

## Prescribing Tai Chi for Fibromyalgia — Are We There Yet?

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Fibromyalgia is a common and poorly understood pain disorder that afflicts an estimated 200 million or more people worldwide.<sup>1</sup> The lack of objective abnormalities detected on physical examination and standard blood and imaging tests has led many physicians to question the existence of this disorder.<sup>2</sup> However, for those experiencing the pain and other associated symptoms (including fatigue, stiffness, and nonrestorative sleep), there is little doubt that the condition is real — and so is the need for relief. Studies over the past decade suggest that fibromyalgia may be due, at least in part, to an alteration in pain sensitivity in the central nervous system.<sup>3</sup> Other potential mechanistic contributors include a genetic predisposition, emotional or physical stress, disordered sleep, and neurohormonal dysfunction.

What relief can we offer persons with fibromyalgia? Once the diagnosis is established with confidence (which is no small feat, since this is a diagnosis of exclusion, with many mimics), standard treatment recommendations include exercise, sleep hygiene, and medications. The ideal exercise program is unclear, although a mix of aerobic and strengthening activities may be best.<sup>4</sup> Other nonmedication approaches include cognitive and behavioral therapies. Pharmacologic agents commonly recommended for fibromyalgia include amitriptyline, cyclobenzaprine, fluoxetine, and several drugs now approved by the Food and Drug Administration (including duloxetine, pregabalin, and milnacipran). Yet even with optimal use of standard measures, the clinical response is often disappointing. For example, in a 12-week, placebo-controlled trial of duloxetine, only 55% of the treated patients, as compared with 33% of those given placebo, had improvement of at least 30% in a standard pain score.<sup>5</sup> Other limitations of standard treatment include significant side effects with pharmacologic approaches and variable compliance with lifestyle changes (especially exercise). Finally, given the chronicity of this disorder, long-term efficacy is of paramount importance; unfortunately, most studies to date have been of short duration, so the durability of even modest improvement is uncertain.

It is no wonder, then, that many people with fibromyalgia seek out less conventional (and less evidence-based) treatments, such as tai chi, yoga, massage, or acupuncture. The limited success of conventional treatments and the efficacy and safety reported in preliminary studies of tai chi<sup>6</sup> make this practice an ideal intervention to study in patients with fibromyalgia. In this issue of the *Journal*, Wang et al. report the results of a randomized, controlled trial of tai chi as a treatment for fibromyalgia.<sup>7</sup>

Tai chi is a gentle, meditative exercise that consists of flowing, circular movements, balance and weight shifting, breathing techniques, and cognitive tools (e.g., imagery and focused internal awareness). Researchers have investigated tai chi as an intervention for a variety of health issues, including balance impairments and cardiovascular disease.<sup>8</sup> Although data from other randomized, controlled trials specifically examining tai chi for fibromyalgia are not available, this practice has been studied as a treatment for other rheumatologic conditions, such as rheumatoid arthritis, and other musculoskeletal conditions, such as osteoarthritis and low back pain.<sup>9</sup> The data suggest that tai chi may be effective, although rigorous studies with adequate sample sizes have not been performed.

In the study by Wang et al., aside from reductions in pain, patients in the tai chi group reported improvements in mood, quality of life, sleep, self-efficacy, and exercise capacity. These results parallel those of small studies of tai chi in other patient populations.<sup>8</sup> Other meditative therapies, such as mindfulness-based stress reduction, have been studied in patients with fibromyalgia. In some cases, symptoms improved, although in general, the results have been equivocal. For example, although an 8-week, randomized, controlled study of mindfulness meditation and tai chi–like movements (qigong) in 128 patients with fibromyalgia showed significant reductions in pain, disability, and depression, these improvements were no better than those seen in the control group, which received educational support.<sup>10</sup> Given this background, the positive results across all outcome measures reported by Wang et al. are striking.

With such provocative results, this study may have far-reaching implications. But several critical questions remain. How much of the benefit of tai chi is due to a placebo effect? What is an appropriate control for tai chi? And what do these findings mean for clinical practice?

The authors state that they tried to minimize any a priori differences between expectations for tai chi and the control intervention, which consisted of stretching and health education, and they report that expectations in the two groups were similar at baseline. However, it seems likely that when a persuasive and enthusiastic teacher of tai chi first explained its potential benefits to the class, expectations in this group were heightened. The authors dutifully suggest that a sham tai chi intervention would have been desirable as a control. Ideally, a placebo control matches all aspects of the therapeutic intervention except for the “active” element of that intervention. But what is the active element of a complex, multi-component therapy such as tai chi?<sup>11</sup> Is it rhythmic exercise, deliberate and deep breathing, contemplative concentration, group support, relaxing imagery, a charismatic teacher, or some synergistic combination of these elements? If so, would the matched control include awkward movements, halted breathing, participant isolation, unpleasant imagery, or a tepid teacher? Would the resulting sham intervention be credible, valid, or even genuinely inactive?

Instead of embarking on a quixotic search for the ideal sham, what else needs to be done and what is a reasonable course of action for the physician who must counsel the patient with fibromyalgia? For next steps, we need replications of this study on a larger scale over longer periods of time, with different practitioners and different styles at multiple sites; determination of the optimal “dose”; comparisons with similar therapies such as yoga; and an assessment of cost-effectiveness. In the end, however, it may be that further evidence in support of tai chi for fibromyalgia, even if consistently positive, will never be as fully convincing as the results of

double-blind pharmaceutical trials. It is also possible that future studies will not replicate the dramatic findings of this small trial<sup>12</sup> and that not all patients with fibromyalgia will find tai chi acceptable or available. Even so, the potential efficacy and lack of adverse effects now make it reasonable for physicians to support patients' interest in exploring these types of exercises, even if it is too early to take out a prescription pad and write “tai chi.”

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