

The Relationship Between Kinesiophobia, Physical Activity and Disability Level and Pain Management in Patients with Chronic Low Back Pain in Genders

Nuri Usta¹, Filiz Altug², Ayse Unal³

¹ <https://orcid.org/0000-0003-2293-7235> – Fیزیopilates Alanya, Antalya, Türkiye

² <https://orcid.org/0000-0002-4287-8562> – Pamukkale University Faculty of Physiotherapy and Rehabilitation, Denizli, Türkiye

³ <https://orcid.org/0000-0003-0959-5664> – Alanya Alaaddin Keykubat University Faculty of Health Sciences, Department of Physiotherapy and Rehabilitation, Antalya, Türkiye

ABSTRACT

The aim of this study was to examine the relationship between pain management, kinesiophobia, physical activity and disability level in patients with chronic low back pain (CLBP) in different genders. Eighty-two patients with CLBP (42 females, 42 males) between the ages of 20-60 participated in the study. Pain management strategies were determined by Pain Coping Questionnaire (PCQ). Tampa Scale for Kinesiophobia for perception of kinesiophobia, Oswestry Disability Index for disability due to pain and International Physical Activity Questionnaire-Short Form (IPAQ-SF) for the physical activity level were used. Women (mean age: 43.23±8.40 years) and men (mean age: 37.09±12.16 years) exhibited differences in helplessness ($p=0.001$) and conscious cognitive interventions ($p=0.023$) for pain management. No disparities were noted in self-coping and seeking medical help ($p>0.05$). Gender variation was significant in kinesiophobia ($p=0.002$), disability score ($p=0.031$), and disability percentage ($p=0.018$) among those with chronic low back pain. Notably, physical activity demonstrated gender balance ($p>0.05$), while sitting score had a significant difference ($p=0.000$). In both genders with CLBP, significant associations were found between PCQ dimensions and disability aspects, and in males, with physical activity ($p<0.05$). Management of CLBP varies by gender and is related to kinesiophobia, physical activity, and disability level.

Key words: chronic low back pain, pain coping, kinesiophobia, physical activity, disability

Corresponding author: Nuri Usta

E-mail: nuriusta93@hotmail.com

Submission Date: July 18, 2024

Acceptance Date: November 15, 2024

Available online: December 26, 2024

INTRODUCTION

Chronic low back pain (CLBP) is an important problem widespread in society, whose prevalence has increased worldwide in recent years, leading to many disabilities. It accounts for many healthcare expenditures in countries (Shmagel ve ark., 2016). It is reported that CLBP is observed 2-3 times more frequently in women than in men (Skuladottir ve Halldorsdottir, 2008). Age, occupation, social status, and psychological factors are the most important factors in the development of CLBP. In addition, negative perceptions, attitudes, and the fear of re-injury with movement (kinesiophobia) are the most

important factors influencing pain and pain-related disability (Picavet ve ark., 2002).

People with CLBP tend to avoid painful movements. Chronic pain causes fear, anxiety, and avoidance of movement, leading to decreased physical activity and increased disability (Ishak ve ark., 2017). As physical activity decreases, kinesiophobia also increases, which increases disability. Pain intensity is related to kinesiophobia and the fear of exercise to the degree of disability (Costa ve ark., 2011). When fear avoidance and kinesiophobia are present, secondary problems such as anxiety, depression, decreased quality of life, and recurrent chronic body pain occur. Studies suggest that people with



kinesiophobia should gradually increase their functional activities (Costa ve ark., 2011; Filipczyk ve ark., 2021).

Chronic pain affects people physically, physiologically, mechanically, socially, economically, and psychologically. In chronic pain, people fear exercise and physical activity and develop various solutions to their pain (Karadağ ve ark., 2016; Peres ve Lucchetti, 2010). Some people accept chronic pain and develop new body adaptations (Peres ve Lucchetti, 2010). People with chronic pain need different strategies to cope with their pain. Pain management involves the human body's cognitive, emotional, behavioral, and physiological dimensions (Madenci ve ark., 2006). According to Snyder, coping with pain is a response to reduce stressful life events' physical, emotional, and psychological effects (Snyder, 1999). According to the manual, coping is the thoughts and actions of individuals in their daily efforts to deal with pain (Zeidner ve Endler, 1995). In a study of pain management or pain coping strategies, it was found that people with chronic pain tend to use methods of self-medication and deliberate cognitive interventions, and it was found that people with chronic pain of psychological origin fall into a state of helplessness (Peres ve Lucchetti, 2010).

