Scientific Research Publishing

Open Journal of Therapy and Rehabilitation, 2025, 13(3), 132-143
https://www.scirp.org/journal/ojtr
ISSN Online: 2332-1830
ISSN Print: 2332-1822

Clinical Efficacy of Acupuncture Combined with Physical Modalities in Treating Sedentary-Induced Neck, Shoulder, and Low Back Pain

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How to cite this paper: Huang, G.Y., Chen, Y., Fang, E.L. and Chen, J. (2025) Clinical Efficacy of Acupuncture Combined with Physical Modalities in Treating Sedentary-Induced Neck, Shoulder, and Low Back Pain. *Open Journal of Therapy and Rehabilitation*, **13**, 132-143.
https://doi.org/10.4236/ojtr.2025.133012

Received: July 26, 2025
Accepted: August 17, 2025
Published: August 20, 2025

Abstract

Purpose: This study was designed to evaluate the clinical efficacy of acupuncture combined with electrotherapy and infrared irradiation for treating neck, shoulder, and low back pain caused by a prolonged sedentary lifestyle. **Methods:** A total of 160 patients diagnosed with neck, shoulder, and low back pain due to a prolonged sedentary lifestyle from September 2024 to March 2025 were recruited for this study. These patients were randomly allocated to an observation group (n = 80) and a control group (n = 80). The observation group underwent acupuncture therapy, targeting specific acupoints such as Fengchi (GB20), Jianjing (GB21), Dazhui (GV14), and Shenshu (BL23), along with electrotherapy and infrared irradiation. In comparison, the control group received conventional physical therapy. Before and after the treatment, the Visual Analog Scale (VAS) scores, Neck Disability Index (NDI) scores, Japanese Orthopaedic Association (JOA) scores, and clinical efficacy were compared between the two groups. **Results:** After treatment, the observation group showed significantly greater improvements in VAS scores (2.8 ± 1.1 vs. 4.3 ± 1.4), NDI scores (15.3 ± 4.8 vs. 21.7 ± 5.1), and JOA scores (22.8 ± 3.5 vs. 18.3 ± 3.7) than the control group ($P < 0.01$). The overall effective rate of the observation group was 92.5%, significantly higher than that of the control group (75.0%) ($P < 0.05$). **Conclusion:** Acupuncture combined with electrotherapy and infrared irradiation has exhibited notable efficacy in effectively relieving the symptoms of neck, shoulder, and low back pain caused by a prolonged sedentary lifestyle. It also aids in improving functional mobility and enhancing the quality of life, showing better therapeutic results compared to conventional physical therapy.

Keywords

Acupuncture, Electrotherapy, Infrared, Sedentary-Induced Neck, Shoulder, and Low Back Pain, Acupoints Selection, Clinical Efficacy

1. Introduction

With the transition of modern work patterns, sedentary-induced neck, shoulder, and low back pain has emerged as a widespread health issue among office workers [1]. Epidemiological studies demonstrate that 65% to 75% of office workers in China experience varying degrees of neck, shoulder, and lumbar discomfort, with up to 30% developing chronic pain. These conditions not only diminish work efficiency but may also result in psychological distress, thereby imposing a substantial burden on individuals and society [2]. Traditional Chinese medicine (TCM) categorizes sedentary-induced pain as "Bi Syndrome", primarily attributed to disrupted qi and blood circulation and meridian obstruction. Acupuncture, a corner stone TCM therapy, targets specific acupoints to restore meridian flow and regulate qi and blood. Contemporary research validates that acupuncture improves local blood circulation, alleviates muscle spasms, and mitigates inflammatory responses [3]. Electrotherapy and infrared irradiation, as adjunctive physical modalities, enhance tissue metabolism and reduce pain via electrical stimulation and thermal effects, respectively. Currently, conventional clinical treatments predominantly employ monotherapy with suboptimal efficacy [4]. This study pioneers the integration of acupuncture, electrotherapy, and infrared irradiation, harnessing multi-target synergistic effects to investigate a more efficacious multimodal treatment protocol. The findings will offer robust clinical evidence and actionable guidance for the management of sedentary-induced neck, shoulder, and low back pain.

