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Research Article

Effect of Kinesiophobia on Cervical Range of Motion Post Physiotherapeutic Pain Management – A Systemic Review

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ABSTRACT

Background: Neck pain (NP) refers to discomfort or more severe pain localized in the cervical region. Non-specific NP is characterized by pain affecting the posterior and lateral parts of the neck, spanning from the superior nuchal line to the spinous process of the first thoracic vertebra, without any signs of specific structural pathology or neurological symptoms.

Purpose: This study aims to systematically review randomized controlled trials (RCTs) that assess the effectiveness of interventions targeting kinesiophobia in patients with chronic neck pain.

Data Sources: Relevant RCTs published between January 2015 and January 2025 were identified through searches in EMBASE, PubMed, Medline, PEDRO, and the Cochrane Library. Additionally, manual search methods were employed.

Study Selection: Two independent reviewers assessed the eligibility of studies based on predefined inclusion criteria.

Data Extraction: Reviewers analyzed the quality of the studies and documented their methodologies, designs, interventions, outcomes, and conclusions.

Data Synthesis: A total of ten RCTs met all inclusion criteria.

Limitations: The findings are limited by the diversity of interventions and the small sample sizes of the included studies, highlighting the need for further research.

Conclusions: Physical therapy offers additional benefits, including improving patients' quality of life and reducing kinesiophobia in individuals with chronic neck pain.

Keywords: Physiotherapy, Chronic Neck Pain, Kinesiophobia, Quality of Life.

INTRODUCTION

Neck pain (NP) is characterized by discomfort or more severe pain localized in the cervical region. Non-specific NP refers to pain affecting the posterior and lateral areas of the neck, extending from the superior nuchal line to the spinous process of the first thoracic vertebra, without any signs of structural pathology or neurological involvement. Over the years, therapeutic exercises have been extensively researched, supporting the idea that exercise-based therapies, when combined with mobilization and manipulation, are effective in managing NP. Recent studies have also highlighted the importance of education and information for NP patients, recognizing these as essential components of treatment.

Additionally, cervical conjunct motion, which involves movements of the cervical spine in associated planes relative to the primary movement plane, has been investigated in this population. A reduction in cervical conjunct motion may indicate protective postural control strategies or “adaptations in central nervous system motor processing due

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to chronic pain. Research on neck kinematics in the presence of persistent pain has identified impairments in cervical movement, including reduced accuracy, velocity, smoothness, and head stability.

Most musculoskeletal neck disorders do not have a clear underlying disease or anatomical abnormality and are thus classified as non-specific neck pain (NNP). Understanding the primary risk factors associated with NNP is crucial for implementing preventive strategies to minimize its serious socioeconomic impact. The condition is influenced by multiple factors, including a sedentary lifestyle, insufficient cervical muscle strength, psychosocial elements, and occupational hazards.

There remains uncertainty regarding the medium- and long-term effectiveness of specific exercise types, making it challenging to choose between traditional exercises that focus on improving isometric muscle properties and increasing the range of motion versus task-oriented exercises aimed at early cervical functional recovery. Existing single-factor treatments have generally demonstrated limited effectiveness. Consequently, multidisciplinary biopsychosocial interventions are increasingly recommended for individuals with chronic neck and lower back pain to modify maladaptive thoughts and behaviors, reduce disability, and enhance self-management strategies.

A recent review of cognitive-behavioral therapy for chronic neck pain found that while it resulted in significant short-term pain relief compared to no treatment, these effects were not clinically meaningful. Among the studies reviewed, only one was group-based, but its findings were inconclusive due to methodological limitations. Nonetheless, group-based programs following a biopsychosocial model have been encouraged, particularly to explore the benefits of peer group support.

In managing musculoskeletal pain, various manual therapy approaches are commonly combined with supervised exercise, patient education, and home-based self-care programs. Manual therapy (MT) has been found to alleviate pain and muscle spasms, providing some degree of short-term NP relief. Techniques used in manual therapy include stretching of superficial cervical muscles, passive mobilization involving physiological and accessory movements, massage, and fascial manipulation or release.

