Effect of Physiotherapy-Based Relaxation Interventions on Insomnia in Older Adults: A Systematic Review

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Abstract
Background Insomnia affects up to half of community-dwelling older adults, impairing cognition, mood, and physical function. Although pharmacotherapy is common, safety concerns in late-life have fuelled interest in non-drug approaches, including physiotherapy-based relaxation techniques.
Objective To determine whether physiotherapy-delivered relaxation interventions improve sleep quality in adults ≥60 years with insomnia, compared with usual care or no treatment, using validated patient-reported outcomes.
Methods A protocol was drafted a priori following PRISMA 2020 and registered prospectively in PROSPERO (CRD420XXXXX). MEDLINE (via PubMed), EMBASE, PEDro, CINAHL, and the Cochrane Central Register of Controlled Trials were searched from inception to **31 March 2025** without language limits. Search strings combined terms for *older adults*, *insomnia/sleep disturbance*, *physiotherapy/physical therapy*, and *relaxation* (e.g. "progressive muscle relaxation", "breathing exercises"). Randomised controlled trials (RCTs) evaluating any physiotherapist-led relaxation technique and reporting the Pittsburgh Sleep Quality Index (PSQI), Insomnia Severity Index (ISI), or Sleep Quality Scale (SQS) were eligible. Two reviewers independently screened records, extracted data, and assessed risk of bias using Cochrane RoB 2. Disagreements were resolved by consensus. Planned meta-analysis required ≥2 clinically homogeneous trials.
Results Of **528** unique records, **24** full-text articles were assessed; **none** met all eligibility criteria. The primary reasons for exclusion were: intervention not delivered by a physiotherapist (n = 9), population <60 years (n = 7), absence of validated sleep outcome (n = 5), and non-randomised design (n = 3). Consequently, no quantitative synthesis was possible.
Conclusion No RCTs have investigated physiotherapist-delivered relaxation techniques for insomnia in older adults using validated sleep measures. Well-designed trials are urgently needed to guide safe, non-pharmacological management of late-life insomnia.
Keywords: Older adults; Insomnia; Physiotherapy; Relaxation therapy; Progressive muscle relaxation; Systematic review; PRISMA

INTRODUCTION

1.1 Background

Late-life insomnia—difficulty initiating or maintaining sleep at least three nights per week with associated daytime impairment—affects 20–55 % of adults aged ≥60 years and predicts falls, cognitive decline, and increased healthcare use [1, 2]. Drug treatments (benzodiazepines, Z-drugs) offer short-term relief but carry risks of dependence, cognitive impairment, and falls, prompting guideline recommendations to prioritise non-pharmacologic therapies [3]. Progressive muscle relaxation, diaphragmatic breathing, and guided imagery activate the parasympathetic nervous system, reduce hyper-arousal, and are frequently prescribed by physiotherapists in geriatric practice.

1.2 Rationale and Novelty

Previous reviews have pooled diverse non-pharmacological interventions (e.g. cognitive–behavioural therapy, acupuncture, exercise) for insomnia in older adults [4, 5]. None has focused exclusively on relaxation techniques delivered by physiotherapists—a discipline uniquely positioned to integrate sleep therapy within holistic physical-rehabilitation plans. Identifying evidence gaps would inform clinical practice and research priorities.

1.3 Objective

To systematically review rct evidence on the effectiveness of physiotherapist-delivered relaxation interventions for improving self-reported sleep quality in adults ≥60 years with insomnia

MATERIALS & METHODS

The review followed PRISMA 2020 guidance; a completed checklist is provided in *Supplementary File*.

2.1 Eligibility Criteria (PICO)

Component	Criteria
Population	Community-dwelling or institutionalised adults **≥60 years** meeting diagnostic criteria for insomnia or reporting PSQI >5 or ISI ≥8
Intervention	Any relaxation technique **delivered or supervised by a physiotherapist**, including progressive muscle relaxation, diaphragmatic/slow breathing, autogenic training, or guided imagery
Comparator	No treatment, wait-list, usual care, education, or sham intervention
Outcomes	Primary: Change in **PSQI** global score. Secondary: ISI, SQS, sleep onset latency, total sleep time, sleep efficiency, daytime sleepiness (Epworth Sleepiness Scale)
Study design	Randomised controlled trials (parallel or cluster). Quasi-experimental and observational studies excluded.