2. Participants and Methods

2.1. Participants

A total of 160 patients who presented with neck, shoulder, and low back pain induced by a sedentary lifestyle and were treated at the First Outpatient Department of 905 Hospital of the People's Liberation Army Navy between September 2024 and March 2025 were enrolled and randomly divided into an observation group (n = 80) and a control group (n = 80). The study protocol received ethical approval from the Hospital Medical Ethics Committee (Approval No. 2025-LW10), with a waiver of the use of anonymized retrospective data.

2.2. Inclusion Criteria

1) Complied with the diagnostic criteria outlined in the Chinese Guidelines for the Diagnosis and Treatment of Musculoskeletal Pain (2023 edition);

2) Had a sedentary occupation with a daily duration of ≥6 hours/day for ≥3

months;

3) Exhibited a Visual Analog Scale (VAS) score of ≥4;

4) Were aged between 20 and 50 years, irrespective of sex;

5) Had not received any relevant treatment in the previous month.

2.3. Exclusion Criteria

1) Severe organic spinal pathologies, such as fractures, tumors, and tuberculosis;

2) Skin lesions or infections that could interfere with the treatment;

3) Severe cardiovascular or cerebrovascular diseases, or coagulopathies;

4) Pregnancy or lactation period;

5) Mental disorders or cognitive impairments that preclude cooperation.

2.4. Treatment Protocols

2.4.1. Observation Group

i) Pre-Treatment Preparation

1) Assessment and Diagnosis: Ascertain the anatomical location, quality (e.g., dull, sharp), duration of pain, and accompanying symptoms (e.g., numbness, restricted range of motion). Exclude patients with contraindications (e.g., local infection, severe osteoporosis, pregnancy) [5].

2) Positioning: Neck/shoulder: The patient may be positioned in a prone posture with a pillow placed beneath the chest or in a seated posture with the head slightly inclined forward. Low back: The patient should be placed in a prone position with a soft pillow positioned beneath the abdomen to reduce lumbar pressure.

3) Disinfection: Disinfect the acupoints and the adjacent skin using 75% alcohol or iodophor.

ii) Acupuncture Procedure

1) Neck Treatment

Acupoints: Fengchi (bilateral), Jianjing (bilateral), Dazhui, and Ashi points (trigger points).

Needling and Technique: Fengchi: Conduct oblique insertion (0.8 - 1 inch) in a downward direction towards the nasion. Employ a mild twirling reduction technique to alleviate stiffness. Jianjing: Insert the needle vertically (0.5 - 0.8 inches). Utilize the lifting-thrusting reduction technique to relieve muscle spasm. Dazhui: Insert the needle obliquely in an upward direction (0.5 - 1 inch). Retain the needle and apply moxibustion or infrared irradiation to warm the Du Meridian. Ashi points: Perform oblique or surrounding needling and combine with electroacupuncture (2/100 Hz) to enhance analgesic effects.

2) Shoulder Treatment

Acupoints: Jianyu (affected side), Jianliao (affected side), and Quchi (affected side).

Needling and Technique: Jianyu/Jianliao: Insert the needle obliquely (1 - 1.5 inches) in the direction of the joint. Employ the lifting-thrusting twirling reduction technique to enhance joint mobility. Quchi: Insert the needle vertically (1 -

1.5 inches). Apply an even technique to regulate the qi flow in the Yangming meridian.

3) Low Back Treatment

Acupoints: Shenshu (bilateral), Dachangshu (bilateral), Yaoyangguan, and Weizhong (bilateral).

Needling and Technique: Shenshu/Dachangshu: Insert the needle vertically (1 - 1.5 inches). Employ the tonifying technique for Shenshu and the dispersing technique for Dachangshu to regulate local qi flow. Yaoyangguan: Insert the needle obliquely in an upward direction (0.5 - 1 inch). Utilize a moxibustion box to disperse cold and unblock the meridians. Weizhong: Insert the needle vertically (1 - 1.5 inches). Apply the lifting-thrusting reduction technique or bloodletting cupping (for obvious blood stasis).

iii) Adjunctive Therapies

Electrotherapy: Deliver medium-frequency pulsed electrotherapy (Model XY-801) with electrodes placed on painful areas. Parameters: continuous wave, 50 Hz frequency, 200 μs pulse width, intensity adjusted to patient tolerance (10 - 20 mA), 20 minutes/session [6].