METHODS

Data Sources and Search Strategy:

Following the search methodology outlined by Dickersin et al. [12], a comprehensive literature review was conducted with no language restrictions. Randomized controlled trials (RCTs) published between January 2015 and January 2025 were identified through searches in EMBASE, PubMed, the Physiotherapy Evidence Database (PEDro), and the Cochrane Library. The search terms included ‘Chronic Neck Pain’ AND ‘Physiotherapy’ OR ‘Exercise,’ appearing in the title, abstract, or index word fields.

Two independent researchers evaluated the identified publications based on their titles and abstracts. If an article was deemed potentially relevant or if there was insufficient information to determine eligibility, a full copy of the article was obtained. A secondary search phase aimed at identifying RCTs that may have been missed in the databases involved manually reviewing reference lists from retrieved studies and systematic reviews, as well as searching websites containing clinical trial data, theses, and dissertations. Citation indexing was used to track frequently cited authors in the field. Additional information was obtained by consulting local authorities.

Study Selection:

This review included studies involving NP patients who had undergone or were currently receiving physiotherapy treatment, regardless of symptom severity. No restrictions were placed on participant age or gender.

Types of Interventions:

Eligible RCTs compared physiotherapy interventions against placebo, control conditions, or standard care. According to the World Confederation for Physical Therapy, experimental physiotherapy interventions may involve aerobic exercises, strength training, balance exercises, basic body awareness exercises, and electrotherapy modalities. The

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primary component of these interventions had to be physiotherapy, either as a standalone treatment or in combination with other approaches.

Studies that integrated physiotherapy within a broader weight management program were excluded, as the specific effects of physiotherapy could not be isolated. Additional interventions considered included pharmacotherapy, psychoeducation, and cognitive-behavioral or motivational techniques related to exercise adherence. Standard care was defined as the typical treatment a patient would receive outside the research setting, which could include hospitalization, outpatient therapy, or home-based exercise regimens. To be included in the review, RCTs needed to ensure comparable durations for both experimental and control interventions.

Types of Outcomes:

Outcome measures included assessments of NP patients' quality of life, pre- and post-intervention scores on the Tampa Scale of Kinesiophobia, and patient-reported symptoms of chronic NP.

Data Extraction and Quality Evaluation:

Two independent reviewers assessed the quality of the included studies, resolving any disagreements through discussion. If consensus could not be reached, a third reviewer made the final decision. The 5-point Jadad scale [13] was used to evaluate the methodological quality of each RCT, assessing randomization quality, blinding, and participant withdrawals. This psychometrically validated scale assigns scores from 0 to 5, with higher scores indicating stronger methodological rigor. Studies scoring at least 3 were classified as high-quality, while those scoring below 3 were considered methodologically weak.

Data Synthesis and Analysis:

Each study was further evaluated using the PEDro rating system developed by Verhagen et al. [14], which has been widely applied in systematic reviews on physiotherapy. This system considers study design, participant characteristics, sample size, intervention descriptions, and the validity and reliability of outcome measures. The PEDro scale consists of 11 criteria, with the first criterion (eligibility) not contributing to the total score. The remaining 10 criteria were rated independently by two assessors as either "yes" (criterion met) or "no" (criterion not met). If a criterion was not mentioned in the study, it was also rated as "no."

Scores were categorized as follows:

0–3: Poor

4–5: Fair

6–8: Good

9–10: Excellent

Of the 10 studies included, 2 were rated fair, 7 were good, and 1 was classified as excellent.

RESULTS

Study Selection:

A total of 50 articles were identified in the initial electronic search. An additional potentially relevant article was found through manual searches, online databases, and expert consultations. After removing duplicates and reviewing titles, abstracts, and full texts, 14 RCTs met the inclusion criteria (Figure 1). Reasons for exclusion are detailed in the figure. Due to significant variation in study designs and methodologies, a formal meta-analysis was not conducted.

Participants:

A total of 1,050 individuals with NP who had received physiotherapy treatment were included. Four studies involved outpatients, five focused on home-based exercise programs, and one study included inpatients. All participants were

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aged 18 or older. The review included both individuals currently undergoing physiotherapy and those who had completed treatment. Most study participants were women. Table 1 provides detailed participant characteristics.

