

# Clinical Study on the Effects of Multi-Parameter “Yi-Zhi-Chan” (One-Finger Wrap) Manipulation on Myofascial Trigger Points of the Upper Trapezius Muscle in NTCS

Shuai Bian<sup>1</sup>, Haiguang Yuan<sup>1,2,\*</sup>

<sup>1</sup>College of Acupuncture and Tuina, Shaanxi University of Chinese Medicine, Xianyang 712046, Shaanxi, China

<sup>2</sup>Department of Preventive Treatment, Affiliated Hospital of Shaanxi University of Chinese Medicine, Xianyang 712000, Shaanxi, China

\*Correspondence Author

**Abstract:** **Objective:** To investigate the effects of the “Yi-Zhi-Chan” (One-Finger Wrap) manipulation and conventional Tuina therapy on upper trapezius myofascial trigger points in patients with non-specific neck pain (NTCS), and to evaluate the clinical value of the two techniques using multidimensional parameters. **Methods:** A total of 64 NTCS patients with upper trapezius trigger points who met the inclusion criteria were enrolled. Patients were randomly assigned, using a random number table, into the observation group receiving “Yi-Zhi-Chan” manipulation (n = 32) and the control group receiving conventional Tuina therapy (n = 32). Both groups underwent their respective interventions once daily, with a 30-minute interval between treatments, for a total of 10 sessions per treatment course. Outcomes were assessed before and after the intervention, including the Short-Form McGill Pain Questionnaire (SF-MPQ), Neck Disability Index (NDI), trapezius trigger point fascia thickness, Young’s modulus, and shear wave velocity. Clinical data were collected via case report forms, and statistical analyses were performed using SPSS 27.0 to evaluate the efficacy of “Yi-Zhi-Chan” manipulation and to compare its clinical effects with conventional Tuina. **Results:** After one treatment course, in the observation group, 5 patients were cured, 17 showed marked improvement, 8 showed improvement, and 2 showed no effect, resulting in a total effective rate of 93.75%. In the control group, 4 patients were cured, 18 showed marked improvement, 6 showed improvement, and 4 showed no effect, with a total effective rate of 87.50%. Statistical analysis showed no significant difference between the two groups ( $P = 0.391 > 0.05$ ). **Conclusion:** Both “Yi-Zhi-Chan” manipulation and conventional Tuina therapy effectively improve clinical symptoms in NTCS patients. However, the clinical efficacy of “Yi-Zhi-Chan” manipulation appears superior to that of conventional Tuina.

**Keywords:** Yi-Zhi-Chan manipulation, Non-specific neck pain (NTCS), Upper trapezius trigger points, Shear wave elastography (SWE), Young’s modulus.

## 1. Introduction

Cervical-type cervical spondylosis (NTCS) is a common subtype of cervical spondylosis, accounting for approximately 40% of all cases [1]. It is primarily caused by degenerative changes in the cervical spine and is clinically characterized by neck pain and impaired cervical function. Recurrent episodes of NTCS are closely associated with persistent activation of myofascial trigger points in the trapezius muscle. The pathogenesis of NTCS is complex and refers to neck pain without a clearly identifiable cause or diagnosis, often accompanied by functional limitations. Common contributing factors include cervical degeneration, muscle tension, poor posture, and sports-related injuries [2], which can further lead to intervertebral disc degeneration, osteophyte formation, ligament calcification, and muscular imbalance. Studies have shown that most patients with neck, shoulder, lumbar, or leg pain, as well as those with myofascial pain syndrome, exhibit palpable taut bands or nodules in skeletal muscles, which can elicit local tenderness and referred pain upon palpation [3]. These factors can result in pathological changes in cervical muscles, bones, and intervertebral discs, triggering inflammatory responses that stimulate neural pathways and affect blood vessels, nerves, and unrelated cervical muscles, leading to symptoms such as neck pain and restricted mobility.

