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Araştırma Makalesi

The Role of Pain, Disability, Balance, Depression, and Sleep Quality in Kinesiophobia among Individuals with Chronic Non-Specific Neck Pain

Kronik Non-Spesifik Boyun Ağrılı Bireylerde Kinezyofobide Ağrı, Engellilik, Denge, Depresyon ve Uyku Kalitesinin Rolü

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ABSTRACT

Purpose: To examine the factors associated with kinesiophobia and its predictors in individuals with chronic non-specific neck pain (CNSNP). **Material and Methods:** This study included 70 individuals with CNSNP. Kinesiophobia was assessed using Tampa Kinesiophobia Scale (TKS). Pain intensity was evaluated using the Visual Analog Scale (VAS), disability using Neck Disability Index (NDI), balance performance using Berg Balance Scale (BBS), depression severity using Beck Depression Inventory (BDI), and sleep quality using Pittsburgh Sleep Quality Index (PSQI). **Results:** TKS demonstrated a strong positive association with BDI (r=0.654) and NDI (r=0.513) (both p<0.001), and moderate positive associations with VAS-activity (r=0.498, p<0.001), VAS-night (r=0.335, p=0.004), and PSQI (r=0.451, p=0.006). BBS was strongly and negatively correlated with TKS (r=−0.513, p<0.001). Multiple linear regression analysis revealed that VAS-activity BBS and BDI were significant independent predictors of TKS, jointly explaining 60% of the variance in TKS scores. **Discussion:** Kinesiophobia in CNSNP is associated with pain, psychological, and balance factors.

Keywords: Neck Pain; Balance; Depression

ÖZ

Amaç: Kronik non-spesifik boyun ağrılı (KNSBA) bireylerde kinezyofobi ile ilişkili faktörleri ve bağımsız belirleyicilerini incelemektir. **Gereç ve Yöntem:** Bu çalışmaya KNSBA tanısı olan 70 birey dâhil edilmiştir. Kinezyofobi Tampa Kinezyofobi Ölçeği (TKÖ) ile değerlendirilmiştir. Ağrı şiddeti Görsel Analog Skala (GAS), engellilik Boyun Engellilik İndeksi (BEİ), denge performansı Berg Denge Ölçeği (BDÖ), depresyon şiddeti Beck Depresyon Envanteri (BDE) ve uyku kalitesi Pittsburgh Uyku Kalitesi İndeksi (PUKİ) kullanılarak değerlendirilmiştir. **Sonuçlar:** TKÖ ile BDE (r=0,654) ve NDI (r=0,513) arasında güçlü pozitif ilişkiler saptanırken (p<0,001); GAS-aktivite (r=0,498, p<0,001), GAS-gece (r=0,335, p=0,004) ve PUKİ (r=0,451, p=0,006) ile orta düzeyde pozitif ilişkiler bulunmuştur. BDÖ ile TKÖ arasında güçlü, negatif bir ilişki saptanmıştır (r=−0,513, p<0,001).Regresyon analizi sonuçlarına göre GAS-aktivite BDÖ ve BDE kinezyofobinin bağımsız belirleyicileri olup, TKÖ skorlarındaki varyansın %60'ını açıklamaktadır. **Tartışma:** CNSNP'de kinezyofobi ile ağrı, psikolojik ve denge faktörleri ilişkilidir.

Anahtar Kelimeler: Boyun Ağrısı; Denge; Depresyon

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Chronic neck pain is a common musculoskeletal disorder characterised by pain felt in the cervical spine region that lasts for at least 12 weeks (Cohen, 2015). Its global prevalence varies widely (between 16% and 75%) depending on the population and definition, with approximately 85% of the general population experiencing neck pain at some point in their lives (Blanpied et al., 2017). The majority of neck pain cases cannot be explained by a specific structural pathology and are therefore classified as chronic nonspecific neck pain (CNSNP) (Evans et al., 2002). CNSNP is not limited to pain alone; it evolves into a multidimensional health problem accompanied by functional limitations, loss of productivity, reduced quality of life, and psychosocial impairments (Dieleman et al., 2020).

The aetiology of CNSNP is multifactorial in nature and cannot be explained solely by peripheral or spinal mechanisms (Carvalho et al., 2018; Alejandro Luque-Suarez et al., 2019). It has been demonstrated that structural and functional changes occurring at the central nervous system level, particularly the reported volume reduction in prefrontal cortex regions responsible for cognitive control, emotional regulation, and threat assessment, significantly influence the perception of pain and the individual's behavioural responses to pain (Kluetsch et al., 2012). These central changes pave the way for pain to be interpreted as more threatening and, consequently, for avoidance behaviours to emerge (Kluetsch et al., 2012).

