an increase in FMS symptoms after disturbed sleep. Abnormal amounts of alpha activity on the electroencephalogram of FMS patients during deep sleep have been reported. FMS-like symptoms can be induced in normal volunteers by depriving them of deep sleep, except in subjects who exercise regularly. Controlled trials have confirmed the value of aerobic exercise in the treatment of FMS. Exercise increases time spent in deep sleep, perhaps a mechanism for its therapeutic effect.

A number of changes in immune system function have been found in FMS, generally in the direction of increased activity, many of which can also be induced in normal volunteers through sleep deprivation. Many of the symptoms of FMS may be caused by elevations, induced by abnormal sleep, in certain cytokines such as interleukin-2, which has been found to be elevated in FMS patients, and which causes FMS-like symptoms when given intravenously.
Serum levels of serotonin and its dietary precursor tryptophan are low in FMS. Amitriptyline, one of the medications often used to treat FMS, blocks serotonin reuptake and increases deep sleep. Serotonin is important in deep sleep and in central and peripheral pain mechanisms. Whether serotonin abnormalities are etiologically important in FMS or secondary is yet unknown.

The concentration of substance P, a peripheral pain neurotransmitter, is several times higher in the cerebrospinal fluid of FMS patients than in pain-free controls, implying a peripheral origin for FMS pain. A number of other neuroendocrine abnormalities have been identified in FMS patients which form the basis for other theories of the etiology of FMS.

Although no specific inheritance pattern has been identified, an increased incidence in relatives of affected patients has been noted. Development of the syndrome may require a predisposing factor, possibly inherited, as well as a precipitating factor such as trauma, infection, stress, or sleep disruption. The immunologic abnormalities have suggested to some an infectious etiology, but if FMS were infectious we would expect to see an increased incidence in spouses of an affected patient and this is not the case.

There are many environmental exposures that are generally accepted triggers of fibromyalgia, all of which fall into the general category of "stressors." Examples of stressors include physical trauma (especially to the axial skeleton), infections (e.g., parvovirus, Hepatitis C), emotional distress (acute or chronic), endocrine disorders (e.g., hypothyroidism), and immune stimulation, as may occur in a variety of autoimmune disorders. Although studies of groups of individuals suggest that there are many "stressors" that can trigger the development of this illness, because of the plethora of potential exposures an individual may be exposed to, it is sometimes difficult to assess the putative role of a single environmental stressor in a single individual.

**Diagnosis**

There is no one test that fully shows if someone has fibromyalgia. There is still debate over what should be considered essential diagnostic criteria and whether objective diagnosis is possible. The difficulty with diagnosing fibromyalgia is that, in most cases, laboratory testing appears normal and that many of the symptoms mimic those of other rheumatic conditions such as arthritis or osteoporosis.

**ACR 1990 Classification**

The most widely accepted set of classification criteria for research purposes was elaborated in 1990 by the Multicenter Criteria Committee of the American College of Rheumatology. (The ACR criteria for classification of patients were originally established as inclusion criteria for research purposes and were not
intended for clinical diagnosis but have now become the *de facto* diagnostic criteria in the clinical setting.)

The ACR criterion states that fibromyalgia is present when there is:

1. body or joint pain above and below the waist, and on the right and left side of the body
2. axial pain (neck, back or middle chest pain), and
3. 11 out of 18 possible tender points.

Tender points are defined by pain perceived at 18 specific locations on the body when mild to moderate pressure is applied that is usually not experienced as painful in a normal individual. The locations of 9 tender points, one on both sides of the body, follow:

1. Occipitus: where one or more of these muscles insert: trapezius, sternocleidomastoid, splenius capitus, and semispinalis capitus.
2. Lower Neck on the Sides: at the front aspect of the spaces between the transverse processes of C5-C7.
3. Trapezius Muscle: at the midpoint of the upper border.
4. Supraspinatus Muscle: above the scapular spine near the medial border.
5. Second rib: lateral to the second costochondral junctions. This is often found when associated costochondritis is present.
7. Gluteal: at the upper outer quadrant of the buttocks at the anterior edge of the gluteus maximus muscle.
8. Greater trochanter: just behind the greater trochanteric prominence.
9. Inner Knee: at the inner knee fat pad just above the joint line.
ACR 2010 Proposed Diagnostic Criteria

Because recent research has shed new light on FMS, the ACR proposed in 2010 augmenting the original diagnostic criteria to add a symptom severity (SS) scale score and a widespread pain index (WPI).