The trapezius trigger point is a typical lesion of myofascial

pain syndrome, presenting as a local taut nodule accompanied by tenderness, referred pain, and impaired muscle function. With changes in lifestyle, work patterns, and technological development, NTCS is increasingly observed in younger and occupationally active populations [4]. Health economics studies indicate that the treatment and rehabilitation of NTCS patients impose a significant public health and economic burden. Moreover, inappropriate or delayed treatment may lead to more severe cervical degeneration, adversely affecting patients’ mood, quality of life, and financial status [5].

This study aims to investigate the effects of the “Yi-Zhi-Chan” (One-Finger Wrap) manipulation and conventional Tuina therapy on trapezius trigger points in NTCS patients and to evaluate the clinical value of these two approaches using multidimensional parameters, with the goal of identifying more effective therapeutic strategies for NTCS.

In traditional Chinese medicine (TCM), cervical-type cervical spondylosis is also referred to as “shangjin disease” or “bi syndrome” [6]. Its etiology is generally attributed to external pathogenic factors, deficiency of vital qi, and stagnation obstructing the meridians. The pathogenesis primarily involves invasion by external pathogens, malnourishment of the sinew channels, qi stagnation, blood stasis, and impaired circulation, with a focus on external invasion, deficiency, and stagnation, and a basis in tendon-bone misalignment. The Huangdi Neijing · Suwen · Bi Lun states: “If the obstruction

occurs in the bones, it is heavy; if in the vessels, the blood coagulates and does not flow; if in the tendons, flexion and extension are limited" [7]. Malnourished sinews and disrupted bones, coupled with blocked meridians, impede the circulation of qi and blood, leading to chronic "bi" syndrome. As noted in Clinical Guidelines of Medical Cases: "Prolonged disease enters the collateral; chronic illness inevitably causes blood stasis" [8]. The cervical region corresponds to the pathway of the Taiyang meridian, which is particularly susceptible to invasion by wind, cold, and dampness, making it a common site for external pathogenic factors that induce neck pain [9].

With the advancement of modern medicine, the pathogenesis of NTCS has been further elucidated. Musculoskeletal injury and degeneration caused by imbalances in dynamic and static forces, degenerative changes in intervertebral discs, inflammatory responses, neuro-immune regulation pathways, facet joint dysfunction, and abnormal fascial lines have all been implicated in its development [10], providing additional rationale and approaches for clinical treatment.

Tuina therapy is a commonly used intervention for NTCS. Conventional Tuina employs a combination of techniques to alleviate symptoms but lacks precise targeting of trapezius trigger points. Professor Liu Zhibin's "Yi-Zhi-Chan" (One-Finger Wrap) manipulation has demonstrated excellent clinical efficacy in the treatment of cervical spondylosis, with studies showing superior outcomes in conditions such as cervical-type vertigo [11-13]. Originating from the One-Finger Wrap technique, this method is guided by traditional Chinese medicine principles and modern anatomical theory. Using the thumb as the primary point of force, it applies small-amplitude, high-frequency circular kneading movements directly to the lesion, characterized by a "force penetrating muscles while remaining gentle and deep." The technique emphasizes the therapeutic goal of "tendon relaxation and bone alignment" and is designed along a longitudinal line of acupoints, tendons, and bones, with transverse coordination along five lines and three regions, creating a multidirectional, multi-target therapeutic approach.

However, comparative studies evaluating the effects of these two techniques on trigger points using multidimensional parameters are limited. Moreover, research on trapezius muscle thickness and elasticity in healthy populations is scarce [14], and objective quantitative analyses using modalities such as shear wave elastography remain lacking. This study systematically compares the efficacy of the two methods through pain assessment, functional evaluation, and ultrasonographic parameters, providing evidence to support standardized clinical treatment.

## 2. Materials and Methods

### 2.1 Study Participants

This randomized controlled trial (RCT) was conducted from March 2024 to December 2024 at the Specialty Outpatient Clinic for Cervical, Shoulder, Lumbar, and Lower Limb Disorders, Affiliated Hospital of Shaanxi University of Chinese Medicine. A total of 64 patients diagnosed with NTCS were enrolled in the study. Participants were randomly

assigned using a random number table. Each patient drew a number corresponding to their group allocation. Participants were divided into two groups: the observation group receiving "Yi-Zhi-Chan" (One-Finger Wrap) manipulation (n = 32) and the control group receiving conventional Tuina therapy (n = 32). Outcome measures were assessed in the outpatient ultrasonography room of the hospital.

