Review Article

Evidence-based Physiotherapy Treatment Strategies for Text Neck Syndrome: A Narrative Review

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Abstract

Text neck syndrome (TNS) is a musculoskeletal condition resulting from prolonged poor posture associated with handheld devices like smartphones. With increasing dependency on technology, the prevalence of TNS has seen a significant rise, especially among those who are more engaged in social media, texting, and digital communication. This study was needed to understand the growing impact of TNS and to evaluate evidence-based physiotherapy techniques for its effective management.To conduct a thorough literature review on the effect of evidence-based physiotherapy treatments techniques on text neck syndrome. various databases were thoroughly searched, including PUBMED, MEDLINE, Research Gate, Google Scholar, and CINHAL databases, with a literature published over the past 10 years between January 2014 and November 2024, using both MeSH (Medical Subject Headings) terms and free-text keywords.Inclusion criteria comprised studies focusing on physiotherapy interventions for text neck syndrome and age 18–44 years, while exclusion criteria included non-English publications, The current study included 13 articles that met the inclusion criteria The reviewed studies consistently reported that physiotherapy interventions—including postural correction exercises, proprioceptive neuromuscular facilitation (PNF), cervical range of motion exercises, stretching, strengthening, and muscle energy techniques (METs) were associated with reductions in neck pain, improvements in cervical mobility, and enhanced postural alignment.This review found that physiotherapy interventions, including postural correction, mobility exercises, and strengthening, can help manage symptoms of text neck syndrome. Further studies comparing these with other treatments are needed to confirm their relative effectiveness.

Keywords: Cervical range of motion, muscle energy techniques, physical therapy, physiotherapy exercise, postural correction, proprioceptive neuromuscular facilitation, text neck syndrome

Introduction

The term *text neck* was first introduced in 2008 by Dr. Dean L. Fishman, an American chiropractor, during the clinical evaluation of a teenager presenting with unexplained neck pain. Observing the patient's pronounced forward head posture while using a smartphone, Dr. Fishman coined the term to describe a repetitive stress injury caused by prolonged flexion of the neck during handheld device use.[1] This condition, also referred to as turtle neck posture, is now widely recognized as a form of musculoskeletal strain resulting from the sustained downward gaze associated with texting, browsing, and other smartphone activities.[2]

Advancements in mobile technology have profoundly altered daily life, influencing commerce, health care, education, and social interaction.[3,4] Smartphones are now indispensable tools for both academic and recreational activities, with usage markedly increasing during recent lockdown periods.[5] Online learning, mobile-based assignments, and continuous digital communication have become commonplace. However, these behaviors often involve sustained neck flexion and forward head posture, placing increased stress on the cervical spine.[6]

Biomechanical studies have shown that in a neutral position, the human head exerts a load of approximately 10–12 pounds

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on the cervical spine. With progressive forward flexion, this load increases dramatically – to 27 pounds at 15°, 40 pounds at 30°, 49 pounds at 45°, and 60 pounds at 60°.[6-9] Over time, this increased load can contribute to cervical strain, reduced cervical lordosis, compensatory thoracic curvature, and structural adaptations associated with forward head posture.[10-11]

The prevalence of text neck syndrome (TNS) is growing worldwide. Research indicates that 32% of the Indian population,[7] 41% of Malaysian academic staff,[8] and 68.1% of Saudi medical students[9] report symptoms consistent with TNS. Alarmingly, one study found that 79% of individuals aged 18–44 years have their mobile devices with them nearly all the time, with only two waking hours per day spent without them.[10] Such prolonged device use places individuals at high risk for repetitive strain injuries of the neck and upper back.

Clinically, TNS presents with neck pain, stiffness, and upper back discomfort, often accompanied by shoulder tightness, muscle spasms, and reduced cervical mobility.[6,9] Chronic forward head posture can diminish neck muscle strength and endurance, and if unaddressed, may lead to more severe outcomes such as spinal misalignment, disc degeneration, herniation, ligament inflammation, and nerve compression.[10-12] Over time, these structural changes can result in long-term disability and reduced quality of life.