The SS is composed of four variables:
- clinician-rated fatigue
- waking from unrefreshed sleep
- cognitive symptoms
- somatic (body) symptoms in general.

Each variable is scored from zero to four generating a possible total score that ranges from zero to twelve.

The WPI correlates with the ACR tender point count and consists of 19 body areas in which the patient reports having pain in the past week: 9 upper body; 4 lower body; 4 back and hip; chest, and; abdomen. There are no guidelines to assess what is considered “pain” in the WPI. This may actually be an advantage compared to tender points. It was soon recognized after the 1990 ACR criteria were published emphasizing tender point counts that diagrams of over-all body pain made by patients with FMS were actually better predictors of their total pain intensity than the number of tender points.

The new preliminary diagnostic criteria proposed by the ACR:
- WPI greater than or equal to 7 and an SS scale score greater than or equal to 5, or a WPI of 3 to 6 and an SS scale score of 9 or greater.
- Symptoms present at a similar level for at least 3 months.
- The patient doesn’t have another disorder that would explain the pain.

The new diagnostic criterion does not require a physical exam or a tender point exam, which is often performed incorrectly. Although fully incorporating these new criteria into clinical practice may take years, as an addition to the current tender point exam, they can help expand and increase the potential for diagnosing patients with FMS.

Nonetheless, despite these criteria, clinicians must often define the presence of fibromyalgia when these tender points are not present. Associated conditions are then helpful in making the diagnosis. When chronic fatigue, sleep disorders, migraine headaches, memory difficulties, clumsiness, costochondritis, irritable bowel syndrome, painful tailbone (coccydynia), low back pain, neck pain, interstitial cystitis, restless leg syndrome, and endometriosis are present with some, but not all of the other ACR criteria, fibromyalgia may be diagnosed by some clinicians. In this setting, where there is either early or incomplete fibromyalgia, as in the case of a chronic regional pain syndrome when only
certain quadrants of the body is affected by pain, the diagnosis of fibromyalgia is difficult to conclusively determine.

Fibromyalgia at this point can overlap with signs of symptoms of other conditions that have similar manifestations. These can include depression and anxiety, which are more common in the general population than fibromyalgia, and post-traumatic stress disorder or chronic fatigue syndrome that may be less common. Often times the practicing clinician will choose to treat for fibromyalgia, though it can not be conclusively proven that it is present. The same treatment may help any overlap conditions as well.

Comorbidities

Sleep Disorders

Most fibromyalgia patients have an associated sleep disorder called the alpha-EEG anomaly. Researchers found that fibromyalgia syndrome patients could fall asleep without much trouble, but their deep level (or stage 4) sleep was constantly interrupted by bursts of awake-like brain activity. It should be noted that most patients diagnosed with chronic fatigue syndrome have the same alpha-EEG sleep pattern and some fibromyalgia-diagnosed patients have been found to have other sleep disorders, such as sleep myoclonus or PLMS (nighttime jerking of the arms and legs), restless leg syndrome and bruxism (teeth grinding). The sleep pattern for clinically depressed patients is distinctly different from that found in FMS or CFS.

Irritable Bowel Syndrome

Studies have found that IBS typically overlaps with fibromyalgia syndrome in the same patient. FMS occurs in up to 60% of patients with irritable bowel syndrome (IBS). Up to 70% of patients with a diagnosis of FMS have symptoms of IBS.

Chronic Headaches

FMS patients frequently experience migraines and tension-type headaches, with roughly 50% succumbing to one or both problems on a chronic basis.

Temporomandibular Joint Dysfunction

It is common for fibromyalgia patients to have pain and dysfunction of the temporomandibular joint or TMJ. The resultant symptoms are headaches, jaw and facial pain, limited and painful mouth opening, popping and clicking in opening and closing the jaw, grating sounds in the jaw joint, pain provoked by prolonged chewing or chewing hard to chew substances, yawning, sneezing, etcetera. There is also referred pain to the temporal areas and behind the eyes.
and most fibromyalgia patients complain of frequent migraine, tension, and/or vascular headaches. Along with TMJ disturbances and sleep disturbances, most fibromyalgia patients are heavily involved in involuntary nighttime grinding and daytime clenching and grinding of teeth, resulting in a cycle of TM joint pain and muscle pain.

**Multiple Chemical Sensitivity Syndrome**

Sensitivities to odors, noise, bright lights, medications and various foods are common in roughly 50% of FMS patients.

**Other**

Painful menstrual periods (dysmenorrhea), chest pain, morning stiffness, cognitive or memory impairment, numbness and tingling sensations, muscle twitching, irritable bladder, the feeling of swollen extremities, skin sensitivities, dry eyes and mouth, frequent changes in eye prescription, dizziness, and impaired coordination can occur.

