

Understanding Fibromyalgia

Fibromyalgia syndrome is defined as a chronic pain disorder of unknown etiology, characterized by widespread musculoskeletal pain and tender points, alterations in sleep patterns, and changes in neuroendocrine transmitters such as serotonin substance P, growth hormone and cortisol. The latter characteristics suggest that dysfunction of the autonomic and neuroendocrine system may be the basis of the disorder. The rheumatologic condition affects an estimated 3.4% of women and 0.5% of men.(1) In most cases the age of the affected individual is over 18, with most sufferers ranging in age between 30 and 50 years.(2)

The disorder is perplexing to patients and physicians due to the lack of associated abnormalities. Originally thought to be psychosomatic, approximately 40% of patients seen in the primary care setting have symptoms with no identifiable causes. For this reason most primary care physicians misdiagnose the condition by making and managing symptom based diagnosis such as migraine and tension headache, irritable bowel syndrome and dysmenorrhea.(3)

While no laboratory test exists to positively identify fibromyalgia, most patients that experience regular widespread musculoskeletal pain, particular physical findings and comorbid conditions can confidently be assumed to have this disorder. The predefined symptoms and criteria used to identify the rheumatologic condition include widespread musculoskeletal pain that can not be explained by an inflammatory or degenerative disease or disorder; reported

pain in at least 11 of the 18 tender point sites; chronic fatigue; impaired sleep; irritable bowel syndrome; headaches; functional disability; and stiffness upon waking up (4).

Rigid criteria may help define a group that can be categorized but does not help the patient suffering from what seems to be, in essence, a sensory amplification syndrome. Individuals experience pain not associated with damage or inflammation within the periphery but rather associated with a central defect in the pain processing.(5) Chronic peripheral pain seen in the low back and joints, as well as visceral pain common with irritable bowel syndrome, interstitial cystitis and pelvic pain all have similar central mechanisms that amplify or exacerbate the problem. In addition other somatic symptoms such as chronic fatigue, sleep pattern disturbance, and headaches compound the possible link and have shown to respond to similar interventions (6).

With no concrete evidence as to its exact cause substantial findings implicate disturbances in the neuroendocrine axis as central to fibromyalgia etiology. (2mh) The relationship between the neuroendocrine axis and sleep have provided further information regarding one possible mechanism. It is common for most FMS sufferers (75%) to experience fatigue and nonrestorative sleep patterning. The sleep electroencephalograms of patients with FMS indicates disturbance of the non-REM sleep phase by intrusion of alpha waves with infrequent progression to stage 3 and 4 sleep (4mh), which

correlates with unrefreshed sleep occurrences. Additionally the stages of sleep have concomitant hormone release activity, which have shown to be irregular with fibromyalgia patients. These symptoms are not conclusively the cause or effect of the fibromyalgia syndrome, but several studies have drawn closer correlations to the possible factors that may help define the problem. One possibility is that neurotransmitter (serotonin, norepinephrine) abnormalities may be common of the syndrome. (7) Additional evidence is provided to suggest that disturbances in the autonomic and endocrine stress response may underlie the etiology of fibromyalgia, but exactly how these pathophysiological processes are set in motion is not understood (8).

Most physical fitness characteristics are impaired in patients with fibromyalgia which may be in part due to the disease or due to physical inactivity. Studies indicate that female patients with FMS showed a 20-30% lower voluntary muscle strength in arm and leg flexion and extension (9), significantly lower in shoulder ROM, shoulder endurance, neck rotation, leg strength, hand grip strength and back flexibility (10) Additional studies showed a decrease in CRF compared to their apparently healthy counterparts (1).

Implications for the personal trainer

Since there is no known cure, treatment is actually successful symptom management. Treatment usually requires a combination of different therapies including pharmacology, exercise, rest and diet. No single management protocol has led to consistent long-term relief but if a patient develops a clear understanding to the importance of their role in the process

of successful management symptoms can be reduced significantly in a population of FMS sufferers.

The most common goals in the management of FMS are to 1) break the pain cycle, 2) restore sleep patterns, and 3) increase functional activity levels (11,12). To most effectively deal with the syndrome a multi-modality approach is recommended. (13)

Education is the first step to helping the FMS patient. Patients have shown improved self-efficacy in studies where educational interventions were used. Likewise, FMS sufferers feel if they know more they can better act on improving their personal state. It has been repeatedly suggested that patients should be instructed in the FMS disease process and with coping strategies that include stress recognition and management, monitoring sleep patterns, balanced nutrition, energy conservation plan, pain management and cognitive-behavioral intervention programs, medication, and physical conditioning (14),(15),(16),(17),(18).

Nutritional recommendations that include avoiding caffeine, alcohol, and nicotine, and increasing complex carbohydrate consumption may help influence and increase restorative sleep patterns and improved energy levels. Carbohydrates enhance the production of serotonin when they are not consumed with protein (14). In addition consuming adequate amounts of calcium and magnesium, B-complex, or a good multivitamin can aid the FMS sufferer.(14)

Energy-conservation is also very relevant to the FMS patient. Developing time management skills can help maintain productivity while decreasing energy

exertion. Balancing pace, available energy levels and recovery time all become key components to living a controllable lifestyle. Patients may focus on movement efficiency, assistive aids and proper biomechanics to avoid excess physical stress and to minimize energy expenditure with activity.