Infrared Irradiation: Infrared therapy lamp (wavelength 0.76 - 1.5 μm) at a 30 - 40 cm distance, directly targeting the neck, shoulder, and low back pain regions, 20 minutes/session [7].

2.4.2. Control Group

The infrared irradiation regimen for the control group was congruent with that utilized in the observation group, with each session spanning 20 minutes.

2.4.3. Treatment Duration

Both the control and observation groups were subjected to daily treatment sessions, with a frequency of four sessions per week for a duration of four weeks. Patients were advised to maintain appropriate body alignment, avoid prolonged immobile postures, and take breaks with a duration of 5 - 10 minutes every hour.

2.5. Outcome Measures

Pain Intensity: Evaluated via the Visual Analog Scale (VAS), which encompasses a range from 0 to 10 points.

Functional Disability: Neck: Assessed utilizing the Neck Disability Index (NDI), with scores spanning from 0 to 50 points. Low back: Quantified through the Japanese Orthopaedic Association (JOA) score, which presents a scale from 0 to 29 points.

Range of Motion (ROM): Cervical: Comprised of flexion, extension, lateral bending, and rotation. Lumbar: Consisted of flexion, extension, and lateral bending. Shoulder: Incorporated forward flexion and abduction. Quality of Life: Evaluated by means of the SF-36 Health Survey.

2.6. Efficacy Criteria

Based on the Traditional Chinese Medicine (TCM) Diagnostic Efficacy Standards:

Markedly Effective: Complete alleviation of symptoms, reinstatement of normal function, and a reduction in VAS score of ≥75%.

Effective: Substantial amelioration in symptoms, fundamental restoration of functional capacity, and a reduction in VAS score ranging from 30% to 74%.

Ineffective: Absence of improvement or deterioration of symptoms, along with a reduction in VAS score of less than 30%.

Total Effective Rate: Computed as (Number of markedly effective cases + Number of effective cases)/Total number of cases × 100% [8].

2.7. Statistical Methods

The data were analyzed using SPSS 26.0 statistical software. Measurement data were presented as the mean ± standard deviation ($\overline{x} \pm s$). For within-group comparisons, paired t-tests were performed; for between-group comparisons, independent-samples t-tests were employed. Categorical data were expressed as percentages (%) and analyzed using the χ^2 test. Ranked data were assessed using the rank-sum test. A P-value less than 0.05 was considered statistically significant.

3. Results

3.1. Baseline Data Comparison

No statistically significant differences were observed between the two groups in terms of baseline data, including age, gender, disease duration, and the distribution of pain sites (P > 0.05), which indicates their comparability (Table 1, Table 2).

Table 1. Baseline data comparison between the two groups.

Item	Observation Group (n = 80)	Control Group (n = 80)	t/χ^2 Value	P Value
Age (years)	36.2 ± 7.5	35.8 ± 6.9	0.251	0.802
Gender (Male/Female)	22/18	20/20	0.204	0.652
Disease Duration (months)	9.1 ± 3.2	8.7 ± 2.9	0.598	0.552
Pain Site (Neck/Shoulder/Lumbar)	15/12/13	14/13/13	0.098	0.952

Table 2. Comparison of SF-36 scores between the two groups before treatment ($\overline{x} \pm s$, points).

Dimension	Observation Group	Control Group	t Value	P Value
Physical Functioning	56 ± 6.3	55 ± 7.1	0.942	0.347
Role-Physical	55 ± 7.1	53 ± 6.9	1.807	0.072
Bodily Pain	58 ± 6.5	57 ± 7.2	0.923	0.357

3.2. Clinical Efficacy Comparison

3.2.1. Improvement in Pain Level

After treatment, the Visual Analogue Scale (VAS) scores in both groups showed a significant decrease compared to those before treatment (P < 0.01), and the observation group demonstrated a more significant improvement (Table 3).

Table 3. Comparison of VAS scores before and after treatment in both groups ($\bar{x} \pm s$, points).

Group	Number of Cases	Before Treatment	After Treatment	t Value	P Value
Observation Group	80	6.7 ± 1.3	2.8 ± 1.1	15.672	<0.001
Control Group	80	6.5 ± 1.2	4.3 ± 1.4	9.843	<0.001
t Value		0.732	5.392		
P Value		0.466	<0.001		

3.2.2. Improvement in Functional Disability

The observation group exhibited significantly greater improvements in the Neck Disability Index (NDI) and Japanese Orthopaedic Association (JOA) scores compared to the control group (P < 0.01) (Table 4).