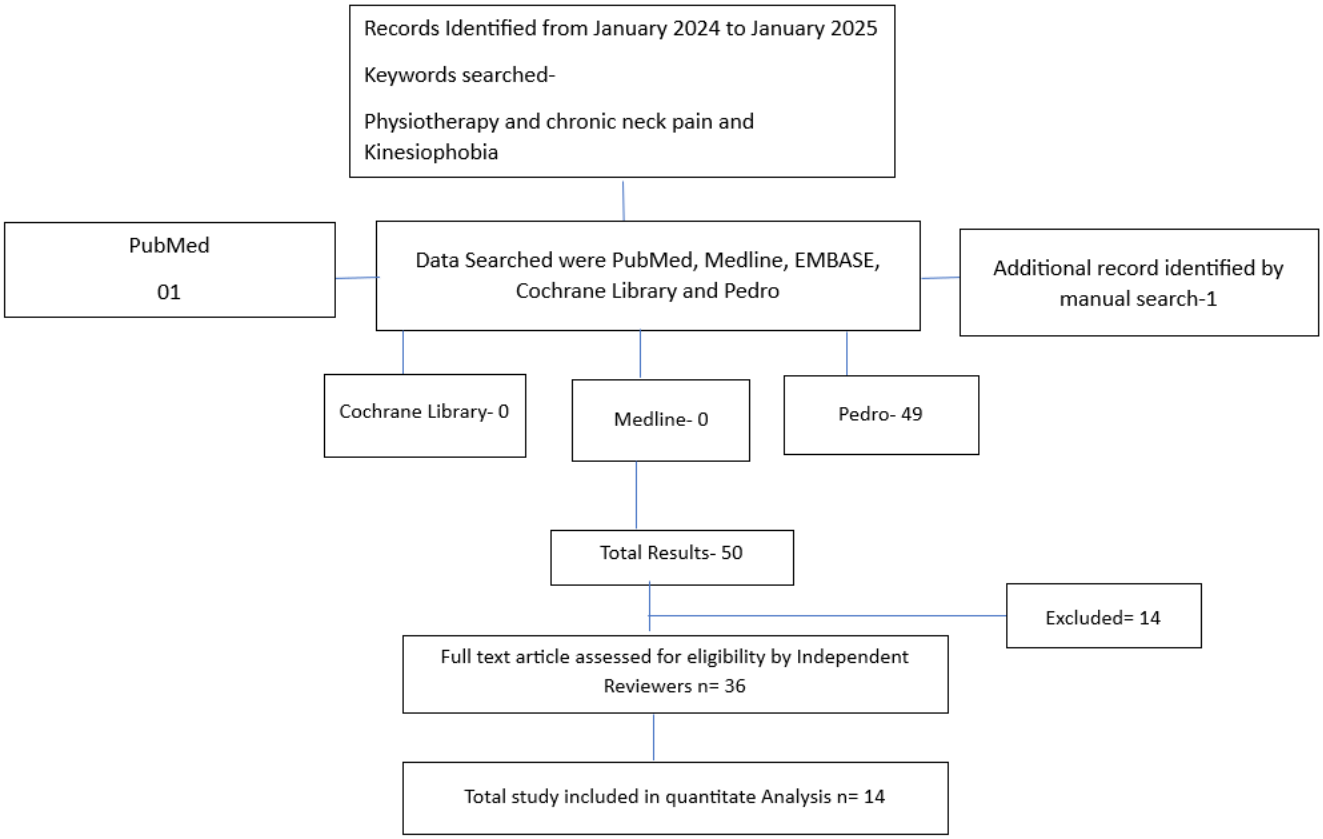

Table 1: A thorough review of various randomised controlled studies was included in this systemic review