Given the widespread nature of mobile device use and the growing prevalence of TNS, early recognition and effective intervention are essential. Physiotherapy plays a crucial role in addressing the mechanical and postural factors contributing to TNS. Evidence-based techniques – including postural correction, proprioceptive neuromuscular facilitation (PNF), cervical range of motion exercises, stretching, strengthening, and muscle energy techniques (METs) – are commonly used to relieve pain, restore cervical mobility, and improve posture.[13-14] However, despite widespread clinical use, the effectiveness of these approaches has not been comprehensively reviewed in recent years.

This review aims to address this gap by systematically evaluating literature from the past decade on physiotherapy interventions for TNS, providing clinicians and researchers with an updated synthesis to guide practice and inform future studies.

Objectives

The objective of the study was to assess the effect of various evidence-based physiotherapy treatment techniques on TNS through a literature search.

Materials and Methods

This review looked at existing research on TNS using a structured way to find and study relevant articles. The focus was on terms such as physiotherapy exercise, TENS (Transcutaneous Electrical Nerve Stimulation), Proprioceptive Neuromuscular Facilitation, Cervical Range of Motion, Physical Therapy, Postural Correction, Text Neck Syndrome, and Muscle Energy Technique (MET). The researchers searched several online databases such as PubMed, MEDLINE, ResearchGate, Google Scholar, and CINAHL for studies published in January 2014 and November 2024. To make sure that they found all possible information, they used both standard medical terms (Medical Subject Headings terms) and common search words. They also checked the reference lists of other important studies, randomized controlled trials (RCTs), quasi-experimental studies, pre–postintervention studies, and case reports to find more related work. The selection of articles was based on the authors' knowledge, experience, and their own thinking, to make sure that the studies were meaningful and trustworthy.

Inclusion criteria for this narrative review were designed to select studies that focused on individuals diagnosed with TNS, characterized by neck pain and postural deviations resulting from prolonged use of electronic devices. The review included studies that presented evidence-based physiotherapy interventions aimed at managing the clinical symptoms of the condition. Specifically, it encompassed research published between January 2014 and November 2024, thereby capturing a 10-year span of relevant literature to ensure that findings reflect the current context of increased smartphone usage. The review targeted studies involving participants aged 18–49 years, aligning with the age group most frequently affected by TNS.

Studies were included based on the PICOS framework:

- **Population (P):** Adults aged 18–49 years diagnosed with TNS
- **Intervention (I):** Physiotherapy evidence-based treatments, including postural correction, stretching and strengthening exercises, PNF, and MET
- **Comparison (C):** Studies with or without comparison groups (e.g., usual care, no intervention, or alternative therapies)
- **Outcomes (O):** Improvement in pain, posture, cervical range of motion, and functional ability
- **Study design (S):** A range of quantitative study designs were included, such as RCTs, quasi-experimental studies, pre–postintervention studies, and case reports.

Exclusion criteria were studies that did not provide empirical data on treatment outcomes, lack a clear methodology, systemic reviews and observational studies or were published in non-peer-reviewed sources.

To ensure accuracy and minimize bias, data extraction was independently performed and cross-verified by two researchers.

Results and Discussion

Study selection and data extraction

A total of 1990 citations were initially identified through electronic database searches. Ultimately, 13 studies[3,10,12,14,15-30] were included in the narrative review [Figure 1].