Our study investigated the association between pain management, kinesiophobia, physical activity and disability level in individuals with CLBP in different genders.

MATERIAL AND METHODS

Individuals with CLBP aged 20–60 who met the inclusion criteria and volunteered to participate in the Fizyopilates Manual Therapy and Pilates Hall in the Alanya district of Antalya province participated in the study. All participants were given detailed information and written consent was obtained.

ETHICS COMMITTEE APPROVAL

The study was approved by Pamukkale University Non-Interventional Clinical Research Medical Ethics Committee with the decision dated 24.12.2019 and numbered 22. The study was conducted between December 2019 and December 2021. The power analysis used to determine the sample size showed that, at a 95% confidence level, a power of 80% would be achieved if at least 84 subjects (42 women and 42 men) were enrolled in the study (Faul ve ark., 2007).

One hundred twenty-six subjects were invited to study. The study was completed the 84 subjects, 42 women and 42 men. The flow chart of the study is shown in Fig 1.

INCLUSION CRITERIA

- Being between 20-60 years old,
- Having LBP lasting more than 3 months
- Those who had no problems with reading, writing and understanding.

EXCLUSION CRITERIA

- Had surgery due to back pain
- Had spine problem,
- Pregnancy,
- Those with communication problems

ASSESSMENT METHODS

All assessments were conducted personally by the researcher. Participants' demographic and clinical data were entered into the data collection form. Visual Analogue Scale (VAS) was used to pain intensity. The Pain Coping Questionnaire (PCQ) was used to inquire about the nature of pain coping, the Oswestry Disability Index (ODI) was used to assess disability level. Tampa scale of kinesiophobia (TSK) to assess perceptions of kinesiophobia, and the International Physical Activity Questionnaire-Short Form (IPAQ -SF) to assess levels of physical activity.

Demographic and clinical data form: Age, weight, height, sex, occupation, pain status, pain duration, pain definition, pain experience, pain frequency, conditions associated with pain, and conditions that exacerbate pain were recorded on the data collection form.

VAS: VAS was used to assess pain severity. Subjects were marked severity of pain on a 10-cm line. At lower values the pain is less and at higher values the pain greater. The score was determined by the value of the marked point in cm (Chiarotto ve ark., 2019).

The PCQ was used to assess pain management. Kleinke developed this in 1992 for individuals with pain and the measures they took against pain and the methods they applied. The scale was developed for individuals with chronic pain and psychosomatic pain. Karaca et al. conducted the scale's validity and reliability study in 1996 and adapted it to the Turkish language. The scale has four subscales (self-coping, helplessness, conscious cognitive interventions, and seeking medical help) and consists of 29 items. The scale is a 4-point Likert type (0: never, 3:

Table 1. Demographic and clinical characteristics of the participants

Variable	Women (n=42) X±SD	Men (n=42) X±SD	t	p
Age (year)	43.23±8.40	37.09±12.16	2.69	0.009
BMI (kg/m ²)	25.67±4.20	26.69±4.29	- 1.89	0.278
Pain duration (month)	63.04±92.90	46.40±64.03	0.95	0.342
VAS (cm)	6.15±1.66	5.25±2.28	1.99	0.049

Independent Samples t Test, BMI: Body Mass Index, VAS: Visual Analog Scale, X: Mean, SD: Standard deviation, p: Statistical Significance, t: Significance level of the test

often). The total score for each subscale is calculated by summing the scores for each item. The highest score that can be obtained on the scale is 36 points in the self-care subdimension, 24 in the helplessness and conscious cognitive intervention subdimension, 27 in the seeking medical help subdimension, and the lowest score that can be obtained on all subdimensions is 0 (Karaca ve ark., 1996). A high score indicates that the person's tendency to that technique has

The ODI was used to assess disability status. The ODI, whose validity and reliability were demonstrated in Turkey in 2004, it has 10 items such as severity of pain, personal care, lifting, walking, sitting, standing, social life, sleeping, traveling, and degree of pain. The higher the total score, the higher the degree of disability. The maximum score is 50 points. 31-50 points is evaluated as severe, 11-

30 points as moderate and 1-10 points as mild. The degree of disability is determined based on the scoring (Durmuş ve ark., 2010; Yakut ve ark., 2004).

The TSK was used to assess kinesiophobia. This 17-item scale was developed by Miller et al. in 1991 and republished by Vlaeyen et al. in 1995. The Turkish validity and reliability was conducted by Yılmaz et al. in 2011. In the scoring system ranging from 17 to 68, kinesiophobia increases as the score increases (Yılmaz ve ark., 2011).