**Fibromyalgia vs. Myofascial Pain Syndrome**

Myofascial pain syndrome may be confused with fibromyalgia. To complicate the situation, myofascial pain syndrome may occur in patients with fibromyalgia. Similar to fibromyalgia, myofascial pain syndrome is a condition that is diagnosed clinically. With a careful history and physical examination, a clinician is able to determine whether a patient has fibromyalgia, myofascial pain syndrome, or both. While the pain of fibromyalgia is widespread with changing areas of emphasis, myofascial pain arises from trigger points in individual muscles. The definitive differentiation between myofascial pain syndrome and fibromyalgia is made by physical examination. Myofascial pain syndrome is defined by the presence of trigger points. Trigger points are located within taut bands of muscle, whereas tender points are not. Palpation of trigger points often reproduces the pain radiation pattern experienced by the patient and can elicit a twitch in the muscle. The pain elicited on palpation of a tender point is localized to the area under palpation and does not elicit a jump or twitch. Lastly, trigger points often have a nodular texture described as similar to a pencil eraser, whereas tender points have no palpatory characteristics distinguishing them from surrounding tissue.
Treatment

Medication for Fibromyalgia

There are three medications that have been approved by the FDA specifically for the treatment of Fibromyalgia: Pregabalin (Lyrica), duloxetine (Cymbalta), and milnacipran (Savella). Pregabalin and duloxetine have been shown to reduce pain in a substantial number of patients with fibromyalgia, but there were others who didn’t benefit. Placebo-controlled trials have shown milnacipran to be significantly more effective than placebo in treating both pain and the broader syndrome of fibromyalgia.

Other Pharmaceuticals

Antidepressants
An meta-analysis in the Journal of the American Medical Association concluded that antidepressants were "associated with improvements in pain, depression, fatigue, sleep disturbances, and health-related quality of life in patients with FMS." The authors also stated that the goal of antidepressants in fibromyalgia should be “possible symptom reduction”, and if used long term, their effects should be evaluated against side effects. Tricyclic antidepressants were the most effective against pain, fatigue, and sleep problems, but have many side effects due to interaction with adrenergic, cholinergic or histaminergic receptors, and sodium channels. Selective serotonin reuptake inhibitors (SSRIs) and Serotonin-norepinephrine reuptake inhibitors (SNRIs) had lower side effects.

Tramadol
Tramadol, a centrally acting analgesic with atypical opioid and antidepressant-like activity, has shown to be moderately effective in treating fibromyalgia pain. Long-term effectiveness and tolerability are unknown. Tramadol combined with paracetamol is an effective and well-tolerated treatment for fibromyalgia. This combination has demonstrated efficacy, safety and tolerability for up to two years without the development of tolerance in the treatment of chronic pain.

Anti-seizure Medication
The anti-seizure drugs gabapentin (Neurontin) and pregabalin (Lyrica) have been tested. Gabapentin is approved for use in treatment of neuropathic pain but not fibromyalgia. Pregabalin, originally labeled for the treatment of nerve pain suffered by diabetics, has been cleared by the US Food and Drug Administration for treatment of fibromyalgia. A Cochrane Database analysis of pregabalin use in chronic pain concluded that “A minority of patients will have substantial benefit with pregabalin, and more will have moderate benefit. Many will have no or trivial benefit, or will discontinue because of adverse events.
Dopamine Agonists
Dopamine agonists (e.g. pramipexole (Mirapex) and ropinirole (ReQuip) resulted in some improvement in a minority of patients, but numerous side effects, including the onset of impulse control disorders like compulsive gambling and shopping, have led to concern about this approach.

Muscle Relaxants
Cyclobenzaprine is a muscle relaxant medication used to relieve skeletal muscle spasms and associated pain in acute musculoskeletal conditions. It is the most well-studied drug for this application, and it also has been used off-label for fibromyalgia treatment.

Tizanidine (brandnames Zanaflex, Sirdalud) is a muscle relaxant centrally acting α-2 adrenergic agonist. It is used to treat the spasms, cramping, and tightness of muscles caused by medical problems such as multiple sclerosis, spastic diplegia, back pain, or certain other injuries to the spine or central nervous system. It is also prescribed off-label for some symptoms of fibromyalgia.

Opioids
Opioids are widely used by fibromyalgia patients despite a lack of clinical trials and the potential for addiction and abuse.