Study characteristics

Table 1 shows[3,12,15,21-30] among the 13 studies included in the narrative review, three were RCTs, five employed experimental

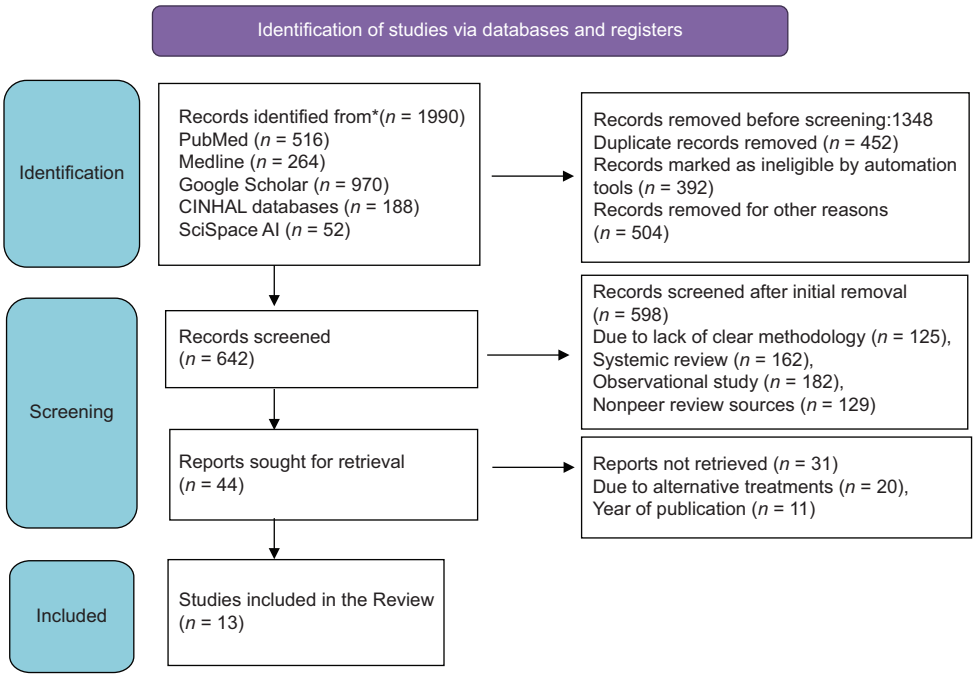

Figure 1: PRISMA 2020 flow diagram selection of articles

designs (including two quasi-experimental), three were comparative experimental studies (two were comparative studies and one utilized a single-group pre–postdesign), and two were case reports [Table 1]. This diversity of research methodologies reflects a broad yet evidence-informed perspective on physiotherapy interventions and outcomes related to TNS.

Characteristics and proportion of text neck syndrome

A study by Vijayakumar *et al*. reported a 100% prevalence of TNS in samples presenting with anteriorly positioned head posture. This malalignment irritates the small cervical facet joints and surrounding soft tissues, inducing pain in the cervical and upper dorsal regions. It also contributes to the formation of myofascial trigger points in the trapezius, sternocleidomastoid, and rhomboid muscles and restricts cervical range of motion. Chronic hypomobility of the cervical joints may further accelerate spinal degeneration.[15-17] A study revealed that 94.91% of participants experienced upper back pain, 89.83% had headaches, and 59.32% reported shoulder pain. In addition, reduced grip strength was commonly observed, especially after extended texting sessions. Gustafsson *et al*. also noted gender differences in texting speed, with females displaying higher speeds.[18]

Forward Head Posture (FHP) also leads to shortening of occipital muscles, altering cervical spine alignment, and increasing stress on facet joints and intervertebral discs. These postural imbalances weaken the deep cervical flexors.[19] Fiebert *et al*. emphasized that long-term hand-held mobile devices (HHMD) use causes anatomical and biomechanical alterations, significantly reducing cervical lordosis. Neck flexion angle is greater in seated than standing positions, increasing strain.[20] Electromyography (EMG) studies confirm that the upper trapezius is often the most fatigued muscle after extended smartphone use, with symptoms intensifying after 30 min of activity.[21-25]

Physiotherapy interventions in the management of text neck syndrome

The physiotherapy techniques explored included PNF, neck stabilization training, MET, Bowen therapy, Pilates exercises, conventional physiotherapy, Kinesio taping, and tailored therapeutic regimens.