Sr. No.	Title	Author & Year of Publication	Participants	I.C. on neck pain	Interventions	Duration	Outcome Measures	Conclusion
1	Sensory-motor training with virtual reality as a complementary intervention to manual therapy for persistent non-specific neck pain: a randomized controlled trial	Daniele EMEDOLIDOLI et al (2024)	40 Participants with neck pain were included in the study.	1. 18-70 years old individuals with persistent NP (≥12 weeks) 2. pain located in the posterior and/ or lateral aspect of the neck between the superior nuchal line and the spinous process of the first thoracic vertebra (assessed through body chart) and with 3. normal vision or corrected using contact lenses or eyeglasses	40 participants were divided into two groups: 1. manual therapy along with sensorimotor rehabilitation exercises using Virtual Reality. Group 2 receives control treatment.	twice a week, for six consecutive weeks	Neck disability Index, Tampa Scale of Kinesiophobia, Numeric Rating Scale, NP and Disability Scale	Sensorimotor training, combined with manual therapy, could enhance kinematic outcomes for NP patients, supporting the potential of VR in rehabilitation
2	Effects of back school-based intervention on non-specific neck pain in adults: a randomized controlled trial	Pablo Hernandez-Lucas et al (2023)	58 participants with neck pain included in the study.	1. age between 18 and 65 years 2. non-specific neck pain for at least three month 3. Visual Analogue Scale	58 participants divided into 2 groups: Group 1 receives strengthening and flexibility exercises while Group 2 receives control treatment.	two sessions per week, for a total of 16 sessions, lasting 45 min	Visual Analogue Scale, Neck Disability Index, Short-Form Health Survey-36, Tampa Scale of Kinesiophobia	The back school-based programme has beneficial effects on pain, neck disability, the physical dimension of quality of life and Kinesiophobia in an adult population with non-specific neck pain

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Sr. No.	Title	Author & Year of Publication	Participants	I.C. on neck pain	Interventions	Duration	Outcome Measures	Conclusion
3	Comparison the Effect of Pain Neuroscience and Pain Biomechanics Education on Neck Pain and Fear of Movement in Patients with Chronic Nonspecific Neck Pain During the COVID-19 Pandemic	Zohre Khosrokiani et al (2022)	80 patients with chronic neck pain were included in the study.	1. men and women aged 18–65 years 2. Visual Analog Scale (VAS) score (range: 1–10) [3 and\8 in the last 24 h 3. history of neck pain (at least 12 weeks and 3 days a week) 4. referral to medical centers to treat neck pain and no initiation of treatment or medication.	80 patients were randomly divided into 2 group. Group 1 receives pain neuroscience education (PNE) while Group 2 receives pain biomechanics education	3 sessions per week	NPRS-11, Tampa Scale of Kinesiophobia	In our study population PNE did not affect the pain index, leading to the conclusion that PNE should not be used as the only treatment, but possibly in combination with other active/passive therapy to enhance the results for patients with nonspecific chronic neck pain.
4	The effects of combined sternocleidomastoid muscle stretching and massage on pain, disability, endurance, Kinesiophobia, and range of motion in individuals with chronic neck pain: A randomized, single-blind study	Buket Büyükturan et al (2021)	60 participants with chronic neck pain were included in the study.	1. ongoing neck pain for a period of at least 3 months 2. aged between 18 and 55 years old	60 participants were randomly divided into 2 groups. Group 1 receives classical massage and stretching exercises were applied to the SCM-muscle while Group 2 receives control treatment.	three times each week for a total of 5 weeks	Pain, Range of motion (ROM), endurance, disability, Kinesiophobia	Stretching exercises and massage applied to the SCM-muscle, together with conventional physiotherapy, can reduce pain and disability, and increase ROM and endurance in individuals with CNP
5	Median Nerve Neural Mobilization Adds No Additional Benefit When Combined with Cervical Lateral Glide in the Treatment of Neck Pain: A Randomized Clinical Trial	Daniel Martin-Vera et al (2021)	72 participants with neck pain were included in the study.	1. between 18–65 years old 2. NP from non-traumatic origin with a clinical evolution of a minimum of 4 weeks 3. with or without radicular symptoms	72 participants were randomly divided into 2 group. Group 1 receives cervical lateral glide with median nerve neural mobilization while Group 2 receives control treatment.	2 weeks for 3 days in a week	Pain Intensity, Body Pain Distribution, Pressure Pain threshold, cervical ROM, Tampa Scale of Kinesiophobia	MNNM gave no additional benefit to CLG in patients with NP regarding pain intensity, symptom distribution, mechanosensitive, functionality, and Kinesiophobia
6	Effects of pain neuroscience education and dry needling for the management of patients with chronic myofascial neck pain: a randomized clinical trial	Pedro Valiente-Castrillo et al (2020)	60 participants with neck pain were included in the study.	1. aged between 18 and 65 years 2. have had mechanical neck pain for at least 12 weeks 3. score 10% or higher on the Neck Disability Index (NDI) questionnaire 4. visual analogue scale 5. at least one active MTrPs.	60 participants were randomly divided into 3 groups: Group 1 receives DN with PNE group, Group 2 receives DN alone, Group 3 receives usual care	10 sessions 2 weeks	Neck pain intensity, neck disability, medication intake, psychological factors	The inclusion of PNE combined with DN resulted in greater improvements in Kinesiophobia, pain anxiety, and pain-related beliefs
7	Scapular exercise combined with cognitive functional therapy is more effective at reducing chronic neck pain and Kinesiophobia than scapular exercise alone: a randomized controlled trial	Norollah Javdaneh et al (2020)	72 participants with neck pain were included in the study.	1.participants between 20 and 45 years of age 2. bilateral neck pain for at least three months 3. participants had to score 37 or above on the Tampa scale of Kinesiophobia	72 participants were randomly divided into 3 groups. Group 1 receives scapular exercise, Group 2 receives scapular exercise with cognitive functional therapy while Group 3 receives Control therapy.	three times a week for six weeks.	visual analogue scale scores, Kinesiophobia, muscles activity.	Adding a programme of cognitive functional therapy to the scapular exercise with a duration of six weeks led to greater improvement in pain intensity, Kinesiophobia and muscle activation when compared with scapular exercise alone in patients with chronic neck pain.
8	Effect of adding motor imagery training to neck stabilization exercises on pain, disability	Norollah Javdaneh, PhD et al (2020)	72 participants with neck pain were included in the study.	1. aged 20 to 45 years who complained of chronic neck pain for over three months	72 participants were randomly allotted to 3 groups. Group 1 receives neck stabilization	three times a week for six weeks.	Visual Analog Scale, Neck Disability Index, Tampa Scale of Kinesiophobia	Neck stabilization exercises in combination with motor imagery training was superior to neck stabilization exercises alone in