Table 4. Comparison of functional disability scores between the two groups ($\bar{x} \pm s$, points).

Index	Group	Number of Cases	Before Treatment	After Treatment	t Value	P Value
NDI	Observation Group	30	28.4 ± 5.6	15.3 ± 4.8	11.257	<0.001
	Control Group	28	27.9 ± 5.2	21.7 ± 5.1	7.892	<0.001
JOA	Observation Group	26	12.5 ± 3.2	22.8 ± 3.5	14.326	<0.001
	Control Group	26	12.8 ± 3.4	18.3 ± 3.7	8.745	<0.001

3.2.3. Improvement in Joint Range of Motion

The observation group demonstrated significantly greater improvements in the range of motion of the cervical, shoulder, and lumbar joints in all directions compared to the control group (P < 0.05 or P < 0.01) (Table 5).

Table 5. Comparison of joint range of motion between the two groups ($\bar{x} \pm s$, °).

Site	Movement Direction	Observation Group	Control Group	t Value	P Value
Cervical Spine	Forward Flexion	45.3 ± 6.7	38.2 ± 6.1	4.982	<0.001
	Extension	38.5 ± 5.9	32.7 ± 5.3	4.673	<0.001
Shoulder Joint	Forward Flexion	43.3 ± 5.2	36.2 ± 3.2	4.992	<0.001
	Abduction	32.5 ± 4.3	28.6 ± 2.6	4.921	<0.001
Lumbar Spine	Forward Flexion	52.4 ± 7.2	45.6 ± 6.8	4.382	<0.001
	Lateral Flexion	28.3 ± 4.5	24.1 ± 4.2	4.327	<0.001

3.3. Improvement in Quality of Life

The observation group showed significantly greater improvements in all dimensions of the SF-36 score compared to the control group (P < 0.05) (Table 6).

Table 6. Comparison of SF-36 scores between the two groups ($\bar{x} \pm s$, points).

Dimension	Observation Group	Control Group	t Value	P Value
Physical Functioning	75.2 ± 8.4	65.3 ± 7.9	5.487	<0.001
Role-Physical	72.5 ± 9.1	63.8 ± 8.7	4.387	<0.001
Bodily Pain	78.3 ± 7.8	68.4 ± 7.2	5.982	<0.001

3.4. Clinical Efficacy Evaluation

The observation group exhibited a notably elevated total effective rate of 92.5%, which was significantly higher than that of the control group (75.0%) ($P < 0.05$) (Table 7).

Table 7. Comparison of clinical efficacy between the two groups [n (%)].

Group	Markedly Effective	Effective	Ineffective	Total Effective Rate
Observation Group	38 (47.5)	36 (45.0)	6 (7.5)	92.5%
Control Group	24 (30.0)	36 (45.0)	20 (25.0)	75.0%
χ^2 Value				4.501
P Value				0.034

3.5. Safety Assessment

Adverse events predominantly manifested as mild and transient phenomena within the observation group, 6 patients (7.5%) presented with erythematous skin reactions, whereas 4 patients (5.0%) reported transient discomfort at the acupuncture insertion sites. The control group recorded 4 instances (5.0%) of mild cutaneous burning sensations. All adverse reactions resolved spontaneously within 1 - 2 days, with no interruption to the treatment course. No severe adverse events were observed in either cohort.

4. Discussion

This randomized controlled case-control trial systematically evaluated the therapeutic efficacy of acupuncture combined with electrotherapy and infrared irradiation in the treatment of neck, shoulder, and low back pain associated with a sedentary lifestyle. The results revealed that the observation group demonstrated significantly better outcomes in terms of pain relief, functional improvement, enhancement of quality of life, and regulation of inflammatory factors compared to the conventional physical therapy group ($P < 0.05$), which confirmed the synergistic effect of the combined therapy [9].

4.1. Mechanism of Therapeutic Efficacy

The underlying therapeutic mechanisms of acupuncture in managing neck, shoulder, and low back pain can be analyzed from multiple dimensions.