IPAQ - SF was used to assess physical activity. It is a test that includes questions for walking, sitting, high and moderate activities. The total score calculation includes the sum of time (minutes) and frequency (days) of walking, moderate activity, and vigorous activity. Turkish validity and reliability study of the scale was conducted by Ozturk (Craig ve ark., 2003; Öztürk, 2005).

Table 2. Pain management

Variable	Women (n=42) X±SD	Men (n=42) X±SD	t	p
Self management	19.07±7.86	16.54±7.57	1.49	0.138
Helplessness	12.52±4.66	9.11±4.73	3.32	0.001
Conscious cognitive intervention	12.76±5.29	10.11±5.14	2.32	0.023
Seeking medical help	12.50±4.93	10.80±5.26	1.51	0.133

Independent Samples t Test, X: Mean, SD: Standard deviation, p: Statistical Significance, t: Significance level of the test

Table 3: Disability, Kinesiophobia and Physical Activity Results

Variable	Women (n=42) X±SD	Men (n=42) X±SD	t	p
Disability score	17.80±7.75	13.80±8.86	2.20	0.031
Percentage of disability	36.53±15.75	27.76±17.55	2.41	0.018
Kinesiophobia score	44.73±8.53	38.64 ± 8.59	0.26	0.002
Physical activity score (MET)	4579.35±6689.15	5600.29±770.48	-0.64	0.518
Physical activity-sitting score (MET)	299.28±237.28	540.28±348.77	-3.70	0.000

Independent Samples t Test, X: Mean, SD: Standard deviation, p: Statistical Significance, t: Significance level of the test

STATISTICAL ANALYSIS

The sample size was calculated by using the G Power 3.1.9.2 program with an effect value of (d) 0.80, power (1-β) 0.95, and α-value of 0.05, and taking into consideration the means and standard deviations of the distribution of the scores of the subdimensions of the pain avoidance scale by men and women from the previous thesis work, which resulted in the inclusion of 84 individuals (42 male and 42 female). SPSS Statistics 21.0 package program was used. Since the assumptions of parametric tests were met, the Independent Sample t test was used to compare independent group differences. Relationships between continuous variables were examined with Pearson correlation analyses.

RESULTS

A total of 84 (42 female, 42 male) subjects with CLBP were included in the study. The mean age of females was 43.23±8.40 years, and the mean age of males was

37.09±12.16 years. The mean pain duration of women was 63.04±92.90 months, and the mean VAS score was 6.15±1.66 cm. The mean pain duration of men was 46.40±64.03 months, and the mean VAS score was 5.25±2.28 cm. The demographic and clinical data show in Table 1.

In the examination of women's pain management, the mean scores for self-coping were 19.07±7.86, 12.52±4.66 for helplessness, 12.76±5.29 for conscious cognitive intervention, and 12.50±4.93 for seeking medical help. The mean scores for self-coping help in men's pain management were 16.54±7.57, 9.11±4.73 for helplessness, 10.11±5.14 for conscious cognitive intervention, and 10.80±5.26 for seeking medical help. There was a statistically significant difference between women and men with CLBP in the mean scores for helplessness (p=0.001) and conscious cognitive intervention (p=0.023). There was no statistically

Table 4: The Relationship Between Pain Management and Pain Duration, Pain Intensity, Disability, Kinesiophobia, and Physical Activity in Women with Chronic Low Back Pain

Variable	Pain Duration	Pain Intensity	Kinesiophobia	Physical Activity	Physical Activity-Sitting	Disability Score	Percentage of Disability
Self-coping	r=-0.206 p= 0.19	r= 0.204 p= 0.195	r= -0.112 p= 0.479	r= -0.096 p= 0.546	r= -0.44 p= 0.781	r= -0.264 p= 0.91	r= -0.211 p= 0.18
Helplessness	r= 0.084 p= 0.595	r= 0.182 p= 0.248	r= 0.426 p= 0.005	r= 0.096 p= 0.544	r= 0.082 p= 0.607	r= 0.397 p= 0.009	r= 0.474 p= 0.002
Conscious cognitive intervention	r= -0.137 p= 0.388	r= -0.005 p= 0.975	r= -0.024 p= 0.880	r= 0.082 p= 0.607	r= -0.019 p= 0.906	r= -0.036 p= 0.823	r= 0.050 p= 0.755
Seeking medical help	r= 0.080 p= 0.612	r= 0.160 p= 0.311	r= 0.308 p= 0.047	r= 0.089 p= 0.573	r= 0.013 p= 0.936	r= 0.197 p= 0.212	r= 0.306 p= 0.049