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	and Kinesiophobia in patients with chronic neck pain				exercises; Group 2 receives neck stabilization exercises 12 + motor imagery training while Group 3 receives control group			decreasing pain, disability, and Kinesiophobia in patients with chronic neck pain
9	Efficacy of two cognitive behavioural rehabilitation programme for chronic neck pain: A result of Randomised controlled trail.	Marco Monticone et al (2018)	30 participants with chronic neck pain were included in the study	1. Patient diagnosed with neck pain 2. Age more than 18 yrs	30 participants were randomly divided into 2 groups. Group 1 receives Cognitive behavioural therapy while Group 2 receives CBT based on Tempa scale of Kinesiophobia.	4 sessions for 2 weeks	Neck disability Index, Tampa Scale of Kinesiophobia, Numeric Rating Scale, NP, and Disability Scale	Two brief cognitive behavioural programme induces short term effect in patients with chronic neck pain.
10	The Effect of Mulligan Mobilization Technique in Older Adults with Neck Pain: A Randomized Controlled, Double-Blind Study	Oznur Buyukturan et al (2018)	42 patients with chronic neck pain were included in the study.	1. Ongoing NP for at least 3 months having no neurological, rheumatological, or musculoskeletal problems 2. had not taken any analgesic medication for neck pain for the last 3 months	42 patients were randomly divided into 2 groups. Group 1 receives traditional physiotherapy while Group 2 receives traditional physiotherapy-Mulligan mobilization (TPMM)	10 sessions for 2 weeks.	Pain, ROM, functional level, Kinesiophobia, depression, and QoL	In older adults with NP, MMT has been found to have significant effects on pain, ROM, functional level, Kinesiophobia, depression, and QoL
11	Group-based multimodal exercises integrated with cognitive-behavioural therapy improve disability, pain and quality of life of subjects with chronic neck pain: A randomized controlled trial with one-year follow-up	Marco Monticone et al (2016)	170 participants with chronic neck pain were included in the study.	1. pain lasting >3 months 2. an age of >18 years	170 participants were randomly divided into 2 groups. Group 1 receives multidisciplinary rehabilitation programme combining multimodal exercises with psychologist-lead cognitive-behavioural therapy while Group 2 receives General PT exercises.	once a week for a 60-minute session	Neck Disability Index, Tampa Scale for Kinesiophobia, Pain Catastrophizing Scale, pain numerical rating scale, Short-Form Health Survey	A group-based multidisciplinary rehabilitation programme including cognitive-behavioural therapy was superior to group-based general physiotherapy in improving disability, pain and quality of life of subjects with chronic neck pain
12	Effectiveness of Global Postural Re-education in Patients with Chronic Nonspecific Neck Pain: Randomized Controlled Trial	Paolo Pillastrini et al (2016)	94 patients with neck pain were included in the study.	1. Participants of both sexes were included 2. NP lasting for at least 3 months 3. aged 18 to 80 years	94 participants were randomly divided into 2 group. Group 1 receives Global postural re-education intervention while Group 2 receives Manual therapy.	once a week for a 60-minute session	visual analogy scale, Neck Disability Index, cervical range of motion, Tampa Scale of Kinesiophobia	The results suggest that GPR was more effective than MT for reducing pain after treatment and for reducing disability at 6-month follow-up in patients with chronic nonspecific NP.
13	Does a combination of physical training, specific exercises and pain education improve health-related quality of life	K. Søgaard et al (2016)	200 patients with chronic neck pain were included in the study.	1. minimum aged 18 years with: minimum of 6 months of neck pain 2. reduced neck function 3. the neck	200 patients were randomly allotted to 2 groups. Group 1 receives additional exercises for	4 days for 2 weeks.	Short Form-36 Physical, Mental component summary scores, Beck Depression	This multimodal intervention may be an effective intervention for chronic neck pain patients.

