Pilates as an effective form of exercise
For Fibromyalgia: a case study

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Abstract

Individuals with Fibromyalgia syndrome (FMS) suffer from debilitating pain than can make dealing with everyday activities to be incredibly challenging. The pathogenesis and etiology of this pain is unknown (Shirer, G.), and although there has been increased recognition of the disorder in the past two decades, there is still much to be done in the way of research regarding its treatment. The National Fibromyalgia Association defines FMS as “a chronic pain illness characterized by widespread musculoskeletal aches, pain and stiffness, soft tissue tenderness, general fatigue, and sleep disturbances.” And while there is no cure for FMS, there is growing research to indicate that exercise, particularly strengthening in a pain-free context, can be beneficial for symptom reduction and improved overall function. This case study of a young woman with FMS outlines the use of Pilates as a safe and effective form of exercise for someone suffering from chronic, widespread pain.
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The above diagram illustrates the areas of pain or *tender points* used when diagnosing FMS. These points are usually highly sensitive to pressure for individuals with FMS.
Case Study

I began working with Jennifer in October of 2014. At the time, she was very interested in Pilates, but was apprehensive to start an exercise program because of her chronic pain illness, known as Fibromyalgia syndrome. At 41 years of age, Jennifer explained how her life's activities were basically dictated by her pain, limiting her outings, interrupting her sleep patterns, making it impossible for her to work, and ultimately causing her to lose the "petite figure" she had maintained most of her life. She emphasized that leaving the house was a chore for her, and that by the time she showered, did her hair and makeup she was exhausted and full of pain. That meant that her availability to do Pilates was already limited to certain days a week and relegated to afternoons as it would take her all day to prep for the session.

Jennifer's situation is not uncommon for a person with FMS. According to the National Fibromyalgia Association, 6-10 percent of the population in the United States have fibromyalgia, affecting more commonly women than men. Jennifer's symptoms of sleep disturbances, headaches, irritable bowel syndrome, fatigue, and depression were concurrent with the common symptoms of FMS, which can also include numbness or tingling of the extremities, restless leg syndrome, weakness, and memory loss (Shirer, G.).

Diagnosis of FMS can be complicated as it is based primarily on report of symptoms and there are no diagnostic tests, such as x-rays or labs, for this problem. The American College of Rheumatology lists the following criteria for diagnosing FMS: number of painful or tender spots on the body, symptoms lasting at least three months at a similar level, exclusion of any other health problems that might be confused with
FMS. Since there is no cure for FMS, physicians will recommend both medication and non-drug treatments depending on the patient's individual symptoms and severity, and the American College of Rheumatology does state that "physical exercise should be used in addition to any drug treatment".

There is limited research on the effectiveness of Pilates on individuals with FMS, but what is available shows support of a regular, personalized program that emphasizes gentle isometric contractions and causes less fatigue than aerobic exercise. Altan et al. studied 50 women with FMS randomly assigned to two groups: a Pilates exercise group (three times per week for one hour sessions) versus a control group. The Pilates exercise group included the components of postural education, neutral spine, stretching, proprioceptive tasks, breathing, and moving within a pain-free range. The study measured the primary outcomes of pain and the Fibromyalgia Impact Questionnaire (FIQ), which is composed of ten items ranging from physical function to anxiety level. After 12 weeks, the Pilates exercise group showed significant improvement in both pain and scores on the FIQ indicating Pilates as a safe and effective form of exercise for individuals with FMS.

The Ottawa Panel (Brosseau et al.) synthesized evidence from comparative controlled trials to create guidelines for the use of strengthening exercises in the management of individuals with FMS. Based on the literature, the panel found that strengthening exercises improved quality of life based on the 'fatigue' and 'feeling rested' items from the FIQ, and that participants demonstrated gains in muscle strength and pain relief, with reductions in physical disability and depression. The literature review done by the Ottawa panel also highlighted some of the deficits of the available
research. It indicates that perhaps researchers are apprehensive about progressing an exercise program for someone with FMS in an effort to avoid aggravating symptoms of the disorder or to avoid study attrition. The panel suggests that maintaining a personalized exercise program delivered by an exercise specialist who is supportive and provides regular encouragement may result in successful engagement without an exacerbation of exercise-induced FMS symptoms.

