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Efficacy of rehabilitation with Tai Ji Quan in an Italian cohort of patients with Fibromyalgia Syndrome

Susanna Maddali Bongi*, Gianluca Paoletti, Michael Calà, Angela Del Rosso, Khadija El Aoufy, Svetlana Mikhaylova

Department of Experimental and Clinical Medicine, Division of Rheumatology, University of Florence, Viale Largo Brambilla 3, 50134 Florence, Italy

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ABSTRACT

Background: Fibromyalgia Syndrome (FMS) is characterized by musculoskeletal pain, muscle tenderness leading to disability, impaired quality of life (QoL), fatigue and it is accompanied by sleep disorders and psychological distress. Mind body therapies (MBT), such as Tai Ji Quan (TJQ), use different techniques to facilitate the ability of the mind to influence disease characteristics and symptoms. Some studies showed that TJQ, in patients with rheumatic diseases, particularly FMS, improved QoL, disability and psychological distress.

Objectives: To evaluate the efficacy of TJQ on disability, QoL, fatigue, sleep and psychological distress in an Italian cohort of FMS patients.

Methods: We enrolled 44 FMS patients: 22 patients (Experimental Group) participated to a course of Tai Ji Quan style of (2/week for 16 weeks); 22 patients (Control Group) participated to an educational course about FMS (2/week for 16 weeks). At baseline (T0) and at the end of treatment (T1), patients were assessed for disability [Fibromyalgia Impact Questionnaire (FIQ), Health Assessment Questionnaire (HAQ)], Quality of Life [Short-Form 36 (SF36)], fatigue [Functional Assessment of Chronic Illness-Fatigue (FACIT-F)], pain [Widespread Pain Index (WPI)], tenderness [Tender Points (TP)], Sleep Quality [Pittsburgh Sleep Quality Index (PSQI)] and mood disorders [Hospital Anxiety and Depression Scale (HADS)].

Results: At T1 versus T0, patients of the Experimental Group showed a significant improvement in FIQ, FACIT, SF36 (Summary Physical Index, Physical activity, physical role, bodily pain, general health, vitality, emotional role limitations), in WPI, TP, PSQI (total, sleep duration, and sleep disturbance) and HADS (total score and anxiety subscale), while Patients in the Control Group did not improve in any parameter.

Conclusions: In FMS patients TJQ, if performed by an expert physiotherapist, should be regarded as an effective rehabilitation method.

1. Background

Fibromyalgia Syndrome (FMS) is a rheumatic disease, characterized by chronic widespread pain for more than 3 months and other symptoms such as fatigue, non-restorative sleep, cognitive and somatic symptoms (headache, depressive symptoms, and irritable bowel) [1]. The large cohort of symptoms associated with FMS (such as pain, headache, migraine, paresthesia, fatigue, restless leg syndrome, dysmenorrhoea, irritable bowel syndrome, sleep disorders, anxiety and depression) lead to high disability and worse quality of life (Qol) [2,3].

FMS impairs Quality of Life (QoL), social life, working activities and implies mood disorders, such as anxiety and depressive symptoms [2]. As other conditions characterized by chronic pain, FMS represents a huge burden that traditional western medicine is currently failing to approach efficaciously.

FMS is included in Central Sensitivity Syndromes (CSS) conditions, which are characterized by a state of hyperexcitement of the central nervous system (CNS) involving the spinal and supraspinal structures due to an amplification of peripheral nociceptive input, that leads to pain exacerbation and excessive sensitivity to peripheral noxious and non-noxious stimuli [4].

Recent reviews show that the optimal management of FMS

* Corresponding author.
E-mail addresses: susanna.maddalibongi@gmail.com (S. Maddali Bongi), gianlucapaoletti@hotmail.com (G. Paoletti), micha.wip@libero.it (M. Calà), angela.delrosso@fastwebnet.it (A. Del Rosso), khadija.ela92@gmail.com (K. El Aoufy), svetlana.mkh@gmail.com (S. Mikhaylova).

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requires an individually tailored multidisciplinary approach, combining pharmacological and non-pharmacological therapies [3–6]. Therapy should target the state of hyperexcitement of the CNS changes with centrally acting drugs and with centrally acting non-pharmacological therapies [4,5,7–9]. Among non-pharmacological interventions, mind-body therapies (MBT) including Mindful Meditation, Cognitive Behavioural Therapy (CBT), Ressèguier Method, Yoga, Qi Gong and neuroscience education are useful in FMS, Mind-body interventions are based on the holistic principle of connection between mind, body and behavior and incorporate strategies that are thought to improve psychological and physical well-being, aiming also to allow patients to take an active role in the treatment, thus promoting people's ability to cope [10].

Tai Ji Quan (TJQ), considered a MBT and originated in China as a martial art, is practiced since many centuries. It combines meditation with many fundamental postures flowing imperceptibly and smoothly from one to the other through slow, gentle, graceful movements as well as deep diaphragmatic breathing and relaxation, with the aim to move "qi" (vital energy) throughout the body. It may be regarded as a multicomponent intervention, integrating physical, psychosocial, emotional, spiritual, and behavioural elements and promoting the mind body interaction [11].