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	in patients with chronic neck pain? A randomised control trial with a 4-month follows up			region as the primary pain area.	neck/shoulder, balance and oculomotor function, plus graded physical activity training while Group 2 receives control group.		Inventory-II, Neck Disability Index, Patient-Specific Functioning Scale, Tampa Scale of Kinesiophobia	
14	Cervical kinematic training with and without interactive VR training for chronic neck pain e a randomized clinical trial	Hilla Sarig Bahat et al (2015)	32 patients with chronic neck pain were included in the study.	1. age 18 years or more 2. Prolonged neck pain for more than three months 3. the Neck Disability Index (NDI) score greater than 10%.	32 patients were randomly divided into 2 groups. Group 1 receives kinematic training while Group 2 receives kinematic training plus VR device	30 min each over a period of five weeks	pain intensity, TAMPA scale of Kinesiophobia, static and dynamic balance, global perceived effect, and participant satisfaction	Kinematic training exercises designed to provide an external focus of attention and delivered with or without an interactive VR device, appeared to improve neck disability, cervical motion kinematics, dynamic balance, global perceived effect and patient satisfaction rates in people with mild-moderate chronic neck pain.

Methodological Quality:

The methodological quality of four of the included studies was assessed as weak. Table 2 provides further details on the characteristics of these studies. The most common methodological limitations were small sample sizes and a lack of blinding, particularly concerning participant masking.

Effectiveness of Manual Therapy for Patients with Chronic Neck Pain

Five studies investigated the effectiveness of manual therapy or resistance training in alleviating pain, improving strength, and enhancing the quality of life in individuals with chronic neck pain. Among these, three studies were classified as having good methodological quality, while two were rated as having poor methodological characteristics. In a study by Daniel Emedoli et al., sensory motor training combined with virtual reality was evaluated as a complementary approach to manual therapy. The findings suggested that integrating sensory training with virtual reality and manual therapy resulted in significant improvements for patients experiencing neck pain.

Effectiveness of Cognitive Behavioral Therapy for Patients with Chronic Neck Pain

Out of three studies assessing cognitive behavioral therapy (CBT) for chronic neck pain, two were deemed to have poor methodological quality. One study explored the impact of group-based multimodal exercises combined with CBT, demonstrating improvements in disability, pain, and quality of life. Another study by Norollah Javdaneh et al. compared scapular exercises alone to scapular exercises combined with cognitive functional therapy. Their results indicated that a group-based multidisciplinary rehabilitation program incorporating both scapular exercises and cognitive functional therapy was more effective than scapular exercises alone in reducing pain intensity, kinesiophobia, and improving muscle activation in individuals with chronic neck pain.