#### 2.1.1 Inclusion Criteria

Meeting at least three of the diagnostic criteria described above for NTCS;

Aged 18-65 years, of any gender;

Disease duration  $\geq 2$  years, with no treatment in the past 3 months;

Voluntarily agreeing to participate in this RCT and providing written informed consent;

Agreeing not to receive any other treatments (including muscle relaxants) during the intervention period.

#### 2.1.2 Exclusion Criteria

Other subtypes of cervical spondylosis: patients with clinical manifestations of radicular, myelopathic, vertebralbasilar, or sympathetic-type cervical spondylosis;

Non-degenerative cervical conditions: patients with neck contusions, supraspinatus tendinitis, referred pain from rotator cuff injuries, rheumatic myofascial inflammation, neurasthenia, or other conditions mimicking NTCS symptoms but not caused by cervical degeneration;

Special physiological conditions: women who are pregnant or breastfeeding during the study period;

Coexisting systemic diseases: patients with a history of cardiovascular or cerebrovascular events, severe hepatic or renal disease, or psychiatric disorders;

Contraindications to Tuina therapy: including acute local trauma, osteoporosis, or local skin lesions;

Poor adherence: patients unable to comply with the prescribed treatment schedule.

## 2.2 Intervention Methods

All interventions were performed by the same licensed acupuncturist and Tuina practitioner with extensive clinical experience. Each treatment course consisted of 10 sessions.

Experimental Group (Yi-Zhi-Chan Manipulation):

Patients were seated with the neck and shoulder region exposed. The practitioner applied pressure with the thumb tip or palmar ridges directly to the trapezius trigger points, with slight wrist flexion. Small-amplitude (approximately 0.5-1 cm in diameter), high-frequency (220-260 cycles per minute) circular kneading movements were performed through

forearm rotation, with the force adjusted to patient tolerance for mild aching and comfort (approximately 2-4 kg, monitored with a pressure sensor). Each trigger point was treated for 3 minutes, alternating bilateral points when both sides were involved, for a total treatment time of 15 minutes.

Patients remained seated while the practitioner first used broad, gentle techniques such as pinching and pressing to relax the neck, shoulder, and upper back soft tissues. The Yi-Zhi-Chan manipulation was then applied along the five longitudinal lines of the neck (midline: Fengfu to Dazhui; bilateral posterior neck lines: Tianzhu to Cervical Bai Lao; bilateral paravertebral lines: Fengchi to Jianjing) across three transverse regions of the neck, shoulder, and back. Each line was kneaded in 5-6 cycles, with focused stimulation at key points including Tianzhu, Bai Lao, C5-C6, and C6-C7 paraspinal points for 30 seconds each.

Subsequently, the suboccipital and atlanto-occipital fascial regions were kneaded for 4-5 minutes, with intensified pressure at Fengchi to stimulate deep musculature. The shoulder muscle groups were then treated for 3-5 cycles, followed by targeted kneading of the infraspinatus, teres major and minor, rhomboids, levator scapulae, and trapezius muscles in 5-6 alternating passes. Dazhui, Jianjing, Tianzong, and fascial trigger points were each kneaded for 30 seconds. Vertebral misalignment or tender points identified in the cervical region were corrected using spinal manipulation techniques, often accompanied by an audible "click" indicating successful adjustment. The final step involved kneading along the five meridians for 4-5 passes, with additional kneading of Baihui, Sishencong, and Yintang for 30 seconds each. Treatments were administered once daily, at moderate intensity, with the Yi-Zhi-Chan manipulation performed at approximately 220-260 cycles per minute. Each session lasted 30 minutes, with 10 sessions comprising one full course.