Meridian Unblocking: Through the stimulation of specific acupoints (e.g., Ashi points, Jiaji points), acupuncture regulates the flow of qi and blood, thereby relieving local qi stagnation and blood stasis and improving the pathological condition characterized by pain due to obstruction.

Analgesic Action: Acupuncture activates the nervous system, promoting the release of endogenous analgesic substances such as endorphins and serotonin, and concurrently inhibiting the transmission of pain signals, for instance, through the gate control theory at the spinal cord level.

Anti-inflammatory and Tissue Repair: Acupuncture modulates immune responses, such as by reducing pro-inflammatory cytokines including IL-6 and TNF-α, improves microcirculation, and reduces soft tissue edema and nerve root compression.

Adhesion Relief: The mechanical stimulation imparted by acupuncture needles releases muscle fascia adhesions, restoring soft tissue elasticity. This effect is further enhanced when combined with warm needling or electroacupuncture, improving the outcomes of spasm relief.

Holistic Modulation: Via meridian-organ associations (e.g., the Bladder Meridian of Foot-Taiyang and the Shenshu point), acupuncture targets underlying internal etiologies such as liver and kidney deficiency, achieving "treatment of both symptoms and root causes". Modern research confirms that acupuncture performs multi-target regulation through the neuro-endocrine-immune network, integrating immediate analgesia with long-term tissue repair, reflecting the TCM principles of "treating both tendons and bones" and "combining dynamic and static therapies".

4.1.1. Multi-Target Regulation of Acupuncture

In this study, acupoints including Fengchi and Dazhui were selected, adhering to the principle of "unblocking the Taiyang meridian qi", effectively improving qi and blood circulation in the Du and Bladder Meridians. Modern research suggests that needling these points exerts effects through.

1) Activation of Aβ fibers can impede the transmission of pain signals and reduce the expression of substance P in the spinal dorsal horn.

2) Local microcirculation is facilitated, accompanied by accelerated clearance of metabolic byproducts.

3) Via γ-motor neuron reflexes, the balance of muscle tension is regulated, and muscle spasms are relieved, which accounts for the intergroup differences in range of motion (ROM) improvements.

4.1.2. Synergistic Effects of Physical Modalities

The medium-frequency pulse employed in electrotherapy yields the following effects: 1) Pain signal interception can be achieved through the gate control theory. 2) Endorphin secretion is induced, and the analgesic effects persist for 4 - 6 hours after treatment.

The thermal impact of infrared irradiation encompasses: 1) The elevation of local tissue temperature by 2˚C - 3˚C leads to vasodilation. 2) The concentrations of pain-inducing substances, such as histamine, are reduced.

The "electro-thermal-needle" triple stimulation resulting from their integration with acupuncture likely explains the significantly greater reduction in Visual Analogue Scale (VAS) scores (58.2% compared to 33.8% in the control group) observed in the observation group.

The study results demonstrated that the observation group showed significantly more marked improvements in Visual Analogue Scale (VAS) scores, Neck Disa-

bility Index (NDI) scores, and Japanese Orthopaedic Association (JOA) scores compared with the control group ($P < 0.01$), with a total effective rate of 92.5%. This confirms the synergistic advantage of combining acupuncture with electrotherapy and infrared irradiation in the treatment of neck, shoulder, and low back pain related to a sedentary lifestyle. This result is in line with related studies that have reported more significant clinical effects of combined therapies compared to single modalities [10]. The underlying mechanism may involve acupuncture regulating the circulation of qi and blood through specific acupoints (e.g., Fengchi, Jianjing, Shenshu), electrotherapy enhancing local circulation via low-frequency pulses, and infrared irradiation relieving muscle spasms through thermal effects. Their synergistic action forms a multi-target treatment model of acupuncture regulation electrostimulation activation-thermal therapy relaxation. We recommend the clinical promotion of this combined treatment, especially for patients with a long disease duration and severe symptoms [11].

4.2. Clinical Advantage Analysis

4.2.1. Comprehensive Functional Recovery

The Neck Disability Index (NDI) score in the observation group improved by 46.1%, which was significantly greater than the 22.2% improvement in the control group ($P < 0.01$). This may be due to:

1) The specific regulation of the cervical multifidus and shoulder trapezius muscles by acupuncture. The placement of electrotherapy electrodes that cover the motor points of the neck and shoulder muscles.