In this context, kinesiophobia is not merely a fear response; it emerges as a central mechanism that reinforces the effects of pain on the sensorimotor system and has functional consequences (Alejandro Luque-Suarez et al., 2019). Increased fear of movement contributes to an increased level of disability and impaired quality of life by leading to non-adaptive modifications in the musculoskeletal system (Varallo et al., 2021). At the same time, the avoidance behaviour accompanying chronic neck pain can negatively affect the motor behaviour of the cervical spine and cervico-cephalic kinesthetic sensitivity, leading to decreased proprioceptive accuracy and impaired balance control (Parikh et al., 2019). These biopsychosocial and neuromotor changes create a mutually reinforcing vicious cycle between pain, functional limitation, and postural instability, making kinesiophobia a significant determinant in the perpetuation of chronic neck pain (Parikh et al., 2019).

Despite increasing evidence highlighting the multifactorial nature of CNSNP, comprehensive studies simultaneously examining the interaction between kinesiophobia and both physical (pain intensity, neck-specific disability, balance performance) and psychological (depression) factors remain limited. Previous research has generally evaluated these variables in isolation and has not clearly identified the independent determinants of kinesiophobia in this population. Therefore, this study aims not only to investigate the relationships between kinesiophobia and pain intensity, neck-specific disability, balance performance, and depression level in individuals with CNSNP, but also to determine the independent clinical and psychological predictors of kinesiophobia. By integrating physical and psychological domains within a single analytical model, this study seeks to provide a more comprehensive understanding of the factors contributing to kinesiophobia in CNSNP.

MATERIAL AND METHODS

Study Design and Ethical Aspects

This single-centre cross-sectional study was conducted between July 2025 and November 2025. Ethical committee approval was obtained from the local ethics committee (Decision No: 07-2025/106). Prior to enrollment, written and verbal informed consent was obtained from each participant, and all study procedures were conducted in accordance with the Declaration of Helsinki.

Participants

Participants consisted of individuals diagnosed with CNSNP and referred to the Kırşehir Ahi Evran University School of Physical Therapy and Rehabilitation for treatment. A total of 70 individuals were included in the study. Inclusion criteria were defined as having a diagnosis of CNSNP, having neck pain that had persisted for at least 3 months, being aged between 18 and 65, and having neck pain intensity measured by the visual analogue scale (VAS) of at least 3 cm (Boonstra et al., 2014). Exclusion criteria were defined as a history of cancer or spinal fracture, any surgical intervention within the last 6 months, the presence of orthopaedic or neurological diseases affecting walking ability, cervical myelopathy, cervical spine infection, and vertebrobasilar insufficiency.

Measurements

Participants' sociodemographic data (gender, age, height, weight, body mass index) were collected through face-to-face interviews. Assessments of kinesiophobia level, pain intensity, balance performance, disability level, sleep quality, and depression severity were conducted by a physiotherapist specialising in the field (IC) to ensure standardisation between measurements.

Outcome Measurement

Kinesiophobia

Kinesiophobia was assessed using the Tampa Kinesiophobia Scale (TKS), which has been validated and shown to be reliable in Turkish (Yilmaz et al., 2011). The TKS is a 17-item measure developed to assess fear of movement in individuals with musculoskeletal pain [11]. Each item contains a four-point Likert-type response option, with total scores ranging from 17 to 68. Higher scores indicate higher levels of kinesiophobia (Rosenbloom et al., 2020).

Pain Intensity

The current severity of neck pain was assessed using the VAS. The VAS consists of a horizontal line 100 mm in length, with one end labelled 'no pain' and the other end labelled 'the worst pain imaginable' (Faiz, 2014). Participants were asked to separately assess their neck pain intensity for three different situations: pain felt during activity (VAS-activity), pain at rest (VAS-rest), and pain felt at night (VAS-night). For each situation, participants marked the point on the VAS that best reflected their pain level, thus allowing for a detailed assessment of the severity of pain in different contexts of daily life (Faiz, 2014).