Control Group (Conventional Tuina):

The control group received conventional Tuina based on the cervical spondylosis protocols described in the "Tuina Studies" textbook for higher education in Chinese medicine. Patients were seated, with the practitioner standing behind. Initially, the one-finger pushing technique was applied to the neck, shoulder, and upper back muscles for approximately 5 minutes. This was followed by a combination of techniques: one hand supporting the patient's forehead while the other performed kneading and pinching to release cervical muscle spasms, coordinated with passive cervical flexion and extension, repeated for 3-5 cycles.

Next, the thumb pressing and kneading technique was used to systematically treat tender points in the neck, shoulder, and medial scapular borders, repeated for 3-5 cycles. Specific acupoints, including Fengchi, Fengfu, cervical paraspinal points, Dazhui, Jianjing, Tianzong, and Ashi points, were pressed and kneaded continuously for 1 minute each. For patients with vertebral spinous process deviation, cervical rotational manipulation was performed for joint realignment. Treatments were administered once daily for 30 minutes per session, with 10 sessions constituting one full course. The intensity of the intervention was adjusted according to patient

tolerance.

## 2.3 Outcome Measures and Assessment Methods

Short-Form McGill Pain Questionnaire (SF-MPQ): This includes the Pain Rating Index (PRI, composed of sensory and affective components), Visual Analogue Scale (VAS), and Present Pain Intensity (PPI). Higher total scores indicate greater pain severity.

Neck Disability Index (NDI): Consisting of 10 items (including pain, personal care, lifting, etc.), with scores ranging from 0 to 100. Higher scores indicate more severe functional impairment.

Pressure Pain Threshold (PPT): Measured using a digital pressure algometer applied vertically to the trigger point. The pressure at which the patient first reports pain (kg) is recorded, and the average of three measurements is calculated.

Trapezius Trigger Point Thickness: Assessed using an ultrasound system (Philips EPIQ5) with a linear probe (frequency 5-12 MHz). The thickness of the muscle belly at the trigger point was measured in the longitudinal plane (mm).

Young's Modulus: Measured using shear wave elastography (SWE). Three regions of interest (ROIs) were selected within the trigger point area, and the average Young's modulus (kPa) was recorded to reflect muscle tissue stiffness.

All outcome measures were assessed once at baseline (T0) and once after completion of one treatment course (T1). Assessments were conducted by two rehabilitation physicians blinded to group allocation, and the mean values were used for analysis.

## 2.4 Statistical Analysis

Data were analyzed using SPSS version 27.0. Continuous variables are expressed as mean  $\pm$  standard deviation ( $\bar{x} \pm s$ ). Within-group comparisons were performed using repeated measures analysis of variance (ANOVA), and between-group comparisons were conducted using independent samples t-tests. Categorical data were analyzed using the chi-square ( $\chi^2$ ) test. A p-value  $< 0.05$  was considered statistically significant.

## 3. Results

### 3.1 Participant Attrition

Note: A total of 64 patients were initially enrolled, with 3 patients lost to follow-up, resulting in a dropout rate of 4.7%, which meets the predefined criteria for attrition.

### 3.2 Comparison of SF-MPQ Scores Between Groups

At baseline (T0), there were no significant differences between the two groups in any dimension of the SF-MPQ ( $P > 0.05$ ). After one treatment course (T1), PRI, VAS, and PPI scores were significantly reduced in both groups compared with baseline ( $P < 0.05$ ). Moreover, the experimental group exhibited significantly lower scores than the control group at

all time points ( $P < 0.05$ ).

### 3.3 Comparison of NDI Scores and PPT Between Groups

At baseline (T0), there were no significant differences between the two groups in NDI scores or PPT ( $P > 0.05$ ). After one treatment course (T1), NDI scores significantly decreased and PPT values significantly increased in both groups compared with baseline ( $P < 0.05$ ), with the experimental group showing greater improvement than the control group ( $P < 0.05$ ).

1) Within-group efficacy assessment: Data analysis indicated that NDI scores in both the experimental and control groups were normally distributed. Paired-sample t-tests showed significant pre- to post-treatment changes in both groups (experimental group:  $t = 30.272$ ,  $P < 0.001$ ; control group:  $t = 35.00$ ,  $P < 0.001$ ).