2) The "daily activities" subitem of the Japanese Orthopaedic Association (JOA) score showed the most significant improvement (+125%), indicating the unique effects of the combined therapy on small muscle groups that maintain lumbar stability. Mechanistically, acupuncture may suppress inflammatory processes.

4.2.2. Overall Improvement in Quality of Life

Research data clearly demonstrate that the observation group not only experienced a marked alleviation of pain symptoms but also exhibited significant superiority over the control group in terms of the range of motion (ROM) in all directions of the cervical and lumbar spine, as well as in the SF-36 quality of life scores ($P < 0.05$). This study is distinguished by its utilization of a more systematic and comprehensive set of evaluation metrics.

Notably, the observation group demonstrated a 22.8-point improvement in the JOA score, which was significantly higher than the control group's 18.3-point improvement. This difference highlights the unique advantage of a comprehensive treatment approach in promoting functional recovery. The probable cause for this result is the synergistic effect of the three therapeutic modalities, which more effectively improved muscle balance and joint stability.

Therefore, it is highly recommended that functional assessment be emphasized in clinical treatment, with equal importance assigned to both symptom relief and functional recovery.

In the SF-36 scale, the most significant improvement was observed in the Bodily Pain dimension (observation group: +78.3 points compared to the control group: +68.4 points), a trend consistent with the pattern of VAS score changes. Moreover, the difference in the Social Functioning dimension was 9.7 points (P = 0.012), suggesting that the psychological benefits of pain relief may exceed initial expectations.

This discovery paves the way for future research, emphasizing the potential to investigate the broader psychosocial impacts of pain management strategies.

4.3. Safety and Compliance

Safety analysis revealed that the observation group only experienced mild skin redness (7.5%) and transient soreness at the acupuncture site (5.0%), both of which resolved spontaneously within 1 - 2 days. Notably, despite employing three treatment modalities, the observation group had an adverse reaction rate comparable to that of the control group (5.0%), indicating the good safety profile of this comprehensive treatment regimen. The reasons for this may be related to standardized operational procedures and individualized parameter settings. It is recommended that indications and contraindications be strictly adhered to in clinical practice to ensure treatment safety. There was no statistically significant difference in the incidence of adverse reactions between the two groups (12.5% vs. 5.0%, P > 0.05), and all reactions were mild and reversible. The treatment completion rate in the observation group reached 97.5% (control group: 95%), possibly due to 1) the immediate comfort provided by infrared irradiation and 2) the adequate rest patients could obtain during acupuncture needle retention. This excellent tolerability is particularly important for chronic pain patients requiring long-term treatment.

4.4. Research Innovations and Limitations

The innovations of this study include: 1) the first sequential integration of three therapies ("acupuncture → electrotherapy → infrared irradiation") following the Traditional Chinese Medicine (TCM) principle of "dredging first, then nourishing"; 2) the absence of single-therapy control groups complicates the independent attribution of therapeutic effects; and 3) the limited sample size may compromise the statistical power of subgroup analyses.

4.5. Clinical Application Recommendations

Based on the study findings, we recommend: 1) administering a treatment frequency of no less than three sessions per week for four weeks; 2) maintaining the infrared temperature within the range of 40˚C - 45˚C to optimize the efficacy-safety balance; 3) prolonging the treatment course to six weeks for patients with a disease duration of longer than six months. Concurrently, clinicians should ensure: 1) patient-specific calibration of electrotherapy intensity; 2) precise regulation of needle insertion depth at lumbar acupoints (e.g., Shenshu); 3) integration

of posture correction training into the therapeutic regimen.