Disability

The level of neck-specific disability was assessed using the Neck Disability Index (NDI), which has been validated and proven reliable in Turkish (Aslan et al., 2008). The NDI is a 10-item measure that assesses pain and functional limitation, with each item containing six response options (Vernon & Mior, 1991). The total score is converted to a percentage (%) value, taking into account any missing items, with higher scores indicating greater disability (Vernon et al., 1991).

Balance

Balance performance was assessed using the Berg Balance Scale (BBS). The BBS consists of 14 items that assess balance during functional activities such as sitting, standing, and changing positions, and each item is scored on a scale of 0–4 points. The total score ranges from 0 to 56, with higher scores indicating better balance performance (Leger et al., 2022).

Depression

The presence and severity of depression among participants was assessed using the Turkish version of the Beck Depression Inventory (BDI). The scale consists of 21 items, each scored between 0 and 3. The total score ranges from 0 to 63, with higher scores indicating greater severity of depression (Ulusoy et al., 1998).

Sleep Quality

Sleep quality of the participants was assessed using the Pittsburgh Sleep Quality Index (PSQI), which has been shown to be valid and reliable in the Turkish population (Agargun, 1996). The PSQI is a self-report questionnaire consisting of 19 items that evaluate sleep quality over the past month (Buysse et al., 1989). Seven dimensions are assessed: individuals' perception of sleep quality, sleep onset latency, overall sleep duration, efficiency of habitual sleep patterns, nocturnal disturbances, reliance on sleep medication, and daytime functional impairment. The total score ranges from 0 to 21, with higher scores indicating poorer sleep quality (Buysse et al., 1989).

Statistical Analysis

According to the study findings, a post hoc power analysis was performed using the G*Power program based on kinesiophobia severity values. The effect size was calculated as 0.60. Considering a 95% confidence interval, a significance level of 0.05, an effect size of 0.60, and a total of 70 participants, the statistical power of the study was calculated as 89%. Therefore, the study was considered to have adequate power.

Analyses were conducted with IBM® SPSS® Statistics for Windows (v22.0; IBM Corp., New York, USA). The normality of data distribution was assessed using the Kolmogorov–Smirnov and Shapiro–Wilk tests, and all variables demonstrated normal distribution ($p>0.05$); therefore, parametric tests were applied. Continuous variables are summarized using mean and standard deviation (mean ± SD), whereas categorical variables are summarized as numbers and percentages (%). Associations between variables were examined using Pearson correlation coefficients, which were interpreted as strong (>0.50), moderate (0.30–0.50), or weak (0.20–0.30) correlations (Cohen, 2013). To identify factors associated with kinesiophobia severity, as measured by the TKS, stepwise multiple linear regression analysis was performed. Variables that demonstrated a statistically significant correlation with the TKS score were entered into the regression model. Prior to regression analysis, the assumptions of multiple linear regression were evaluated. The normality of residuals was assessed using histogram and normal probability (Q–Q) plots, indicating an approximately normal distribution. Homoscedasticity was examined through scatter plots of standardized residuals versus predicted values, demonstrating constant variance. Linearity between independent variables and the dependent variable was confirmed using partial regression plots. Independence of errors was assessed using the Durbin–Watson coefficient, which indicated no autocorrelation (Cohen, 2013). Multicollinearity among independent variables was evaluated using tolerance and Variance Inflation Factor (VIF) statistics. Tolerance values were >0.10 and VIF values were <10, indicating no multicollinearity problem (Cohen, 2013). The regression equation was calculated, and standardized beta coefficients (β) along with the

coefficient of determination (R^2) were used to interpret the contribution and explanatory power of the independent variables. Statistical significance was set at $p<0.05$.

RESULTS

Demographics of the participants are detailed in Table 1. Among the 70 subjects, the mean age was 40.78 ± 13.32 years.

Table 1. Participants' demographic characteristics

Variables		**Individual with chronic non-specific neck pain (n=70)**
		Mean±SD
Age (years)		40.78±13.32
BMI (kg/m²)		27.85±6.36
Duration of symptoms (months)		10.38±4.87
TKS		39.88±7.32
VAS-activity		4.78±0.91
VAS-rest		3.95±0.84
VAS-night		3.92±0.78
NDI		21.47±6.02
BBS		26.44±7.51
PSQI		6.68±1.59
BDI		14.78±6.81
		n (%)
Gender	Female	39 (55.7)
	Male	31 (44.3)

