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ADMINISTRATIVE INFORMATION**Support** - No support.**Review Stage at time of this submission** - Preliminary searches.**Conflicts of interest** - None declared.**INPLASY registration number:** INPLASY202680015**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 3 August 2026 and was last updated on 3 August 2026.**INTRODUCTION**

Review question / Objective This study conducts a systematic review of relevant literature from both domestic and international sources to evaluate the intervention effects of progressive muscle relaxation training in the elderly population, so as to provide evidence-based support for further promoting clinical standardization.

Rationale Progressive muscle relaxation training (PMRT) has been widely used to alleviate anxiety and improve sleep. However, there is currently no consensus regarding its intervention effects specifically in the elderly population. The findings from existing primary studies are somewhat heterogeneous, and the outcome measures employed across these studies are not entirely consistent. Consequently, a comprehensive and systematic synthesis of the current evidence is lacking.

Condition being studied The Seventh National Population Census of China in 2020 reported that there were 264 million people aged 60 years and above in the country, and this number is projected to reach 460 million by 2040. With advancing age, older adults experience a decline in physiological functions, a high prevalence of chronic diseases with multimorbidity, and changes in social roles and family dynamics. These factors predispose them to psychological issues such as loneliness and anxiety, along with related complications, which negatively affect their overall health perception and life satisfaction, ultimately increasing family caregiving burdens and healthcare costs, and impairing quality of life. Therefore, exploring safe, effective, and easily implementable non-pharmacological interventions to improve the mental health of the elderly population is of significant public health importance.

METHODS

Search strategy aged[MeSH Terms]" OR "elderly[Title/Abstract]" OR "senior[Title/Abstract]" OR "older adults[Title/Abstract]" OR "older patients[Title/Abstract]" OR "older people[Title/Abstract]" AND ("muscle Relaxation [MeSH Terms]" OR "muscle relaxation [Title]" OR "relaxation training[Title]" OR "relaxation technique[Title]" OR "relaxation therapy[Title]" OR "progressive muscle relaxation[Title]" OR "progressive relaxation[Title]" AND ("clinicaltrial[Filter]" OR "randomized controlled trial[Filter]).

Participant or population Older adults aged 60 years and above.

Intervention The intervention group received progressive muscle relaxation training (PMRT). PMRT is a gradual, sequential technique involving alternating tension and relaxation of muscle groups. It requires a comfortable, quiet environment. Participants were instructed to empty their bladder and bowels before training, adopt a comfortable sitting or supine position, and then follow verbal guidance to begin by clenching their fists, tensing the muscles for 5–10 seconds to sense the tension, and then relaxing for 5–10 seconds to experience the sensation of relaxation.

Comparator The control group received routine care, which included conventional oral health education, guidance on medication use and analgesia, dietary advice, and rehabilitation training. For those who experienced negative emotions, routine psychological counseling was also provided.

Study designs to be included Randomized controlled trials.

Eligibility criteria Language: Only studies published in Chinese or English will be included. Publication period: Studies published from database inception to May 2026 will be considered.

Study setting: Studies conducted in hospitals, communities, or long-term care facilities are eligible

Population details: Participants aged 60 years and above.

Intervention details: Studies that evaluate the effects of progressive muscle relaxation training (PMRT) are eligible.

Full-text availability: Studies for which the full text cannot be obtained after contacting the authors will be excluded.

Information sources Data were retrieved from the following databases: PubMed, Web of Science, Embase, Cochrane Library, EBSCO, CINAHL, CNKI (China National Knowledge Infrastructure), Wanfang Database, VIP Database, and the Chinese Biomedical Literature Database (CBM/SinoMed).

Main outcome(s) The primary outcome measures include anxiety, depression, sleep quality, pain, and quality of life, among others.

Additional outcome(s) Activities of Daily Living (ADL).

Data management 1. Literature management: All retrieved records will be imported into EndNote X9 for automatic deduplication and classification. Different folders will be created to manage the screening process (e.g., initial screening, full-text review, and final inclusion).

2. Data extraction: A standardized data extraction form will be developed using Microsoft Excel. The extracted information will include general study characteristics (e.g., first author, publication year, country), participant characteristics (e.g., age, sample size), intervention details (e.g., duration of PMRT sessions), and outcome measures.

3. Independent screening and cross-checking: Two independently trained reviewers will perform the literature screening and data extraction in duplicate. Any disagreements will be resolved through discussion or, if necessary, by consultation with a third senior reviewer.

4. Storage and backup: All data files will be securely stored and regularly backed up to ensure data integrity and security.

Quality assessment / Risk of bias analysis Two reviewers will independently assess the methodological quality of the included studies using the quality assessment tool recommended by the Cochrane Handbook for Systematic Reviews of Interventions (Version 5.1.0) [12]. Any disagreements will be resolved by consultation with a third reviewer.

Strategy of data synthesis Data analysis was performed using RevMan 5.4 software. For continuous measurement data collected using identical assessment tools, the weighted mean difference (MD) was used for analysis; otherwise, the standardized mean difference (SMD) was employed, along with its 95% confidence interval

(CI). For data lacking standard deviations, conversion was performed according to the specified formula. The χ^2 test was utilized to assess heterogeneity. When the heterogeneity test yielded a P -value > 0.10 and $I^2 < 50\%$, a fixed-effects model was applied for the meta-analysis; conversely, when $P \leq 0.10$ and $I^2 \geq 50\%$, a random-effects model was adopted for the meta-analysis.

Subgroup analysis In cases of substantial heterogeneity (i.e., high I^2) in the meta-analysis, subgroup analyses will be performed according to participant characteristics (chronic diseases / mental disorders / acute conditions) and intervention duration.

Sensitivity analysis Sensitivity analyses excluding each individual study did not materially alter the overall results, indicating that the findings of this meta-analysis are robust.

Language restriction Chinese or English.

Country(ies) involved China.

Other relevant information No

Keywords Progressive muscle relaxation; Aged; Psychological status; Quality of life; Meta-analysis.

Dissemination plans The findings of this systematic review will be disseminated through multiple channels. First, the results will be submitted for publication in a peer-reviewed journal in the fields of nursing, geriatrics, or rehabilitation. Second, we plan to present key findings at relevant national academic conferences (e.g., the annual meeting of the Chinese Nursing Association or Geriatrics Society) to reach clinical practitioners and researchers. Additionally, if the findings provide clear evidence of effectiveness, we will prepare a summary report in Chinese for healthcare policymakers and clinical guideline developers to inform practice recommendations for older adults.

Contributions of each author

Author 1 - Xiaona Zhang - Primary responsibilities included drafting the manuscript, study screening, quality assessment, and data extraction.

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Author 2 - Jie Zhao - Study screening, quality assessment, and data extraction.

Author 3 - Fang Yu - Data analysis.

Author 4 - Hongyan Lu - Conceptualization, Review & editing.

Author 5 - Xindan Li - Search strategy development and execution.

Author 6 - Jiali Xue - Search strategy development and execution.