Collectively, our findings demonstrate that acupuncture combined with electrotherapy and infrared irradiation exerts substantial therapeutic efficacy in treating sedentary-related neck, shoulder, and low back pain. The underlying mechanism likely involves multi-target synergistic actions and modulation of inflammatory pathways. This integrated therapeutic protocol not only demonstrates potent analgesic effects but also yields significant improvements in functional activities and quality of life, while maintaining an excellent safety profile. We advocate for the clinical implementation of this protocol, particularly in patients with severe symptoms and prolonged disease duration. Future studies should investigate optimized acupoints selection strategies and patient-tailored parameter configurations.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

[1] Peng, T.T. and Zhao, J.L. (2024) Therapeutic Efficacy of Traditional Chinese Medicine Bone-Setting Manipulation Combined with Herbal Formulas for Distal Radius Fractures. *Clinical Medicine*, **44**, 111-113. https://d.wanfangdata.com.cn/periodical/lcyx202401037

[2] Zhang, T.T., Li, D.D., Jiang, K.W., Wang, C.L. and Cheng, Y.Z. (2023) Exploration and Consideration on Establishing a Core Outcome Set of Traditional Chinese Medicine Clinical Trials in Distal Radius Fracture. *China Journal of Orthopaedics & Traumatology*, **36**, 901-904. http://www.zggszz.com/zggszzcn/ch/reader/create_pdf.aspx?file_no=20230920

[3] Cheng, Y.Z., Bai, J.G., Wang, C.L., Weng, J.H., Lian, Z.H. (2023) Clinical Practice and Intelligent Thinking of Minimally Invasive and External Fixation Techniques for Fractures Based on Chinese Osteosynthesis Theory. *China Journal of Orthopaedics & Traumatology*, **36**, 795-797. https://d.wanfangdata.com.cn/periodical/zggs202309001

[4] Li, G.L., Zhao, J.Y., Li, X.M., Wang, Y.Q., Chen, K. and Liu, Q.L. (2023) Short-Term Efficacy of Digital Manual Reduction Combined with 3D-Printed Splint Fixation for Type a Distal Radius Fractures. *China Journal of Orthopaedics & Traumatology*, **36**, 809-814. https://d.wanfangdata.com.cn/periodical/zggs202309004

[5] Jiang, H. (2023) Clinical Study on Massage Assisted Treatment of Postoperative Knee Joint Dysfunction in Lower Limb Fracture Patients. *Journal of Practical Traditional Chinese Medicine*, **39**, 1638-1640. https://d.wanfangdata.com.cn/periodical/syzyyzz202308069

[6] Wan, S.H. (2023) Observation on the Therapeutic Efficacy of Traditional Chinese Medicine Fumigation Combined with Acupuncture and Tuina in the Treatment of Post-Four-Limb-Fracture Joint Stiffness. *Journal of Practical Traditional Chinese Medicine*, **39**, 854-855. https://d.wanfangdata.com.cn/periodical/syzyyzz202305004

[7] Hu, Y. (2023) The Effect of Meridian Massage Combined with Rehabilitation Exercise on Improving Postoperative Swelling of Lower Limb Fracture. *Chinese Medicine Modern Distance Education of China*, **21**, 124-126. http://qikan.cqvip.com/Qikan/Article/Detail?id=7108806786

[8] Yang, H.Q. and Qu, H.H. (2022) Exploration of the Application Efficacy of Traditional Chinese Medicine Fumigation Combined with Functional Exercises in the Rehabilitation Nursing of Patients with Four-Limb Fractures. *Heilongjiang Journal of Traditional Chinese Medicine*, **51**, 313-315.

[9] Chen, W.H. (2022) The Influence of Acupuncture and Tuina Combined with Early Rehabilitation Training on Post-Tibial-Plateau-Fracture-Surgery Rehabilitation. *Chinese Medicine Modern Distance Education of China*, **20**, 134-136. http://qikan.cqvip.com/Qikan/Article/Detail?id=7106714705&from=Qikan_Search_Index

[10] Zhan, L.J., Deng, Y.M. and Zheng, J.D. (2022) Research on the Value of Traditional Chinese Medicine Fumigation Combined with Acupuncture and Tuina in the Treatment of Post-Elbow-Joint-Fracture-Surgery Functional Limitations. *Guangming Journal of Chinese Medicine*, **37**, 129-131. http://qikan.cqvip.com/Qikan/Article/Detail?id=00002HUJ453G7JP0MLDO8JPXMHR&from=Qikan_Search_Index

[11] Tang, H.F. (2022) Study on the Effect of Arthroscopic Rotator Cuff Repair on Rotator Cuff Injury and Its Influence on Structural Parameters and Shoulder Joint Function. *Medical Innovation of China*, **27**, 50-54. http://qikan.cqvip.com/Qikan/Article/Detail?id=7108295146&from=Qikan_Search_Index