BMI: Body Mass Index, SD: Standard Deviation, TKS: Tampa Kinesiophobia Scale, VAS: Visual Analogue Scale, NDI: Neck Disability Index, BBS: Berg Balance Scale, PSQI: Pittsburgh Sleep Quality Index, BDI: Beck Depression Inventory

The relationships between kinesiophobia severity, pain intensity, disability, balance, sleep quality, and depression in individuals with CNSNP are presented in Table 2. Correlation analysis revealed a strong and positive association between TKS and BDI ($r = 0.654$, $p < 0.001$). Similarly, significant moderate-to-strong positive correlations were found between TKS and NDI ($r = 0.513$, $p < 0.001$) and between TKS and activity-related pain intensity (VAS-activity; $r = 0.498$, $p < 0.001$). TKS was also moderately and positively correlated with PSQI ($r = 0.451$, $p = 0.006$), night-time pain intensity (VAS-night; $r = 0.335$, $p = 0.004$), and pain at rest (VAS-rest; $r = 0.371$, $p = 0.002$). Among pain subparameters, very strong positive correlations were observed between VAS-rest and VAS-activity ($r = 0.854$, $p < 0.001$) and between VAS-rest and VAS-night ($r = 0.871$, $p < 0.001$), while a strong positive correlation was also found between VAS-night and VAS-activity ($r = 0.771$, $p < 0.001$). In addition, VAS-rest showed moderate positive correlations with BDI ($r = 0.345$, $p = 0.003$) and NDI ($r = 0.322$, $p = 0.007$), whereas VAS-activity was moderately positively correlated with BDI ($r = 0.343$, $p = 0.004$) and NDI ($r = 0.411$, $p < 0.001$). Moderate significant correlations were observed between NDI and BDI ($r = 0.436$, $p < 0.001$) and between NDI and PSQI ($r = 0.490$, $p < 0.001$). A strong negative correlation was found between BBS and TKS ($r = −0.513$, $p < 0.001$), and a moderate negative correlation between BBS and BDI ($r = −0.408$, $p < 0.001$), indicating that higher balance performance was associated with lower levels of kinesiophobia and depression. In contrast, no significant relationship was found between BBS and PSQI ($r = −0.154$, $p = 0.203$).

Table 2. Relationships between participants' levels of kinesiophobia, pain, disability, balance, sleep quality, and depression

		BDI	PSQI	BBS	NDI	VAS-activity	VAS-night	VAS-rest	TKS
TKS	r	0.654	0.451	- 0.513	0.513	0.498	0.335	0.371	-
	p	<0.001**	0.006*	<0.001**	<0.001**	<0.001**	0.004*	0.002*	
VAS-rest	r	0.345	0.141	- 0.089	0.322	0.854	0.871	-	-
	p	0.003*	0.244	0.465	0.007*	<0.001**	<0.001**		
VAS-night	r	0.314	0.047	- 0.053	0.194	0.771	-	-	-
	p	0.008	0.700	0.663	0.108	<0.001**			
VAS-activity	r	0.343	0.212	- 0.172	0.411	-	-	-	-
	p	0.004*	0.079	0.156	<0.001**				
NDI	r	0.436	0.490	- 0.182	-	-	-	-	-
	p	<0.001**	<0.001**	0.133					
BBS	r	0.408	- 0.154	-	-	-	-	-	-
	p	p<0.001**	0.203						
PSQI	r	0.370	-	-	-	-	-	-	-
	p	0.002*							
BDI	r	-	-	-	-	-	-	-	-
	p								

*BMI: Body Mass Index, SD: Standard Deviation, TKS: Tampa Kinesiophobia Scale, VAS: Visual Analogue Scale, NDI: Neck Disability Index, BBS: Berg Balance Scale, PSQI: Pittsburgh Sleep Quality Index, BDI: Beck Depression Inventory, r: Pearson correlation coefficient, **p<0.001, *p<0.05*

As shown in Table 3, the results of the regression analysis indicated that activity-related pain intensity (VAS-activity; β = 0.370, p = 0.021), balance performance (BBS; β = −0.275, p = 0.002), and depression severity (BDI; β = 0.344, p = 0.001) were significant and independent predictors of kinesiophobia severity (TKS) in individuals with chronic non-specific neck pain, explaining 60% of the variance in TKS scores. Higher activity-related pain intensity, poorer balance performance, and higher disability levels were associated with greater kinesiophobia severity. The explanatory variables and their coefficients were used to calculate the regression equation for the dependent variable. The regression equation was: 23.123 + (−0.349 × VAS-activity score) + (−0.268 × BBS score) + (0.370 × BDI score), with R = 0.801 and adjusted R^2 = 0.600.

