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The Effectiveness of Different Exercise Therapies in the Intervention of Cervicogenic Dizziness: A Network Meta-Analysis

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ADMINISTRATIVE INFORMATION

Support - Regional Natural Fund.

Review Stage at time of this submission - Data analysis.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 13 March 2025 and was last updated on 13 March 2025.

INTRODUCTION

Review question / Objective P:Patients with cervical vertigo I:Different exercise therapies combined with conventional therapy C:Conventional therapies (acupuncture, moxibustion, massage, medication, etc.) O:Cervicogenic dizziness symptoms and functional assessment scale (ESCV), left and right vertebral arteries (LVA, RLA) average blood flow velocity, basilar artery (BA) average blood flow velocity.

Rationale Cervical vertigo (CV), also known as cervicogenic vertigo, refers to a clinical syndrome characterized by symptoms such as dizziness, nausea, vomiting, and imbalance caused by various cervicogenic factors such as cervical degeneration, soft tissue strain, and cervical structural disorders. The pathological mechanism of cervical vertigo is not yet clear, and vertebral-basilar artery insufficiency may be one of the important pathogenic mechanisms. Studies have confirmed that traditional Chinese medicine decoctions and acupuncture treatment have significant advantages. Manipulation and traction therapy are usually used as adjuncts, and combined treatment with multiple therapies can improve clinical efficacy. Exercise therapy has the advantage of convenient operation compared to other traditional Chinese and Western medical therapies and is widely used in the treatment of cervical vertigo. However, there are many types of exercise therapy currently available, and the direct comparison of the therapeutic effects between different exercise therapies for this disease is not clear. Therefore, this study takes conventional treatments such as acupuncture, needle knife, manipulation, moxibustion, and medication as common controls and uses network meta-analysis to explore the clinical efficacy of different exercise therapies combined with conventional treatment for CV.

Condition being studied Exercise therapy has been widely applied in the treatment of cervical vertigo. However, with the multitude of exercise therapy options available, this study employs a network meta-analysis to explore the clinical

effects of different exercise therapies combined with conventional treatment on cervical vertigo (CV).

METHODS

Search strategy 1 (((TS=(Cervical Vertigo)) OR TS=(Cervicogenic Vertigo)) OR TS=(Vertebral Artery Type Cervical Spondylosis)) OR TS=(Vertebrobasilar Artery Insufficiency) and Preprint Citation Index (Exclude – Database)
2 ((((((((((((((((((((TS=(Exercise)) OR TS=(Training)) OR TS=(Gongfa)) OR TS=(Kinesiotherapy)) OR TS=(Resistance Training)) OR TS=(Muscle Strength Training)) OR TS=(Aerobic Exercise)) OR TS=(Core Stability Training)) OR TS=(Motor Control Training)) OR TS=(Muscle Energy Technique)) OR TS=(Breathing Training)) OR TS=(Yoga)) OR TS=(Pilates)) OR TS=(Tai Chi)) OR TS=(Baduanjin)) OR TS=(Yijinjing)) OR TS=(Shaolin Neigong)) OR TS=(Wuqinxi)) OR TS=(Qigong)) OR TS=(Comprehensive Exercise)) OR TS=(Comprehensive Training)
3 ((TS=(Randomized Controlled)) OR TS=(Randomized)) OR TS=(RCT)
4 #3 AND #2 AND #1 and Preprint Citation Index (Exclude – Database).

Participant or population Patients with cervical vertigo.

Intervention Different exercise therapies combined with conventional therapy.

Comparator Conventional therapies (acupuncture, moxibustion, massage, medication, etc.)

Study designs to be included RCT.

Eligibility criteria Inclusion Criteria:① Randomized controlled trials published domestically and internationally; ② The subjects of the included literature meet the diagnostic criteria for cervical vertigo and do not have other critical illnesses; ③ The intervention measures for the control group are conventional treatments (acupuncture, moxibustion, massage, medication, electrotherapy, hot compress, physical therapy, etc.). The observation group is based on conventional treatment and includes exercise therapy, with no restrictions on the type or dosage of exercise therapy; ④ Outcome indicators are the cervical vertigo symptom and functional assessment scale (ESCV) score, and at least one of the average blood flow velocities of the left vertebral artery (LVA), right vertebral artery (RVA), and basilar artery (BA) measured by transcranial color Doppler (TCD).

Exclusion criteria:① Intervention methods that combine other therapies that may affect the outcome, such as control groups containing exercise therapies similar to those in the observation group; ② Repeatedly published or incomplete data literature; ③ Literature that is not possible to obtain the full text; ④ Literature with poor baseline balance between groups.

Information sources Web of Science, PubMed, Embase, Cochrane Library, China National Knowledge Infrastructure (CNKI), Wanfang Database (Wanfang), VIP Information (VIP), China Biomedical Literature Service System.

Main outcome(s) Outcome indicators are the cervical vertigo symptom and functional assessment scale (ESCV) score, and at least one of the average blood flow velocities of the left vertebral artery (LVA), right vertebral artery (RVA), and basilar artery (BA) measured by transcranial color Doppler (TCD).

Data management NoteExpress.

Quality assessment / Risk of bias analysis Cochrane's Risk of Bias Tool for Randomized Trials (Version 2.0).

Strategy of data synthesis The study employs a frequency framework model and performs a network meta-analysis using Stata 18, drawing network graphs with the software and conducting a global inconsistency test on the data. If a loop exists, the node-splitting method is used for a local inconsistency test. If $P>0.05$, it indicates that the direct and indirect comparisons are consistent, and a consistency model can be used for analysis; if $P<0.05$, it suggests that the inconsistency model is significant, and a consistency model analysis cannot be performed. Instead, pairwise comparisons are made using meta-analysis. By analyzing with the consistency model, the Surface Under the Cumulative Ranking curve (SUCRA) and league table are drawn to determine the best treatment option.

Subgroup analysis Subgroup analysis was conducted based on patient age, gender, and other factors.

Sensitivity analysis Use software to perform a global inconsistency check on the data. If a loop exists, use the node-splitting method for a local inconsistency check. If $P > 0.05$, it indicates that the consistency between direct and indirect comparisons is good, and a consistency model

can be used for analysis; if $P < 0.05$, it shows that the inconsistency model is significant and consistency model analysis cannot be performed, and meta-analysis should be used for pairwise comparisons.

Language restriction No.

Country(ies) involved China.

Keywords Exercise therapy; Cervicogenic Dizziness; Vertebral Artery Type of Cervical Spondylosis; Network Meta-Analysis.

Contributions of each author

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