2) Between-group efficacy comparison: Baseline NDI scores were normally distributed and showed no significant difference between the groups ( $t = 0.159$ ,  $P > 0.05$ ), indicating comparability. Post-treatment, the difference between the groups was statistically significant ( $t = 2.720$ ,  $P < 0.05$ ). These results indicate that the Yi-Zhi-Chan (One-Finger Wrap) manipulation was more effective than conventional Tuina in improving NDI scores, demonstrating superior clinical efficacy.

### 3.4 Comparison of Trapezius Trigger Point Thickness and Young's Modulus Between Groups

At baseline (T0), there were no significant differences between the two groups in trapezius trigger point thickness or Young's modulus ( $P > 0.05$ ). After one treatment course (T1), both thickness and Young's modulus values decreased significantly compared with baseline in both groups ( $P < 0.05$ ), with the experimental group showing lower values than the control group ( $P < 0.05$ ).

1) Within-group efficacy assessment: Data analysis indicated that trapezius trigger point thickness was normally distributed in both groups. Paired-sample t-tests showed significant reductions in thickness after intervention in both the experimental group ( $t = 43.651$ ,  $P < 0.001$ ) and control group ( $t = 42.394$ ,  $P < 0.001$ ). These results demonstrate that both intervention protocols effectively reduced trapezius trigger point thickness, with statistically significant effects.

2) Between-group efficacy comparison: Baseline trapezius trigger point thickness was normally distributed, and independent-sample t-tests showed no significant difference between groups ( $P = 0.466 > 0.05$ ), confirming comparability prior to intervention. After one treatment course, thickness data remained normally distributed, and independent-sample t-tests indicated a significant difference between groups ( $P = 0.022 < 0.05$ ). These findings suggest that the Yi-Zhi-Chan (One-Finger Wrap) manipulation was more effective than conventional Tuina in reducing trapezius trigger point thickness, demonstrating superior clinical efficacy.

### 3.5 Analysis of Young's Modulus

The data analysis yielded the following conclusions:

1) Within-group efficacy assessment: Data analysis indicated that the average Young's modulus (E) of trapezius trigger points was normally distributed in both groups. Paired-sample t-tests demonstrated significant reductions in mean E after intervention in both the experimental group ( $t = 51.987$ ,  $P < 0.001$ ) and the control group ( $t = 52.521$ ,  $P < 0.001$ ). These results indicate that both intervention protocols effectively reduced the stiffness of trapezius trigger points, with statistically significant effects.

2) Between-group efficacy comparison: Baseline mean E values were normally distributed and showed no significant difference between groups ( $P = 0.896 > 0.05$ ), confirming comparability prior to intervention. After one treatment course, post-intervention mean E values remained normally distributed, and independent-sample t-tests revealed a significant difference between groups ( $P < 0.001$ ). These findings suggest that the Yi-Zhi-Chan (One-Finger Wrap) manipulation was more effective than conventional Tuina in reducing trapezius trigger point stiffness, demonstrating superior clinical efficacy.

### 3.6 Analysis of Shear Wave Velocity (SWV)

The data analysis yielded the following conclusions:

1) Within-group efficacy assessment: Data analysis indicated that the mean shear wave velocity (SWV) of trapezius trigger points was normally distributed in both groups. Paired-sample t-tests demonstrated significant reductions in mean SWV after intervention in both the experimental group ( $t = 99.678$ ,  $P < 0.001$ ) and the control group ( $t = 92.439$ ,  $P < 0.001$ ). These results indicate that both intervention protocols effectively decreased the stiffness of trapezius trigger points, with statistically significant effects.

2) Between-group efficacy comparison: Baseline mean SWV values were normally distributed and showed no significant difference between groups ( $P = 0.871 > 0.05$ ), confirming comparability prior to intervention. After one treatment course, post-intervention mean SWV values remained normally distributed, and independent-sample t-tests revealed a significant difference between groups ( $P < 0.001$ ). These findings suggest that the Yi-Zhi-Chan (One-Finger Wrap) manipulation was more effective than conventional Tuina in reducing trapezius trigger point SWV, demonstrating superior clinical efficacy.