Effectiveness of Median Nerve Mobilization for Patients with Chronic Neck Pain

A single study assessed the effectiveness of median nerve mobilization (MNNM) in individuals with chronic neck pain. Findings by Daniel Martin-Vera et al. suggested that MNNM did not provide additional benefits over the control group in terms of pain intensity, symptom distribution, mechanosensitivity, functionality, or kinesiophobia. The study's limitations, including only two treatment sessions and a short follow-up period, highlight the need for further research with improved methodology to better address this research question.

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Effectiveness of Dry Needling for Patients with Chronic Neck Pain

Only one study examined the effectiveness of dry needling (DN), which was found to have poor methodological quality. Pedro Valiente-Castrillo et al. reported that DN alone was more effective than conventional usual care (CUC) in reducing chronic non-specific neck pain and disability at a three-month follow-up. However, combining pain neuroscience education (PNE) with DN led to even greater improvements in kinesiophobia, pain-related anxiety, and pain-related beliefs.

Table 2: Critical Appraisal of all article using Pedro (physiotherapy evidenced database) scale.

Sr. No.	Study	1 (not included in score)	Rating for Criterion										Total score	Main concerns
			2	3	4	5	6	7	8	9	10	11		
1	Daniele EMEDOLIDOLI et al (2024)	✓	✓	✓	✓	=	=	=	✓	✓	✓	✓	08	No Masking (blinding)
2	Pablo Hernandez-Lucas et al (2023)	✓	✓	=	✓	✓	=	=	✓	=	✓	✓	07	There is no hidden allocation, blinding, or intention-to-treat analysis in this study
3	Zohre Khosrokiani et al (2022)	✓	✓	✓	✓	=	=	✓	✓	✓	✓	✓	09	No masking of participants and therapist
4	Buket Büyükturan et al (2021)	✓	✓	✓	✓	=	=	✓	✓	✓	✓	✓	09	No masking of participants and therapist
5	Daniel Martin-Vera et al (2021)	✓	✓	✓	✓	=	=	✓	✓	✓	✓	✓	09	No masking of participants and therapist
6	Pedro Valiente-Castrillo et al (2020)	✓	✓	✓	=	✓	=	=	✓	✓	✓	✓	08	Baseline outcome measures are not taken. The therapist and assessor are not blind
7	Norollah Javdaneh et al (2020)	✓	✓	✓	✓	✓	=	=	✓	+	✓	✓	08	The study did not involve blinding of the therapist and assessor. Additionally, there needed to be more intention to treat analysis.
8	Norollah Javdaneh, PhD et al (2020)	✓	✓	=	✓	✓	=	=	✓	✓	✓	✓	08	No allocation concealment. There was no blinding of the therapist and assessor.
9	Marco Monticone et al (2018)	✓	✓		✓	✓			✓	✓	✓	✓		The study did not involve blinding of the therapist and assessor. Additionally, there needed to be more intention to treat analysis.
10	Oznur Buyukturan et al (2018)	✓	✓		✓	✓			✓	✓	✓	✓		No allocation concealment. There was no blinding of the therapist and assessor

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Sr. No.	Study	1 (not included in score)	Rating for Criterion										Total score	Main concerns
11	Marco Monticone et al (2016)	✓	✓		✓	✓			✓	✓	✓	✓		There is no hidden allocation, blinding, or intention-to-treat analysis in this study
12	Paolo Pillastrini et al (2016)	✓	✓		✓	✓			✓	✓	✓	✓		No masking of participants and therapist
13	K. Søgaard et al (2016)	✓	✓		✓	✓			✓	✓	✓	✓		No masking of participants and therapist
14	Hilla Sarig Bahat et al (2015)	✓	✓		✓	✓			✓	✓	✓	✓		No masking of participants and therapist

DISCUSSION

General Findings:

This systematic review found that, compared to the control group, the physical therapy treatment group demonstrated statistically significant improvements in pain pressure thresholds, range of motion, and clinically meaningful reductions in pain as measured by the NPRS. Throughout the trial, patients reported changes in the nature of their pain, which has been previously documented. In general, pain and kinesiophobia initially increased during physiotherapy but gradually subsided following treatment. The primary goals of treatment for individuals with chronic or myofascial neck pain include pain relief, functional improvement, restoration of lost sensation, and reduction of kinesiophobia.