Upon initial assessment, Jennifer presented with poor posture marked by forward head, rounded shoulders, slightly increased thoracic kyphosis, and increased lumbar lordosis. She demonstrated inconsistent activation of her abdominal muscles and back extensors, indicating a weak core, and poor proprioception globally. Jennifer’s goals were to improve her posture, increase her energy and overall fitness level, and strengthen her abdominals. Given that Pilates is a low impact program that focuses on core stability and strength, postural alignment and spinal articulation, integration of breath with movement, and muscular symmetry and proprioception, it seemed a perfect fit for Jennifer.
Conditioning Program

The following exercises were included in Jennifer's Pilates repertoire:

**Warm-up (on mat)**

- Pelvic tilts
- Pelvic curls
- Chest lift (sometimes done with BOSU behind torso to facilitate abdominal engagement)
- Chest lift with rotation
- Roll-up (with manual assistance)
- Spine twist supine
- Double leg stretch
- Single leg stretch
- Criss cross

**Footwork**

- Series (parallel heels, parallel toes, small V toes, wide heels, wide toes, single leg heels, single leg toes) done on Reformer (for increased support), Cadillac (to stretch tight hamstrings), or Exo Chair (to challenge postural muscles)
- Calf raises
- Prances

**Abdominals**

- Hundred prep (mat & reformer)
- Hundred (mat & reformer)
- Coordination
● Short box series (reformer: round back, flat back, tilt)
● Double legs in straps
● Double legs in straps with rotation
● Mini roll-ups (Cadillac)
● Mini roll-ups with obliques (Cadillac)
● Standing pike (Exo Chair)
● Reverse pike (Exo Chair)
● Roll-up with roll-up bar (Cadillac)

**Hip Work**
● Frog (Reformer for more stability, Cadillac to challenge pelvic stability)
● Circles up/down (Reformer/Cadillac)
● Openings
● Extended frog/reverse extended frog
● Extension (Reformer/Cadillac)
● Bicycles/reverse bicycles (Cadillac)

**Spinal Articulation**
● Bottom lift
● Bottom lift with extensions
● Short spine (loaded with 2 springs to assist legs up and allow for articulation & abdominal engagement)
● Pelvic curl (Exo Chair)

**Stretches**
● Standing lunge
• Modified kneeling lunge (foot on wood instead of on footbar due to tight hamstrings)
• Ladder barrel (gluteals, hamstrings, adductors, and quadriceps)
• Side split (with moving foot only halfway on carriage for increased stability/control)

**Full Body Integration 1**

• Elephant (modified with foot bar at top level due to tight hamstrings and limited back extension)
• Reverse knee stretch
• Up stretch 1 (modified with foot bar at top level)
• Stomach massage round back
• Thigh stretch (Cadillac)

**Arm Work**

• Supine arm series (Reformer)
• Sitting arm series (Avalon Chair, modified by straddling box for chest expansion, biceps, and rhomboids)
• Ped a pull
• Sitting arm series (on Reformer but modified by sitting on long box due to tight hamstrings)
• Shrugs (Exo Chair)
• Triceps press sitting and prone (Exo Chair)

**Leg Work**

• Single leg skate
● Magic circle seated series
● Sidelying gluteal series with ankle weights
● Hamstring curls (Exo Chair)

**Lateral Flexion & Rotation**

● Side lifts (mat)
● Side stretch (Exo Chair)
● Side over prep (Ladder barrel)
● Mermaid
● Kneeling side stretch (Exo Chair)

**Back Extension**

● Basic back extension (mat and Ladder Barrel)
● Breaststroke prep
● Swan basic (Exo Chair)

It is worth noting Jennifer's progression of strength and endurance during her months of Pilates training. Over a six-month period, she was able to increase her springs on the reformer from 2.5 to 3.5 for footwork, from 1 to 1.5 for abdominals, and from .5 to 1 or 1.5 for arm work. Initially, Jennifer had the energy to perform only one session per week and within 2 months she had upped her sessions to twice weekly. She was also able to tolerate a full hour of exercise including all blocks from the BASI block system (except Full Body Integration Advanced/Master), when in the beginning she was only able to perform between four and six blocks per session due to pain and fatigue. Jennifer's subjective reports were also testament to her improved overall function as a result of Pilates. She reported being able to accomplish more than one
task during her outings from her house, such as grocery shopping and visiting small downtown shops, when prior to beginning Pilates she had the energy for only one task per day.

**Conclusion**

Pilates is a form of exercise that focuses on postural awareness, breath, stability, flexibility, and strength, all of which are critical elements of daily function and overall well-being. With a growing recognition of both the Pilates method and FMS as a legitimate diagnosis, it seems that with careful consideration of an individual's symptoms Pilates can be a safe and effective form of exercise for those with chronic, widespread pain. Jennifer's case is a good example. She was plagued by symptoms of depression, fatigue, generalized weakness, and poor posture. Within two months of Pilates training, she was able to tolerate twice weekly sessions using the BASI block system to increase her endurance and energy levels, improve her strength and flexibility, and enhance her overall well-being without increasing her pain. As research regarding alternative drug-free treatments of FMS continues to grow, hopefully so will the research regarding the benefits of Pilates.
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