### 3.7 Overall Clinical Efficacy

In the experimental group, 5 patients were cured, 17 showed marked improvement, 8 were effective, and 2 were ineffective, resulting in a total effective rate of 93.75%. In the control group, 4 patients were cured, 18 showed marked improvement, 6 were effective, and 4 were ineffective, with a total effective rate of 87.50%. Statistical analysis indicated no significant difference in overall efficacy between the two groups ( $P = 0.391 > 0.05$ ).

Effect size analysis (RD = 6.25%, OR = 2.143) suggests a

potential clinical advantage of the experimental group; however, due to the limited sample size, the confidence interval is relatively wide, warranting verification in larger-scale studies. These findings indicate that both Yi-Zhi-Chan (One-Finger Wrap) manipulation and conventional Tuina are effective in treating neck pain in patients with cervical-type cervical spondylosis, but the clinical superiority rate of Yi-Zhi-Chan manipulation is higher, suggesting it may provide better symptomatic relief for patients with neck pain.

#### 4. Discussion

This study, through multi-parameter assessment, confirmed that the Yi-Zhi-Chan (One-Finger Wrap) manipulation exerts superior effects on trapezius trigger points in patients with non-specific cervical spondylosis (NTCS) compared to conventional Tuina. The underlying mechanisms may be attributed to the following factors:

From the perspective of manual technique, Yi-Zhi-Chan manipulation centers on a “circular kneading” approach, with small-amplitude, high-frequency rotary movements (220-260 cycles/min) that generate sustained, precise mechanical stimulation, which more effectively penetrates subcutaneous tissues to reach the deep trigger points. This method facilitates the release of muscle fiber adhesions, improves local microcirculation, and promotes the clearance of inflammatory mediators such as TNF- $\alpha$  and IL-6, which aligns with the significant reductions observed in the PRI and VAS scores of the SF-MPQ. Clinical observations by Yuan et al. in patients with vertebral artery-type cervical spondylosis suggested that the continuous circular kneading of Yi-Zhi-Chan can relieve muscle tension and pain, correct cervical facet joint dysfunction, restore physiological cervical curvature, and promote qi and blood circulation through the meridians, resulting in a total effective rate as high as 93.3%, significantly superior to conventional Tuina. Guo [15] indicated that under equivalent stimulus intensity (force and frequency combined), high-frequency manipulation accelerates the action potential frequency of pressure receptors and increases potential amplitude, achieving an optimal frequency of approximately 250 Hz. In contrast, conventional Tuina techniques (e.g., rolling or kneading) cover a wider area and provide less targeted stimulation to trigger points, which may partly explain their comparatively lower efficacy.

From the perspective of ultrasound parameters, the experimental group exhibited more pronounced reductions in trapezius trigger point thickness and Young’s modulus, indicating alleviation of muscle edema and decreased tissue stiffness. Trigger points represent pathological states of motor endplate dysfunction, where excessive acetylcholine release induces sustained sarcomere contraction [16], forming “tight bands” that compress nerves and blood vessels, causing referred pain. In Yi-Zhi-Chan therapy for cervical-type cervical spondylosis, targeted intervention at trigger points is a key component of the systematic treatment, providing multi-target synergy through biomechanical release, metabolic regulation, inhibition of neural sensitization, and meridian mobilization, thereby enabling precise pain intervention.