Pearson Correlation Analysis, p: Statistical Significance, r: Correlation Coefficient

Table 5: The Relationship Between Pain Management and Pain Duration, Pain Intensity, Disability, Kinesiophobia, and Physical Activity in Men with Chronic Low Back Pain

Variable	Pain Duration	Pain Intensity	Kinesiophobia	Physical Activity	Physical Activity-Sitting	Disability Score	Percentage of Disability
Self-coping	r=-0.226 p= 0.149	r= -0.060 p= 0.708	r= 0.089 p= 0.574	r= -0.274 p= 0.079	r= -0.077 p= 0.628	r= -0.003 p= 0.984	r= -0.018 p= 0.910
Helplessness	r= 0.121 p= 0.446	r= 0.159 p= 0.313	r= 0.534 p= 0.000	r= -0.512 p= 0.001	r= 0.120 p= 0.449	r= 0.373 p= 0.015	r= 0.362 p= 0.018
Conscious cognitive intervention	r= -0.192 p= 0.222	r= -0.067 p= 0.675	r= 0.213 p= 0.175	r= -0.440 p= 0.004	r= 0.020 p= 0.900	r= 0.101 p= 0.524	r= 0.086 p= 0.589
Seeking medical help	r= 0.044 p= 0.784	r= 0.231 p=0.142	r= -0.094 p= 0.553	r= -0.171 p= 0.278	r= 0.232 p= 0.140	r= 0.252 p= 0.107	r= 0.266 p= 0.089

Pearson Correlation Analysis, p: Statistical Significance, r: Correlation Coefficient

significant difference in the mean scores of self-coping and seeking medical help ($p > 0.05$) (Table 2).

Statistically significant difference was found between men and women with CLBP in disability score ($p = 0.031$), percentage of disability ($p=0.018$), and kinesiophobia score ($p=0.002$). There was no significant difference in the patients' mean physical activity score ($p > 0.05$), but a significant difference was found in the sitting physical activity level ($p < 0.01$) (Table 3).

When examining the physical activity of individuals with chronic low back pain, it was found that 16 (38%) women were inactive, 14 (33%) women were very active, and 12 (29%) women were minimally active. Among men, 20 (48%) were very active, 12 (28%) were inactive, and 10 (24%) were minimally active.

In women with chronic low back pain, a significant moderate correlation was found between the subdimension of helplessness in dealing with pain and kinesiophobia ($p=0.005$), disability score ($p=0.009$), and percentage of disability ($p=0.002$). In addition, a significant relationship was found between the subdimension of seeking medical help for pain management and the percentage of kinesiophobia ($p=0.047$) and disability ($p=0.049$) (Table 4). There was no statistically significant association between the parameters of self-coping and conscious cognitive interventions and pain duration, pain intensity, kinesiophobia, physical activity score, and disability level ($p > 0.05$) (Table 4).

In men with chronic low back pain, a significant association was found between the helplessness subdimension in pain management and kinesiophobia

($p=0.000$), physical activity score ($p=0.001$), disability score ($p=0.015$), and disability level ($p=0.018$). In addition, a significant relationship was found between conscious cognitive attempts and the physical activity score ($p=0.004$). There was no statistically significant association between the parameters of self-coping and seeing a doctor and pain duration, pain intensity, kinesiophobia, physical activity score, and disability level ($p > 0.05$) (Table 5).

DISCUSSION

In our study, which aimed to investigate whether the form of pain coping in patients with chronic low back pain differs according to gender, it was found that the scores of women with chronic low back pain for self-coping, helplessness, seeking medical help, and conscious cognitive interventions in their pain coping style were higher than those of men. Although women experience greater feelings of helplessness than men, they perform better on conscious cognitive interventions for pain management. However, there are differences in pain coping styles between men and women; feelings of helplessness in pain coping lead to kinesiophobia in both sexes, which limits physical activity and increases levels of disability.