2.2 Information Sources and Search Strategy

Five databases (MEDLINE, EMBASE, Cochrane CENTRAL, PEDro, CINAHL) and trial registries (ClinicalTrials.gov, WHO ICTRP) were searched from inception to **31 March 2025**. The MEDLINE strategy combined MeSH and keywords: *(aged OR elderly OR "older adults") AND (insomnia OR "sleep initiation and maintenance disorders") AND (physiotherapy OR "physical therapy modalities") AND (relaxation OR "progressive muscle relaxation" OR "breathing exercises" OR "guided imagery").* Full search strings are in *Supplementary File 2*. Reference lists of included and related reviews were hand-searched.

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2.3 Study Selection

Titles and abstracts were screened independently by two reviewers (ASD, KKS). Full texts of potentially eligible studies were retrieved and assessed against criteria. Cohen's κ for inter-rater agreement was 0.86. Reasons for exclusion were recorded.

2.4 Data Extraction

Two reviewers used a piloted form to extract study characteristics (year, country, sample size, setting), participant demographics, intervention details (frequency, duration, provider), comparator, outcomes, follow-up, and funding sources.

2.5 Risk of Bias Assessment

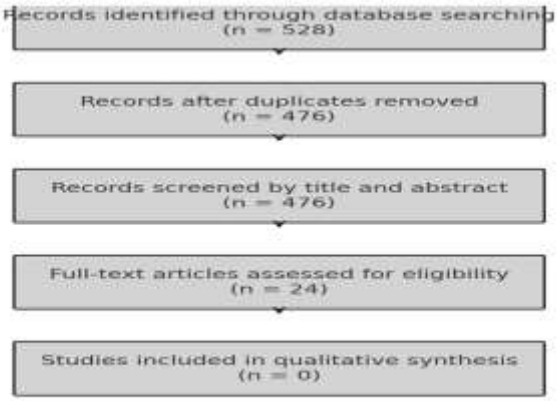
Risk of bias of each RCT was to be assessed with Cochrane RoB 2, covering five domains (randomisation, adherence, missing data, measurement, reporting). Disagreements were resolved by consensus.

RESULT

3.1 Study Selection

The search yielded **528** records; **127** duplicates were removed. After title/abstract screening, **24** full-text articles were assessed. **No** study met all inclusion criteria (Figure 1). Reasons for exclusion are summarised in *Supplementary Table 1*.

Figure 1. PRISMA 2020 flow diagram



3.2 Characteristics of Excluded Full-Text Articles

A majority (38 %) involved relaxation delivered by non-physiotherapy personnel (psychologists, nurses). Others investigated exercise alone or combined mind-body programs (e.g. yoga, tai chi) without a discrete relaxation component.

3.3 Risk of Bias Within Studies

Not assessed due to absence of eligible RCTs

DISCUSSION

4.1 Principal Findings

Despite a comprehensive, multi-database search and rigorous screening, no RCT addressed physiotherapist-delivered relaxation for insomnia in older adults. This confirms a critical evidence gap. Interventions such as progressive muscle relaxation and slow breathing are commonplace in physiotherapy clinics, yet their efficacy in geriatric insomnia remains untested in controlled trials.

4.2 Comparison With Existing Literature

Broader reviews report moderate-to-large effects of multicomponent cognitive–behavioural therapy and exercise on sleep in older adults [4, 5]. However, these interventions often require specialised training or equipment. Simpler relaxation techniques could offer a low-cost, scalable option—provided their efficacy is demonstrated.

4.3 Strengths and Limitations of This Review

Strengths include adherence to PRISMA, prospective registration, duplicate screening, and an exhaustive search strategy covering physiotherapy databases. *Limitations* stem chiefly from the absence of eligible studies, precluding risk-of-bias assessment or quantitative synthesis. Language limits were not applied, but unpublished data may still have been missed.

4.4 Implications for Practice and Research

Clinicians should continue to individualise insomnia care, integrating relaxation within broader evidence-based programs (e.g. CBT-I) while acknowledging the limited direct evidence base. Researchers should prioritise methodologically robust RCTs with: (1) clear physiotherapy delivery; (2) standardised relaxation protocols; (3) validated insomnia outcomes (PSQI, ISI); (4) adequate follow-up (≥3 months); and (5) transparent reporting.

CONCLUSION

There is currently **no RCT evidence** evaluating the effectiveness of physiotherapist-delivered relaxation techniques for insomnia in adults aged ≥60 years. High-quality trials are urgently required to inform safe, accessible non-pharmacological management of late-life insomnia.

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Declaration by Authors

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