Nonsteroidal Anti-Inflammatory Agents (NSAIDS)
Used alone, anti-inflammatories have not proven effective in reducing FMS pain. However, Elavil and Xanax's effectiveness is increased when used in combination with ibuprofen. If the patient has arthritis, osteoarthritis or tendinitis these medications would be helpful in alleviating the pain. These medications can cause stomach upset and some patients have developed bleeding ulcers.

Sleep Medications
These may be used occasionally during flares or when the patient is having severe sleeping problems. They can be habit forming, however, Ambien is thought to be less habit forming, is well tolerated, with few side effects, and there are no known drug interactions. This sleep medication should not be used more than two or three times a week.

Growth Hormone Therapy
About one third of fibromyalgia patients have low levels of insulin-like growth factor 1 (IGF-01), a surrogate marker for low growth hormone (GH) secretion. Among the many clinical features of growth hormone deficiency are diminished energy, dysphoria, impaired cognition, poor general health, reduced exercise capacity, muscle weakness, and cold intolerance. Researchers discovered that women with fibromyalgia and low IGF-1 levels experienced an improvement in their overall symptomatology and number of tender points after nine months of daily growth hormone therapy.
Vitamins, Coenzymes, Minerals

Preparations that have been claimed to have benefit for CFS patients include adenosine monophosphate, coenzyme Q-10, germanium, glutathione, iron, magnesium sulfate, melatonin, NADH, selenium, l-tryptophan, vitamins B12, C, and A, and zinc. The therapeutic value of all these preparations has not been validated.

Physical Rehabilitation

Physical rehabilitation consisting of postural education, stretching, and low-level aerobics is beneficial in treating fibromyalgia. Taking part in an exercise program usually increases endurance and decreases pain. Low-level aerobic exercise has been shown to be especially beneficial. For patients reluctant to exercise because they are already feeling pain and fatigue, low-level aerobic activities such as walking, biking, swimming, or gentle water aerobics are generally the best way to start an exercise regimen. Exercise on a regular basis such as every other day with slow, gradual increments in activity enable patients to reach a better level of fitness.

Massage Therapy

Massage therapy has been found to be useful in managing fibromyalgia. A study of people with fibromyalgia done by the Touch Research Institute at the University of Miami School of Medicine found that those who got 30 minutes of massage two times a week for 5 weeks had less anxiety and depression and lower levels of stress hormones. Over time they reported less pain and stiffness, less fatigue, and less trouble sleeping.

Acupuncture

According to research presented at the annual meeting of the American College of Rheumatology in San Francisco, acupuncture helped relieve symptoms such as pain and depression in women with fibromyalgia. The researchers reported that patients who received acupuncture treatments showed statistically significant improvement on measures of pain, depression and mental health after the first month.

Cognitive Behavior Training

Studies continue to show that when fibromyalgia patients increase their psychological capacity to deal with the specific conditions of their disorder and their lives, they are more apt to experience physical improvement. Cognitive-behavioral therapy is an effective method for enhancing patients' belief in their own abilities and to develop methods for dealing with stressful situations.
The primary goals of cognitive-behavioral therapy are to change any distorted perceptions that individuals have of the world and of themselves and to change their behavior accordingly. Using specific tasks and self-observation, patients gradually shift their fixed ideas that they are helpless against the pain that dominates their lives to the perception that pain is only one negative factor and, to a degree, a manageable experience among many positive ones.

Cognitive therapy is particularly helpful in defining and setting limits, behavior that is extremely important for these patients. Many fibromyalgia patients live their lives in extremes. They first become heroes or martyrs, doggedly pushing themselves past the point of endurance until they collapse and withdraw. This inevitable backlash reverses their self-perception, and they then view themselves as complete failures, unable to cope with the simplest task. One important aim of cognitive therapy is to help such patients discover a middle route, whereby they can prioritize their responsibilities and drop some of the less important tasks or delegate them to others. Such behavior will eventually lead to a more manageable life and to less of an absolutist perspective on themselves and others.

Cognitive therapy may be expensive and not covered by insurance, although it is usually of short duration, typically six to 20 one-hour sessions. Patients are also given homework, which usually includes keeping a diary and attempting tasks that they have avoided because of negative thinking.