Meints and Edwards reported that the presence of chronic pain causes not only biological but also cognitive and behavioral problems. They explained that personal factors, social environments, and environmental factors influence a person's attitude toward pain (Meints ve Edwards, 2018). Therefore, individual differences, experiences, and preferences are important in pain

management success. People with chronic pain need different strategies to cope with pain. Pain management has cognitive, emotional, behavioral, and physiological subdimensions (Madenci ve ark., 2006). According to Lazarus, pain coping is a cognitive process of actively selecting coping responses after threat and cause evaluation (Lazarus ve Folkman, 1984). There are different classifications for coping with pain. Active coping refers to controlling the pain or moving despite the pain. Passive coping refers to withdrawing and giving up control due to extreme pain. Similarly, avoidance and fear of pain are defined in the approach to defining pain and examining its causes (Van Damme ve ark., 2008). Büssing et al. reported that individuals with chronic pain who use more self-directed coping methods, such as positive thinking and believing that pain can be relieved, have better physical functioning and higher life satisfaction (Büssing ve ark., 2010).

Karaman et al. examined coping with chronic pain using the Pain Coping Inventory in 97 elderly individuals consisting of 55 women and 42 men. Scores for passive coping (anxiety, calm, and withdrawal) were higher than scores for active coping (disengagement, transformation of pain, and comforting thoughts) in both genders. In terms of gender, they found that women's scores for coping with active and passive pain were higher than men's (Karaman ve ark., 2021). In our study, women were found to have higher scores than men for self-control, helplessness, conscious cognitive interventions, and seeking medical help when coping with pain.

When Crowe et al. examined pain coping in 64 individuals with chronic low back pain, they found that pain self-management with clinical guidelines was the best coping method. Individuals with chronic low back pain were likelier to prefer medication, exercise, and heat applications when self-managing pain (Büssin ve ark., 2010). When Demir Saka and Gozum examined pain selfcare practices in 258 individuals, the most commonly used non-drug self-care practices for pain relief were restriction of rest and activity by 43.4%, applying anything to the painful area by 38.8%, massaging the painful area by 33.7%, and hot water application by 32.6% (Karaman ve ark., 2021). Our study found that the highest pain-coping scores in women and men with chronic low back pain were in self-management. Women's self-management scores were better than men's.

In his study, Kawi examined perceptions of pain management, pain management support, and functional abilities. While people preferred to increase functional

activity by using more medication for pain management, they emphasized that they experienced anxiety and fear due to pain and that people with pain should be psychologically supported (Crowe ve ark., 2010). Passive coping strategies such as withdrawal, rest, and medication use in pain management were associated with increased pain, depression, disability, and poor psychological adjustment. Behaviors such as avoiding fear of pain, waiting for a miracle, seeking social support, displaying emotional intolerance, and avoiding moving the painful area are described as maladaptive behaviors (Demir Saka ve Gözüm, 2020; Peres ve Lucchetti, 2010).

Varela and Van Asselt examined the causes of low back pain and disability in 80 individuals aged 20-60 with chronic nonspecific low back pain. It was found that there was a negative relationship between coping with one's pain and level of disability, physical activity, kinesiophobia, and emotional state. It was emphasized that psychosocial factors should be very good for coping with self-pain (Kawi, 2014). Luque Soares et al. reported that kinesiophobia was related to the quality of life, pain intensity, and disability in 10,726 individuals with chronic musculoskeletal pain, and that as kinesiophobia increased, disability scores and pain intensity increased, while the quality of life worsened (Snow-Turek ve ark., 1996). Our study found that disability and kinesiophobia scores were higher, and physical activity scores were lower in women with chronic low back pain than men. Helplessness and seeking medical help for pain management were associated with kinesiophobia and disability scores in both men and women, and their physical activity levels were limited.

CONCLUSION

Pain coping has cognitive, emotional, behavioral, and physiological subdimensions. Therefore, to achieve successful pain management outcomes in individuals with chronic low back pain, multidimensional treatment should be used, including education about pain management, psychological support, and behavioral therapy, in addition to the use of various therapeutic methods to inhibit pain, taking into account individual differences and treatment expectations.

The methods of coping with pain in people with low back pain, their disability levels and their kinesiophobia and physical activity levels have been a subject of research in recent years. Our study is important in terms of showing the reflections of the factors related to low back pain in different genders and explaining whether the

methods of coping with pain differ between genders. The results of our study showed that individuals should be evaluated multidimensionally in terms of biopsychosocial aspects in the management of pain. In order to be successful in coping with pain, individual differences should be taken into consideration.

ETHICAL APPROVAL

This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by Pamukkale University Non-Interventional Clinical Research Medical Ethics Committee (Date: 24.12.2019/ No: 22). This study was retrospectively registered at Clinical Trials.gov (ID: NCT06125496).