Previous research consistently suggest than TJQ intervention has great benefit in patients with fibromyalgia. It was shown that after TJQ training FMS patients significantly improved in FIQ [12–15], Quality of life [12,14,15], pain [13–15], sleep [13], psychological distress [14,15], functional mobility and capacity [13,15].

Considering the potential efficacy of TJQ in the treatment of FMS and the limited number of scientific researches on this matter, especially in the Italian population, the present work aims to evaluate the efficacy of the Tai Chi on Quality of life, disability, pain, tenderness, psychological distress and sleep.

2. Patients and methods

Fifty patients with FMS, diagnosed according to American College of Rheumatology diagnostic criteria [1], were enrolled in this study. Six patients from the fifty enrolled withdrew for many reasons: three of them for problems in reaching the rehabilitation gymnasium and three for problems concerning their work and familiar organization. Thus, a total of 44 FMS patients (22 in each group) participated to the study.

The study had a duration of 16 weeks. The patients were divided randomly into two groups: the Experimental Group (22 patients) was treated with a program of Tai Chi (2 lesson/week of Tai Ji Quan) and the Control Group (22 patients) was treated with an educational treatment (2 educational lessons/week about FMS).

2.1. Assessment

FMS Patients were evaluated by both general and specific questionnaires for the disease and by tender points evaluations:

Fibromyalgia Impact Questionnaire (FIQ) evaluates the specific FMS disability by 10 questions that investigate the problems patients may experience every day [16]. The score ranges from 0 to 100, with the highest scores indicating the worst health condition.

Medical Outcomes Survey Short Form 36 (SF-36) is a self-report questionnaire evaluating HRQoL by 36 items structured into 8 domains: physical functioning (PF), role limitations due to physical problems (RP), bodily pain (BP), general health (GH), vitality (V), social functioning (SF), role limitations due to emotional problems (RE) and mental health (MH), combined into summary physical index (SPI) and summary mental index (SMI). Each item can be scored from 0 to 100 with higher scores corresponding to better HRQoL [17].

Health Assessment Questionnaire (HAQ) evaluates the disability in patients with rheumatic diseases [18] through 20 items grouped into 8 main categories: dressing and bathing, arising, eating, walking, hygiene, reach, grip and daily activities. The score ranges from 0 to 3: the higher score, the greater disability.

Functional Assessment of Chronic Illness-Fatigue (FACIT-fatigue) evaluates the fatigue and its effects on the quality of life by 13 questions. The total score ranges from 0 (no fatigue) to 52 (maximum degree of fatigue) [19].

Pittsburgh sleep Quality Index (PSQI) assesses sleep quality by 19 items evaluated by the subject himself and by 5 items to be answered by the bed or room partner (not included in the total score, but only used as clinical information). The 19 items are grouped in 7 scales, exploring one the following different aspects of sleep: sleep quality, latency to bed, sleep duration, sleep efficiency, sleep disturbance, use of medications, daily difficulties. The total score of PSQI ranges from 0 to 21. A total score higher than 5 is indicative for the presence of sleep disorders [20,21].

Hospital Anxiety and Depression Scale (HADS) assesses the degree of psychological distress by 14 items divided into 2 subscales, each one composed by 7 questions (A = Anxiety subscale, D = Depression subscale). The range for each subscale is 0–21 points: the higher score, the greater psychological distress [22].

Widespread Pain Index (WPI), is also called Regional Pain Scale. WPI assesses the extent of extra-articular pain in patients with FMS [23]. It lists 12 sites (5 monolateral and 7 bilateral, for a total of 19 sites) that represent the areas commonly referred as painful by FMS patients. The score ranges from 0 to 19.

Tender Points Evaluation (TPE) evaluates the tenderness at the pressure on 18 points (9 points assessed bilaterally: Occipital, trapezius, Supraspinatus, Buttock, Great trochanter, low Cervical, Second coast, lateral epicondyle, knee) as described in the 1990 ACR criteria [24]. The score ranges from 0 to 18.

2.2. Methods of intervention

2.2.1. Experimental group

Patients practiced TJQ twice a week for 16 weeks, with sessions lasting 60 min each (Box 1). Each lesson was divided into 3 parts:

- Stage I (15 min) consisted in breathing exercises, concentration and postural maintenance with the aim to increase the ability to perceive themselves. Postural exercises are the basis of the treatment and they are characterized by maintaining a static posture associated with natural breathing. The postural control with respect to one or more points in space allows the patient to re-establish a direct contact with their body and the surrounding environment. The postural corrections of the therapist during exercises supports proprioceptive education and the correct relationship of the body in the three axes of the space and improves postural attitude. The combination of correct posture with breathing exercises induces greater muscle relaxation of the upper limbs and trunk by reducing the perception of fatigue and pain.
- Stage II (15 min) included exercises allowing physical, mental and emotional rebalancing, thus improving greater control of posture, breathing and concentration, by very low impact movements.
- Stage III (30 min) included the study and practice of a form of TJQ allowing the patient to carry out a precise movement that, repeated over time, becomes more harmonious and consonant with the environment, thus the figure is connected to the next one in a unique and fluid movement. The TJQ method stimulates greater concentration and coordination in the movements.