A typical cognitive therapy program may involve the following measures:

- **Keep a Diary.** The patient is almost always asked to keep a diary, and it is usually a key component of cognitive therapy. The diary serves as a general guide for setting limits and planning activities. The patient uses the diary to track any stress factors, such as a job or a relationship that may be making the pain worse or better.
- **Confront Negative or Discouraging Thoughts.** Patients are taught to challenge and reverse negative beliefs ("eg, I'm not good enough to control this disease, so I'm a total failure.") to using coping statements ("Where is the evidence that I can control this disease?")
- **Set Limits.** Limits are designed to keep both mental and physical stress within a manageable framework so that patients do not get discouraged by forcing themselves into situations in which they are likely to fail. For example, tasks are broken down into incremental steps, and patients focus on one at a time.
- **Seek out Pleasurable Activities.** List a number of enjoyable low-energy activities that can be conveniently scheduled.
- **Prioritize.** Patients learn to drop some of the less critical tasks or delegate them to others.
- **Accept Relapses.** Over-coping and accomplishing too much too soon can often cause a relapse of symptoms. Patients should respect
these relapses and back off. They should not consider them a sign of treatment- or self-failure.

**Hypnosis**

Hypnosis allows a person to participate in the healing process and take personal control over pain reduction. In its simplest form, hypnosis involves inducing a trance-like state characterized by extreme relaxation, focused attention, and heightened susceptibility to suggestion. The two most common applications are the use of hypnosis to decrease sensitivity to pain (hyponeuralgia) and to numb sensation of pain (hypnoanesthesia). Regardless of the application, the most important factor is the ability to focus attention. Research into psychological and physiological mechanisms supports the idea that the use of attention is what gives the mind power over the body.

**Support Groups**

The rise of patient self-help support groups has been an important factor in alleviating adjustment problems. Groups allow the airing of problems that are not discussed in detail at the doctor’s office or at home. These often include the difficulty that fibromyalgia patients have in coping with the illness, the effects of the illness on other family members, or problems involving sleeping, working, and performing activities of daily living. At these meetings, people are able to share their fears and hopes, find friends, and come to terms with their illness. By lessening the anxieties about the illness, these group sessions end the isolation that so many patients impose on themselves.

**Resources**

**International Association for CFS/ME (IACFS/ME)**
27 N. Wacker Drive Suite 416
Chicago, IL 60606
Website: www.iacfs.net

**Fibromyalgia Network**
PO Box 31750
Tucson, AZ 85751-1750
Website: www.fmnetnews.com

**Fibromyalgia Information Foundation**
PO Box 19016
Portland, OR 97280
Website: www.myalgia.com
FIBROMYALGIA

References


Fibromyalgia

Post-Test

1. Which organization established the criteria for the classification and diagnosis of fibromyalgia?
   A. American College of Rheumatology
   B. Arthritis Foundation
   C. American College of Family Physicians
   D. American Medical Association

2. Which of the following is NOT a symptom typically associated with fibromyalgia?
   A. Heightened autonomic response
   B. Bowel irregularity
   C. Chronic sleep disturbance
   D. Cognitive dysfunction

3. Which one of the following statements is TRUE?
   A. Fibromyalgia is a somatoform disorder.
   B. Muscle energy metabolism is abnormal in individuals with FMS.
   C. Interleukin-2 has been found to be elevated in people with FMS.
   D. The concentration of substance P is lower in the cerebrospinal fluid of individuals with FMS.

4. How many tender points must a patient have to meet the traditional criteria of fibromyalgia?
   A. 8
   B. 11
   C. 14
   D. 18

5. Which of the following is NOT a common site for tenderness?
   A. Occiput
   B. Second rib
   C. Greater trochanter
   D. PSIS

6. Which of the following patients would be diagnosed with Fibromyalgia utilizing the new proposed ACR criteria?
   A. WPI = 6, SS = 4, symptoms x 2 months
   B. WPI = 8, SS = 6, symptoms x 4 months
   C. WPI = 2, SS = 9, symptoms x 3 months
   D. WPI = 8, SS = 4, symptoms x 5 months
7. What is the definitive differentiation between Myofascial Pain Syndrome and Fibromyalgia?
   A. Fibromyalgia has trigger points
   B. Myofascial Pain Syndrome has trigger points
   C. There is no difference between the two diagnoses
   D. Fibromyalgia pain is localized

8. Which of the following is NOT a medication specifically approved by the FDA for the treatment of fibromyalgia?
   A. Pregabalin
   B. Duloxetine
   C. Tramadol
   D. Milnacipran

9. Which of the following would NOT be an appropriate PT/OT activity for fibromyalgia patients?
   A. High impact aerobics
   B. Stretching
   C. Postural education
   D. Gentle pool exercises

10. A typical cognitive therapy program involves which of the following?
    A. Psychoanalysis
    B. Medication
    C. Keeping a diary
    D. Hypnosis