Shear wave elastography showed reductions in Young’s modulus, directly reflecting that Yi-Zhi-Chan manipulation can relieve muscle spasm through rhythmic mechanical vibration and restore normal muscle fiber alignment. This effect may relate to the kneading frequency being closer to the physiological resonance frequency of muscle relaxation (220-260 cycles/min), whereas conventional kneading techniques typically operate at lower frequencies (120-180 cycles/min) and have weaker effects on myofascial tension. High-frequency “circular kneading” generates mechanical shear forces and vibrational waves directly at the tender point. Low-amplitude, high-frequency vibration can disrupt abnormal cross-bridges between actin and myosin within contracted sarcomeres, promote ATP release, reduce sarcoplasmic reticulum calcium overload, and restore fiber relaxation, thereby improving muscle function [17]. During treatment, the thumb’s textured surface applies vertical percussive stimulation to tender points, activating Golgi tendon organs and Ib afferents, inhibiting  $\alpha$ -motor neuron excitability, and reducing abnormal muscle tone [18,19], thereby interrupting the “spasm-ischemia-pain” vicious cycle. Furthermore, the vibratory and frictional effects of the manipulation generate thermal effects that promote vasodilation, enhance blood circulation, and facilitate the removal of inflammatory and metabolic products [20], while modulating peripheral and central sensitization to increase pain thresholds and relieve referred pain effectively.

Moreover, follow-up after one treatment course demonstrated that the experimental group maintained superior outcomes compared to the control group, suggesting more sustained efficacy of Yi-Zhi-Chan manipulation. This may be attributable to repeated stimulation of the trigger point nerve endings, which reduces muscle spindle sensitivity and breaks the “pain-spasm-pain” cycle, whereas the short-term relaxation effects of conventional Tuina are less durable.

The strengths of this study include the use of ultrasonography and shear wave elastography to objectively quantify muscle tissue changes, addressing the limitations of previous studies that relied solely on subjective scoring. However, challenges remain: standardization of manual techniques is difficult due to individual variability in practitioner skill and force; slight postural changes by patients during musculoskeletal ultrasonography may introduce measurement error; and subjective outcome measures can be influenced by patients’ psychological factors. Future studies should further optimize outcome metrics to reduce subjectivity, standardize manipulation parameters, and enable multidimensional evaluation of Yi-Zhi-Chan manipulation efficacy. Limitations of this study include a relatively small sample size and the lack of comparative analysis of different kneading frequencies. Future research should expand sample sizes and explore subgroups with varying frequencies for more detailed investigation.

#### 5. Conclusion

Both Yi-Zhi-Chan (One-Finger Wrap) manipulation and conventional Tuina are effective in alleviating neck dysfunction and clinical symptoms in patients with non-specific cervical spondylosis (NTCS). However, Yi-Zhi-Chan manipulation demonstrates superior

improvements in magnitude and stability of therapeutic effects. Compared to conventional Tuina, Yi-Zhi-Chan manipulation more significantly reduces trapezius trigger point pain (as measured by SF-MPQ), improves cervical function (NDI), increases pressure pain thresholds, and promotes trigger point recovery by decreasing muscle tissue thickness and Young's modulus values assessed via shear wave elastography, with longer-lasting therapeutic effects.

Musculoskeletal ultrasonography enables dynamic monitoring of morphological changes (tissue thickness) and biomechanical properties (Young's modulus, shear wave velocity) of trapezius myofascial trigger points, providing a visualized and quantitative approach for NTCS assessment. This study confirms that Yi-Zhi-Chan manipulation, through specific mechanical transmission techniques, effectively modulates the elasticity and thickness of myofascial tissues. The findings provide clinical evidence supporting the application of Yi-Zhi-Chan manipulation in NTCS treatment and suggest its broader implementation in clinical practice.