Multimodal programs that integrate postural training, stretching, strengthening, and proprioceptive reeducation have shown greater improvements in pain and cervical mobility compared with conventional exercise alone. In particular, approaches that emphasize neuromuscular control – such as PNF and stabilization training – consistently report superior gains in endurance and range of motion, aligning with recent review articles published in this journal that highlight the value of active rehabilitation over passive care.[22]

Adjunctive techniques, including Matrix Rhythm Therapy, Kinesio taping, and Bowen therapy, provide short-term pain relief and muscular relaxation, but their effects appear less durable when not combined with exercise-based regimens. Similarly, Pilates-based programs and progressive resistance training offer additional benefits by enhancing core stability and postural control, complementing traditional physiotherapy routines. Systematic reviews of related musculoskeletal conditions have also confirmed that such multicomponent interventions deliver more sustainable outcomes than unimodal treatments, reinforcing the principle of individualized, comprehensive care.[3,16,23,28]

Table 1: Studies summarizing text neck syndrome and evidence-based physical therapy

Author (year)	Study setting	Study design	Participants/sample size	Intervention – Frequency and duration	Measuring tool(s)	Key findings
Dropkin *et al.* (2015)	USA	RCT	113 computer workers	7-month ergonomic intervention and 3-month follow-up	Pain severity, computer RULA, hand activity level	Ergonomic intervention reduced nonneutral postures in nondominant upper extremity but increased activity; mixed effects
Kothare *et al.* (2019)	India	Quasi-experimental (short-term pre–post)	50 participants with text neck aged 18–22 years	Kinesio taping applied on bilateral upper trapezius for 3 days	NPRS, NDI	Significant immediate reduction in neck pain and disability after 3 days of Kinesio taping application
Soyer *et al.* (2020)	India	Quasi-experimental (2-group comparative)	90 smartphone users aged 15–30 years with forward head posture	Group A: Neck stretching and modified cervical exercises; Group B: Neck stretching and postural modifications; 5 days/week, 4 weeks	VAS, NDI, CROM	Both groups showed significant improvements; Group A showed better improvements in pain, disability, and cervical ROM
Shah and Soni (2021)	India	Quasi-experimental (2-group)	30 smartphone users (>4 h/day) aged 18–22 years	Pilates and conventional versus conventional; 5 days/week for 6 weeks	Not specified	Both groups improved pain and strength; Pilates group had greater improvements
Miraj (2022)	India	Quasi-experimental (2-group comparative)	66 TNS patients aged 18–30 years (33 in each group)	Osteopathic treatment and modified cervical exercises versus modified cervical exercises; Duration: 3 weeks	NPRS, NDI, CROM, CVA	Both groups improved pain, disability, cervical ROM, and posture; combined treatment was more effective
Seemal *et al.* (2022)	Pakistan	Quasi-experimental (2-group comparative)	22 patients with TNS aged 13–35 years	Group A: MET; Group B: Bowen therapy and MET; 6 sessions over 2 weeks (alternate days)	VAS, NDI	Both interventions reduced pain and disability; combination therapy more effective
Rajopadhye *et al.* (2023)	India	Quasi-experimental (pre–post)	63 college students aged 13–25 years	PNF stretching techniques, including dynamic reversal and rhythmic stabilization; 2 weeks duration	VAS, goniometer for cervical ROM	Significant reduction in neck pain and improvement in cervical extension ROM after 2 weeks
Bharal *et al.* (2023)	India	RCT	75 participants with a history of recurrent neck pain aged 18–49 years	Three groups: neck isometric training (control), neck stabilization training, and Pilates (contrology); 4-week duration	CVA, NPRS, NDI	All groups improved CVA, pain, disability; neck stabilization slightly superior
Chu *et al.* (2023)	China	Case report	Single case (6-year-old boy with 1-month history of cephalgia and cervicalgia)	Multimodal chiropractic (spinal adjustments, cervical extension-traction, instrument-assisted soft-tissue manipulation, ergonomic and exercise advice); 9-month follow-up	Numeric Pain Rating Scale, WHO-QoL questionnaire	Significant improvements in pain, mobility, neurological symptoms, and QoL
Radha *et al.* (2024)	India	Quasi-experimental (2-group pre–post)	80 participants clinically diagnosed with TNS aged 18–44 years	Conventional therapy versus integrated postural training; 3 times/week, 6 weeks	VAS, NDI, CROM, CJPE	Integrated postural training superior for proprioception, posture correction, pain, and ROM
Gohil *et al.* (2024)	India	Case study	Single patient (22-year-old female with average screen time of 4–5 h/daily)	Matrix rhythm therapy and physiotherapy exercises and ergonomic advice; 7-day treatment plan	NDI, cervical ROM	Reduced pain, improved posture and muscle strength
Kulli *et al.* (2024)	Turkey	RCT	38 participants with TNS aged 13–40 years	PNF techniques; frequency and duration not specified	Not reported	PNF improved flexibility, muscular control, effective for text neck syndrome
Nathani and Phansopkar (2024)	India	Quasi-experimental (single-group pre–post)	54 smartphone addictive individuals aged 18–30 years	Personalized physiotherapy protocol; 3 weeks duration	VAS, NDI, SAS, CHDQ, ROM	Significant reduction in pain, disability, discomfort; moderate–strong correlations