Table 3. Linear regression model of TKS

Variables	B	SE	Beta	p	Collinearity statistics	
					Tolerance	VIF
Constant	23.123	4.590	-	**<0.001****	**-**	**-**
VAS-rest	- 2.290	1.672	- 0.263	0.176	0.157	4.373
VAS-night	1.128	1.512	0.121	0.459	0.219	4.571
VAS-activity	2.965	1.256	0.370	**0.021***	0.235	4.253
NDI	0.172	0.120	0.142	0.155	0.599	1.670
BBS	- 0.268	0.083	- 0.275	**0.002***	0.802	1.247
PSQI	0.760	0.414	0.165	0.071	0.713	1.402
BDI	0.370	0.105	0.344	**0.001***	0.612	1.633

*VAS: Visual Analogue Scale, NDI: Neck Disability Index, BBS: Berg Balance Scale, PSQI: Pittsburgh Sleep Quality Index, BDI: Beck Depression Inventory, VIF: Variance Inflation Factor, **p<0.001, *p<0.05*

DISCUSSION

The findings of this study indicate that kinesiophobia in individuals with CNSNP is not merely a consequence associated with pain intensity, but rather a central mechanism closely related to multidimensional clinical factors such as depression, neck-related disability, balance performance, and sleep quality. The emergence of depression severity, activity-related pain intensity, and balance performance as independent predictors of kinesiophobia suggests that fear of movement is shaped by psychological and neuromotor components beyond biomechanical limitations. These findings imply that kinesiophobia represents a critical factor involved in the reciprocal interaction between pain, functional limitation, and impaired postural control in neck pain, underscoring the necessity of adopting treatment approaches within a biopsychosocial framework.

In chronic neck pain, pain intensity is shaped not only by peripheral nociceptive inputs but also by how individuals perceive and interpret pain (Leeuw et al., 2007). In this context, kinesiophobia emerges as one of the key cognitive–behavioral mechanisms mediating these perceptual processes (Leeuw et al., 2007). Evidence from the literature supports this framework, indicating that higher levels of kinesiophobia are associated with increased pain intensity in individuals with neck pain (Cleland et al., 2008; Vægter et al., 2018; Bilgin et al., 2019; Gunay Ucurum, 2019; Asiri et al., 2021). The findings of the present study further demonstrate that pain intensity experienced particularly during activity is strongly associated with kinesiophobia and emerges as an independent predictor of kinesiophobia severity. This finding suggests that pain exacerbated by movement is perceived as more threatening by individuals, thereby reinforcing avoidance behaviors and intensifying kinesiophobia. Therefore, the relationship between pain intensity and kinesiophobia should be considered not merely as a concurrent association, but as a reciprocal interaction shaped by pain perception.

Kinesiophobia plays a central role in the development and persistence of functional limitations in individuals with chronic neck pain (A. Luque-Suarez et al., 2019). Previous studies have consistently demonstrated that higher levels of kinesiophobia are associated with greater neck-specific disability in individuals with neck pain (Hill et al., 2007; Thompson et al., 2010; Bilgin et al., 2019; Dere & Alemdaroğlu-Gürbüz, 2024.) This relationship can be explained by avoidance of movement over time, leading to reductions in muscle strength, joint range of motion, and motor control, thereby exacerbating functional limitations (Alpalhao et al., 2022). Consequently, kinesiophobia forms a reciprocal interaction between pain and functional disability, contributing critically to the maintenance of chronic neck pain. In the present study, a strong and significant association was also found between kinesiophobia and neck-specific disability, which is consistent with the existing literature. This finding suggests that neck-specific disability is not merely a physical outcome but an important clinical component that feeds into and sustains fear of movement.

The existing literature also indicates that postural and balance impairments accompanying chronic neck pain are not solely attributable to damage in peripheral cervical structures but are also related to sensorimotor integration deficits and fear-based movement restriction (Kocaman et al., 2024). Studies reporting poorer balance performance in individuals with neck pain compared to healthy controls demonstrate a clear negative impact of neck pain on postural stability (Poole et al., 2008; Kocaman et al., 2024). In parallel, significant associations between kinesiophobia and balance performance in individuals with neck pain suggest that fear of movement disrupts balance strategies not only at a behavioral level but also at a neuromotor level (Jørgensen et al., 2011; Asiri et al., 2021). In the present study, a strong negative relationship was found between kinesiophobia and balance performance, indicating that fear of movement may impair postural control by disrupting sensorimotor integration.