Lifestyle behaviors, physical traits and everyday stressors become of major concern for the FMS patient. Symptom aggravators include poor sleep patterns, fatigue, mental trauma (worry, anxiety, depression, lack of support systems), physical trauma (repetitive or excessive physical activity), prolonged inactivity, excess weight, poor posture, poor nutrition, and weather changes.(8) It is important to maintain a steady control state to manage the disease. While following a plan of psychological and physical moderation the FMS patient can greatly benefit from pharmaceutical, exercise and behavioral therapeutic techniques.

Medication therapy can be very helpful in assisting the FMS sufferer with pain and sleep pattern management. Common pharmacology includes independent or cooperative therapies with the following: a nonsteroidal analgesic (33%), an antidepressant (69%), a muscle relaxant (13%), benzodiazepine (15%), and sometimes a narcotic analgesic (37%) (18). For short term pain relief common over-the counter non-steroidal anti-inflammatory drugs, ibuprofen or non-narcotic analgesics, such as acetaminophen are used as needed. (16),(17),(19) Additional scripts include tricyclic antidepressants (amitriptyline) or muscle relaxants (cyclobenzaprine) which serve to lessen stage IV sleep disturbance

and are thought to increase levels of brain serotonin and other neurotransmitters(7). Medication side effects may cause fatigue or morning lethargy(16,18). Cyclobenzaprine has been shown to reduce pain, increase total sleep time, and slightly reduce evening fatigue(18) In addition to tricyclic antidepressants, patients are instructed in sleep preparation and sleep habits to assist in maintaining restorative sleep patterns(16,21). Drug therapy alone has not shown to provide long-term relief from FMS.

Exercise has shown to be an effective intervention for long-term management of FMS (13,17). Trained muscle is far more efficient than muscle in a deconditioned state. It has a much better ability to utilize energy effectively therefore decreasing fatigue through conservation. A popularly cited study has shown that women suffering from FMS have lower physical functioning scores than female control subjects and those scores published as population norms (10). The study indicated a consistency of lower physical function in all comparable measures which included: isometric shoulder muscle endurance for FMS subjects was 37% of the endurance levels of control subjects; Active elevation of the arms in flexion was notably lower; Shoulder pain increased as it moved from rest to active motion exercise(10), Tender-point pain correlated highly with muscle strength (or lack of), but it was not found to correlate with walking distance and flexibility(10).

Personal trainers should assess and evaluate physical parameters including pain, tender points, cardiorespiratory fitness, range of motion, and strength.(8) Much like any exercise prescription it is necessary to individualize the training regimen with added concern for

limitations but not to underestimate their abilities. As with any comprehensive training program the trainer should look at core stability, proper technique of postural exercises; passive stretching; modified load/repetition strengthening; and a low-impact aerobic component (cycling, swimming, walking) (15,16,19,20) Flexibility should focus on normal-ROM and avoid maximum stretching techniques because it can cause discomfort and may result in limited rather than increased range of movement. Use existing pain limitations as a guide to avoiding the onset of painful movements.

FMS patients can and should be encouraged to participate in regular aerobic activity. Basic aerobic guidelines are suggested with a goal of reaching a frequency of three times a week, at a pulse rate of 70-85% of the target heart rate for age, for a duration of >30 minutes. As with sedentary adults FMS sufferers may need to progress based on individual need and ability. For those experiencing elevated symptom exercise prescription may need to begin at a very low level of exercise for 5 minutes a day and then increase the duration of activity by 1 minute per session every 3 to 4 days, gradually building to 30 or 40 minutes of exercise three or four times a week(8).

In addition to non-weight-bearing walking and biking, aquatic exercise may provide a positive outlet for those with extensions of special population categories (i.e. obesity). Aquatic activity allows for greater movement ability with limited

trunk demands. These exercise sessions need to be consistent with those found on land with respect to flexibility, strengthening and cardiorespiratory conditioning.

There are also therapeutic techniques that can help reduce the symptoms of FMS beyond pharmacological and physical additions. They include heat (moist hot packs, heating pads, whirlpools, warm showers or baths, and hot pads) to increase local blood flow and to decrease muscle spasm and tension, cold modalities (ice packs, ice massage, and cool baths) to anesthetize localized areas of pain (tender points) and break the pain cycle, massage, acupuncture, as well as meditation, spiritual aids, relaxation tapes and breathing techniques, hypnosis, yoga, tai chi, and biofeedback.(17,20,21)

Fibromyalgia continues to baffle medical experts. This multifactorial condition maintains an unknown etiology and has no proven effective long-term management remedy. Health professionals must utilize the system of support and employ strategic management programs along with empathy and cognizance for the physiological and psychological factors that effect the FMS sufferer. Emphasizing education, awareness and physical exercise along with a pain management plan the Health professional can assist the FMS patient with successful management of the disorder.

American College of Rheumatology 1990 Criteria for the Classification of Fibromyalgia based upon sites of pain

Pain in the left side of the body	Pain in the right side of the body
Pain above the waist	Pain below the waist
Axial skeletal pain (cervical spine or anterior chest orthoracic spine or low back)	Occiput: Bilateral, at the suboccipital muscle insertions
Low cervical: Bilateral at the anterior aspects of the intertransverse spaces at C5-C7	Trapezius: Bilateral, at the midpoint of the upper border
Supraspinatus: Bilateral, at origins above the scapular spine near the medial border	Second rib: Bilateral, at the second costochondral junctions, just lateral to the junctions on upper surfaces
Lateral epicondyle: Bilateral, 2 cm distal to the epicondyles	Gluteal: Bilateral, in upper outer quadrants of buttocks in anterior fold of muscle
Greater trochanter: Bilateral, posterior to the trochanteric prominence	Knees: Bilateral, at the medial fat pad proximal to the joint line