VAS: Visual Analog Scale, NDI: Neck Disability Index, SAS: Smartphone Addiction Scale, NPRS: Numeric Pain Rating Scale, CVA: Craniovertebral angle, CROM: Cervical range of motion, RULA: Rapid upper limb assessment, PNF: Proprioceptive neuromuscular facilitation, MET: Muscle energy technique, ROM: Range of motion, RCT: Randomized controlled trial, TNS: Text neck syndrome, QoL: Quality of life, CDHQ: Cervical health-disability questionnaire

These modalities were meticulously analyzed based on seven clinical parameters: intensity, duration, level of supervision, frequency of pain relief, action-rest cycle, chronicity, and contraindications.[26-29]

Supervision and customization: Nearly all reviewed techniques mandate professional supervision. Physiotherapists must tailor treatment plans based on individual severity, physical fitness, age, gender, and comorbid conditions.

Rest cycles and specificity: PNF includes structured action-rest periods. Conventional physiotherapy addresses comprehensive goals – stretching, strengthening, postural correction, and pain management. Kinesio taping enhances lymphatic and blood circulation, potentially improving myofascial function and reducing muscle tension.[15,24,30]

Cost and contraindications: Pilates requires expensive equipment, limiting accessibility. Other methods are cost-effective. Patients with severe cervical compression or spinal canal stenosis should avoid Pilates and PNF.

Efficacy in text neck syndrome reversal

TNS reversal is achievable through structured physiotherapy, especially PNF, METs, and isometric neck stabilization.[27] Bowen therapy and kinesio taping are best suited for acute pain relief,[15,28] while integrated postural training offers long-term postural correction.[12]

Limitations

The studies reviewed revealed several limitations, including variability in therapy duration and inconsistency in exercise regimens. These differences make it challenging to compare outcomes across studies and highlight the need for standardized treatment protocols in future research.

Conclusions

Conventional physiotherapy, which combines stretching, strengthening, posture correction, and pain relief strategies, was most consistently associated with symptom improvement. Adjunct techniques such as PNF, kinesio taping, and Pilates demonstrated additional benefits when applied selectively, but evidence remains limited. These findings highlight the importance of individualized, supervised physiotherapy programs as the most reliable approach for managing Text Neck Syndrome, while also emphasizing the need for further research into emerging treatment strategies.

Author's contribution statement

GA and KM: Data collection, draft manuscript preparation, analysis and interpretation of results.

Data availability statement

Data used for the present study is available in public domain.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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