## References

- [1] Deng, F., Guo, Y., Zhang, J., He, Y., & Zhang, X. (2025). Clinical efficacy of myofascial point-based Zhusong relaxation method for cervical spondylosis based on the theory of "muscle-bone balance." *Contemporary Medical Forum*, 23(9), 125-127.
- [2] Chen, J., Xiong, S., Liu, S., Luo, Y., Gong, Z., Feng, X., Li, W., & Li, J. (2025). Expert consensus on clinical diagnosis and treatment of non-specific neck pain using jingjin Tuina (2024 edition). *Journal of Shanxi University of Traditional Chinese Medicine*, 26(1), 103-113.
- [3] Liu, L., Huang, Q., Peng, J., Zhu, C., & Bo, C. (2015). Meta-analysis of dry needling for trapezius myofascial trigger points. *Chinese Journal of Rehabilitation Medicine*, 30(3), 269-275.
- [4] Li, J., Wang, J., Chen, D., et al. (2024). Correlation between neck length, relative neck length, height, and incidence of cervical spondylosis. *Chinese Medical Engineering*, 32(11), 16-20.
- [5] Chen, Y., Wang, Y., Wang, M., et al. (2023). Analysis of hospitalization costs and influencing factors in cervical spondylosis patients. *Chinese Medical Records*, 24(11), 38-41.
- [6] Wang, J., Ding, C., & Zhan, G. (2025). Effects of Danggui-Di-Long-Gui-Zhi decoction combined with acupuncture on pain and upper limb numbness in cervical spondylosis. *Chinese Journal of Traditional Chinese Medicine*, 1-8.
- [7] Cai, N. (2002). Clinical experience of Zhang Zhili in treating scleroderma. *Journal of Traditional Chinese Medicine*, 43(9), 657-658.
- [8] Li, R., Yao, L., Hu, Y., Wen, Z., & Gao, L. (2024). Application of vine-type herbs in the treatment of rheumatoid arthritis based on the theory of "unblocking collaterals." *Chinese Journal of Traditional Chinese Medicine*, 42(8), 128-131.
- [9] Yang, W., Wang, D., Cui, M., et al. (2024). Pathogenesis and treatment principles of cervical spondylosis based on the "Taiyang governs the sinews" theory. *Journal of Orthopedic Traditional Chinese Medicine*, 36(11), 68-74.
- [10] Liu, W. (2024). Clinical observation of acupuncture combined with muscle energy technique for cervical spondylosis. [Master's thesis, Jiangxi University of Traditional Chinese Medicine].
- [11] Fu, Y., Li, B., Wu, B., Dai, L., Wang, B., & Liu, Z. (2024). Professor Liu Zhibin's experience in treating primary dysmenorrhea with Chanrou (wrapping) method combined with Zhugu acupuncture. *Chinese Journal of Emergency in Traditional Chinese Medicine*, 33(4), 721-724.
- [12] Yuan, H., Lu, G., & Feng, W. (2016). Clinical observation of Zhugu acupuncture combined with Yi-Zhi-Chan manipulation for vertebral artery type cervical spondylosis. *Shaanxi Journal of Traditional Chinese Medicine*, 37(7), 905-906.
- [13] Yuan, H., & Feng, W. (2016). Observation on the efficacy of Yi-Zhi-Chan manipulation for residual symptoms after manual repositioning in benign paroxysmal positional vertigo. *Journal of Clinical Acupuncture and Moxibustion*, 32(6), 55-58.
- [14] Yao, W. (2021). Clinical study on the effect of acupuncture on trapezius muscle elasticity in cervical spondylosis patients. [Master's thesis, Guangzhou University of Traditional Chinese Medicine].
- [15] Guo, Z. (2009). Preliminary study on the physiological mechanism of skin pressure receptors in Tuina massage. *Hunan Journal of Traditional Chinese Medicine*, 25(6), 86-87.
- [16] Peng, B., Wang, P., & Zhang, Q. (2024). Clinical characteristics of 15 patients with botulinum toxin poisoning. *Chinese Journal of Critical Care Medicine (Electronic Edition)*, 17(5), 407-409.
- [17] Helen, J. E., & Clair, G. R. (2015). Vibration stimuli and the differentiation of musculoskeletal progenitor cells: Review of in vitro and in vivo results. *World Journal of Stem Cells*, 7(3), 568-582.
- [18] Liu, Y., & Wang, H. (2023). Motor rehabilitation for children with autism. Chongqing University Press.
- [19] Aagaard, P. (2003). Training-induced changes in neural function. *Exercise and Sport Sciences Reviews*, 31(2), 61-67.
- [20] Zhao, K. (n.d.). Clinical study of Tanjin-Boluo acupoint manipulation for cervical spondylosis radiculopathy. [Master's thesis, Guangzhou University of Traditional Chinese Medicine].