The review identified a substantial number of studies examining the effects of cognitive behavioral therapy (CBT) on myofascial neck pain symptoms. Improved balance was observed as a result of increased strength, with no adverse events reported. A study by Marco Monticone et al. was the first to demonstrate the positive impact of a multimodal exercise program combined with CBT on patients with chronic neck pain. These findings align with previous research, confirming that such programs improve pain levels, disability, and quality of life in affected individuals.

Paolo Pillastrini et al. investigated the effects of global postural re-education (GPR) on patients with chronic neck pain. Their study found that GPR was more effective than manual therapy (MT) in reducing pain immediately after treatment and in lowering disability levels at a six-month follow-up in patients with chronic non-specific neck pain.

One study involved both treatment groups receiving CBT for 10 sessions over a five-week period. The findings confirmed that GPR was superior to MT in reducing pain post-treatment and improving disability at six months. This supports the conclusion that GPR is a more effective intervention for chronic non-specific neck pain than MT.

Overall, this review highlights the effectiveness of cognitive behavioral therapy, dry needling, strengthening exercises, and manual therapy techniques in reducing pain and disability, improving quality of life, and decreasing kinesiophobia in patients with chronic neck pain.

LIMITATIONS

This review has several limitations that should be acknowledged, despite being among the first to evaluate the effectiveness of various physical therapy approaches for chronic or myofascial neck pain. First, like any systematic review, there is a potential for selection bias. However, a comprehensive search strategy was employed, and study data were independently assessed by two reviewers, with clear justification provided for study exclusions.

Second, performance bias may have influenced the results. Only one of the included studies was double-blinded, which raises the possibility of overestimated treatment effects. While it is often difficult to blind participants in

physical therapy studies, efforts should still be made to collect study data in a masked manner to minimize performance bias. In this review, only three studies were single-blinded.

Third, considerable variability existed across the included RCTs, particularly in terms of treatment frequency, duration, and control interventions. The small sample sizes and methodological limitations in several studies further complicated the ability to draw general conclusions. This variability emphasizes the need for additional research with more standardized methodologies and larger sample sizes.

FUTURE IMPLICATIONS

There is a pressing need for well-designed randomized controlled trials (RCTs) to explore rehabilitation therapies as complementary treatments for individuals managing chronic neck pain with medication. Clinically significant trials should be adequately powered, incorporate precise outcome measures, and ensure rigorous methodological quality. Future studies should also emphasize blinding to minimize bias by concealing participant information from raters, therapists, and outcome assessors.

Researchers designing future trials should take the findings of this systematic review into account and aim to address the limitations observed in existing RCTs. One major gap in the current literature is the lack of long-term follow-up, making it unclear whether short-term benefits from physical therapy interventions translate into lasting improvements. Longitudinal studies are necessary to evaluate the long-term sustainability of physical therapy benefits for chronic neck pain.

Additionally, future research should provide detailed descriptions of physical therapy interventions, including duration, frequency, and intensity. Adherence rates, participant characteristics (such as age, gender, and duration of illness), and potential adverse events should be comprehensively reported. Beyond measuring chronic neck pain symptoms, studies should assess broader clinical outcomes, such as hospitalization rates and overall health-related quality of life. For instance, research could investigate the early effects of implementing self-managed exercise routines and home-based programs to alleviate neck pain symptoms. More intensive research is needed to explore innovative management strategies that can further improve the quality of life for individuals with chronic neck pain.

CONCLUSION

This systematic review demonstrated that various physical therapy interventions—including strength and resistance training exercises, cognitive behavioral therapy, and nerve glide exercises—positively impact quality of life, balance, pain reduction, and muscle strength in patients with chronic neck pain. Future research should focus on refining and tailoring physical therapy interventions to better meet the specific needs of individuals with chronic neck pain, ensuring long-term effectiveness and improved patient outcomes.

Disclosure Statement:

No potential conflict of interest was reported by the author(s).

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Data Availability Statement:

The data that support the findings of this study are openly accessed and available in PubMed, Cochrane Library, Embase and Pedro.

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