



Chinese massage combined with core stability exercises for nonspecific low back pain: A randomized controlled trial

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Oswestry disability index (ODI);
Nonspecific low back pain (NSLBP);
Core stability exercises;
Chinese massage

Summary

Objective: To determine the effect of Chinese massage combined with core stability exercises on nonspecific low back pain.

Methods: In the prospective study, ninety-two participants with nonspecific low back pain were divided into experimental and control group at random, and 46 in each. The experimental group were treated using Chinese massage combined with core stability exercises, while the control group were treated using Chinese massage alone. The two groups were evaluated using visual analog scale and Oswestry disability index at baseline, immediately after two and eight weeks. In addition, the recurrence rate of nonspecific low back pain was evaluated one year after the last intervention.

Results: Two weeks after treatment, both VAS and ODI scores decreased significantly in two groups ($p < 0.05$), when compared with the values before treatment, but no difference between the two groups ($p > 0.05$). Eight weeks later, the VAS and ODI scores decreased significantly in both groups ($p < 0.05$); at the same time, both VAS and ODI scores were significantly lower ($p < 0.05$) in the experimental group than those in the control group. At the final follow-up, five cases recurred in the experimental group and nineteen cases in the control group, the control group has a significantly higher recurrence rate ($p < 0.05$).

Conclusion: Core stability exercises can improve the therapeutic effect of Chinese massage in treating nonspecific low back pain.

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Introduction

Low back pain (LBP) is one of the most common musculoskeletal disorders,¹ and in USA about 80% of adults had an LBP episode at least once in their lives. LBP is usually regarded as self-limiting, but approximately 16–62% of acute cases may develop chronic pain,² and its recurrence rate is as high as 85%.³ LBP is the primary cause of absenteeism and disability in industrialized societies,⁴ exerting a large burden on the health care system.

The cause of low back pain is not clear in almost 85% of LBP patients, and these LBP were called nonspecific low back pain (NSLBP). NSLBP is reported to be closely correlated to poor lumbar stability, and clinical trials showed that training muscles could stabilize the trunk and reduce short and long term symptoms of LBP.⁵ Lumbar exercise can improve the support and stabilization of lumbar spine, avoiding the pain and improving the proprioception related to the dysfunction.⁶ In recent years, core stability exercises have been carried out widely in rehabilitation of LBP, which has a positive effect on reducing pain⁷ and elevating the trunk stability to facilitate skilled motor behavior.⁸ In a meta-analysis, Wang and colleagues found compared to general exercise, core stability exercise was more effective in decreasing pain and improving physical function in patients with LBP.⁹

In addition, massage is also a common nonsurgical method widely used to treat LBP. In a systematic review, Kumar concluded that massage was an effective treatment option for NSLBP, when compared to placebo and some other active treatment options.¹⁰ Chinese massage, as one of the complementary and alternative therapies, has a long history in China, which is popular for various diseases including neck pain, LBP, dysmenorrhea, pediatric torticollis, and cibophobia.¹¹ Some clinical reports from Pang, Zhang, Cai and Liu have confirmed the effectiveness of Chinese massage on LBP.^{12–15}

As core stabilities exercises can stabilize the lumbar structures, we assume that it may improve the effectiveness of Chinese massage and decreasing the recurrence rate of NSLBP when it was performed combined with Chinese massage. Although some studies have confirmed the effectiveness of Chinese massage or core stabilities exercises on NSLBP, no trials have been reported on the effect of Chinese massage combined with core stability exercises for improving the symptoms and decreasing the recurrence rate in patients with NSLBP.

Therefore, the objective of this randomized controlled trial was to determine whether Chinese massage combined with core stability exercises may exert greater improvement on NSLBP than massage therapy alone, and help physicians' better make strategies.

Materials and methods

Design

We used a pragmatic randomized controlled trial to evaluate the effectiveness of Chinese massage combined with core stability exercises on NSLBP. The study was approved by the Ethics Committee of Qingzhou hospital of traditional Chinese

medicine, and an informed consent form was signed by all the participants. The included participants were randomly assigned into experimental or control group. The experimental group received Chinese massage combined with core stabilization exercises, while the control group experienced Chinese massage therapy alone. After the baseline assessment, an independent physician took a sealed opaque envelope for each participant, from a box following a numerical sequence generated by computer, which contained a piece of paper indicating whether the subject belonged to the experimental or control group.

The sample size was calculated according to the formula, i.e., $n = 2(\mu_{\alpha} + \mu_{\beta})^2 \sigma^2 / \delta^2$. In the formula, μ_{α} and μ_{β} are the probability of type-1 and 2 error, σ is standard deviation in standard-therapy group, δ is the difference of means between standard-therapy and experimental group.¹⁶ An α level of 0.05 and power of 0.90 and allowing for 10% loss to follow-up were set, the estimation of σ and δ were performed according to our previous preliminary experiment as well as some published literatures.^{17,18}

Subjects

Participants were recruited from patients with NSLBP in Qingzhou hospital of traditional Chinese medicine between March 2011 and June 2012. The inclusion and exclusion criteria were based on the published literature.¹¹

Inclusion criteria: (1) age < 55 years; (2) having NSLBP without any relevant ongoing pathologies such as disc prolapse, fractures, spondylolisthesis, tumor, osteoporosis, or infection; (3) willing to participate in this study and signing informed consent.¹¹

Exclusion criteria: (1) other pain syndromes; (2) spinal surgery in the past 6 months or having to undergo surgery or invasive examinations during the study; (3) neurological disease; (4) psychiatric disease; (5) serious chronic disease that could interfere with the outcomes (e.g., cardiovascular disease, rheumatoid arthritis, epilepsy, or other disqualifying conditions); (6) pregnant or planning to become pregnant during the study.¹¹

Treatment

The treatment including Chinese massage and core stability exercises was carried out in Qingzhou hospital of traditional Chinese medicine. In experimental group, the participants received Chinese massage including rolling, rubbing, pushing, oblique-pulling, stroking and tapotement, which was performed in the low back for 40 min, once daily for eight weeks, by professional therapists. In addition, the participants performed core stability exercises including plank, side plank, bridge, straight leg raise and modified push-up, each movement was performed ten times for one arm/leg, once daily for eight weeks. Before the beginning of the treatment, the participants in the experimental group were given an individual specific core stability exercises instruction by the researchers, and at time point, the participants in the experimental group were asked to demonstrate the exercises to ensure that they had mastered the train.

In control group, the participants received the same treatment of Chinese massage as the experimental group, but didn't receive the core stability exercises.

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