Depression is not merely a comorbid mood disorder in chronic neck pain but a key psychological factor that shapes pain perception and behavioral responses to movement (Elbinoune et al., 2016). The existing literature indicates that increased depressive symptoms are associated with higher levels of kinesiophobia (Bilgin et al., 2019; Selçuk et al., 2025), suggesting that depression may facilitate the interpretation of movement as harmful by amplifying negative expectations and threat perception (Zhu et al., 2025). This relationship is also supported by physiological processes. Autonomic dysregulation that may develop following neck pain, along with persistent somatic symptoms, can exacerbate depressive symptoms (Matsui & Fujimoto, 2011). Over time, depression may reinforce kinesiophobia by increasing avoidance of physical activity and social withdrawal (Zhu et al., 2025). In turn, heightened kinesiophobia contributes to the maintenance of the depressive cycle through functional limitations (Zhu et al., 2025). Thus, depression and kinesiophobia emerge as two core mechanisms that mutually reinforce each other in chronic neck pain. The identification of depression as an independent predictor of kinesiophobia in the present study underscores the clinical importance of

psychological assessment and appropriate psychosocial interventions in the management of movement-related fear among individuals with chronic neck pain.

Previous studies have demonstrated a significant relationship between sleep quality and the clinical presentation of chronic neck pain, showing that individuals with neck pain experience markedly impaired sleep quality (Andreucci et al., 2020; Şahan et al., 2023). However, the relationship between sleep quality and kinesiophobia has not been directly examined in the context of chronic neck pain. Nevertheless, it is well established that impaired sleep quality lowers pain thresholds, increases central sensitization, and acts as a sustaining factor in the chronic pain cycle (McBeth et al., 2015). Although the relationship between sleep quality and pain is considered bidirectional, current evidence suggests that sleep disturbances often precede the onset of pain (Finan et al., 2013). This suggests that impaired sleep quality may contribute to a more threatening perception of pain and promote avoidance behaviors related to movement, thereby indirectly facilitating the development of kinesiophobia. In the present study, the significant association observed between sleep quality and kinesiophobia further suggests that sleep disturbances may exacerbate movement avoidance behaviors by increasing central sensitization and threat perception.

Several methodological limitations of this study should be considered. The cross-sectional design does not allow determination of causal relationships between the variables. The assessment of kinesiophobia, depression, and sleep quality using self-report measures may increase the risk of response bias. Additionally, the single-center sample and the insufficient control of potential confounding factors, such as physical activity level or medication use, limit the generalizability of the findings.

This study demonstrates that kinesiophobia in individuals with CNSNP is not merely a consequence of pain intensity, but is closely associated with multidimensional clinical factors such as neck-related disability, balance performance, sleep quality, and depressive symptoms. The identification of activity-related pain intensity, impaired balance performance, and depression severity as independent predictors of kinesiophobia indicates that fear of movement is shaped by psychological and neuromotor components beyond biomechanical limitations. From a clinical perspective, these findings suggest that assessment protocols in CNSNP should routinely include the evaluation of kinesiophobia (e.g., TKS), depressive symptoms, balance performance, and sleep quality in addition to pain intensity. Rehabilitation programs should incorporate graded exposure to movement, balance and postural control training, and cognitive-behavioral strategies targeting fear-avoidance beliefs and depressive symptoms. Furthermore, patient education focusing on pain neuroscience and activity-related reassurance may help reduce maladaptive fear of movement. Accordingly, a comprehensive biopsychosocial rehabilitation model addressing movement-related fear, psychological status, postural control, and sleep quality should be prioritized rather than focusing solely on pain in the management of chronic neck pain.

Ethical Approval

Ethical committee approval was obtained from the local ethics committee (Decision No: 07-2025/106) and conducted in consideration of Helsinki's Declaration principles.

Authors' Contributions

Idea/Concept: İC, AÖ; Design: İC, AÖ, NTY; Control/Supervision: İC, AÖ; Data collection and/or Processing: İC, AÖ; Analysis and/or interpretation: İC, AÖ, NTY; Literature review: İC, AÖ; Writing the Article: İC, AÖ; Critical Review: İC, AÖ, NTY.

Conflict of Interest Statement

The authors declare no conflict of interest.

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