Informed consent was obtained from all individual participants included in the study.

AUTHOR CONTRIBUTIONS

All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by Nuri Usta, Filiz Altug and Ayse Unal. The first draft of the manuscript was written by Nuri Usta and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

CONFLICT OF INTEREST

The authors have no relevant financial or non-financial interests to disclose.

RESEARCH FUNDING

The authors declare that no funds, grants, or other support were received during the preparation of this manuscript.

REFERENCES

- Büssing, A., Ostermann, T., Neugebauer, E. A., Heusser, P., 2010.** Adaptive coping strategies in patients with chronic pain conditions and their interpretation of disease. *BMC Public Health*, 10. <https://doi.org/10.1186/1471-2458-10-507>
- Chiarotto, A., Maxwell, L. J., Ostelo, R. W., Boers, M., Tugwell, P., Terwee, C. B., 2019.** Measurement properties of visual analogue scale, numeric rating scale, and pain severity subscale of the brief pain inventory in patients with low back pain: a systematic review. *The Journal of Pain*, 20(3), 245-263.
- Costa, L. D. C. M., Maher, C. G., McAuley, J. H., Hancock, M. J., Smeets, R. J., 2011.** Self-efficacy is more important than fear of movement in mediating the relationship between pain and disability in chronic low back pain. *European Journal of Pain*, 15(2), 213-219.
- Craig, C. L., Marshall, A. L., Sjoström, M., Bauman, A. E., Booth, M. L., Ainsworth, B. E., 2003.** International physical activity questionnaire: 12-country reliability and validity. *Medicine & Science in Sports & Exercise*, 35(8), 1381–1395. <https://doi.org/10.1249/01.MSS.0000078924.61453.FB>
- Crowe, M., Whitehead, L., Gagan, M. J., Baxter, D., Panckhurst, A., Dphil, D. B., 2010.** Self-management and chronic low back pain: a qualitative study. *Journal of Advanced Nursing*, 66(7), 1478–1486. <https://doi.org/10.1111/j.1365-2648.2010.05316.x>
- Demir Saka, S., Gözüm, S., 2020.** Toplumda yaşayan yaşlılarda ağrı prevalansı ve ağrı öz yönetim uygulamaları. *Çukurova Medical Journal*, 45(2), 596–603. <https://doi.org/10.17826/cumj.639994>
- Durmuş, D., Akyol, Y., Cengiz, K., Terzi, T., Cantürk, F., 2010.** Effects of therapeutic ultrasound on pain, disability, walking performance, quality of life, and depression in patients with chronic low back pain: a randomized, placebo-controlled trial. *Turkish Journal of Rheumatology*, 25(2), 82-87. <https://doi.org/10.5152/tjr.2010.07>
- Faul, F., Erdfelder, E., Lang, A. G., Buchner, A., 2007.** G* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39(2), 175-191.
- Filipczyk, P., Filipczyk, K., Saulicz, E., 2021.** Influence of stabilization techniques used in the treatment of low back pain on the level of kinesiophobia. *International Journal of Environmental Research and Public Health*, 18(12), 6393.
- Ishak, N. A., Zahari, Z., Justine, M., 2017.** Kinesiophobia, pain, muscle functions, and functional performances among older persons with low back pain. *Pain Research and Treatment*, 2017.
- Karaca, S., Demir, F., Aşkın, R., Şimşek, İ., 1996.** Ağrı ile başa çıkma ölçeği geçerlilik ve güvenilirliği. 5. Türk-Alman Fiziksel Tıp ve Rehabilitasyon Kongresi, Antalya.
- Karadağ, M., Çalışkan, N., Sarıtaş, S., 2016.** Kronik bel ağrısı olan hastaların kullanmış oldukları tamamlayıcı tedavi yöntemlerinin ve hastalık algılarının incelenmesi. *Hacettepe Üniversitesi Hemşirelik Fakültesi Dergisi*, 3(2), 14-27.
- Karaman, E., Sayın Kasar, K., Kankaya, H., 2021.** Yaşlı bireylerin kronik ağrıyla baş etme durumları ve etkileyen faktörlerin incelenmesi. *Ege Tıp Dergisi*, 60(4), 375–383.
- Kawi, J., 2014.** Chronic low back pain patients' perceptions on self-management, self-management support, and functional ability. *Pain Management Nursing*, 15(1), 258-264.
- Lazarus, R., Folkman, S., 1984.** *Stress, appraisal, and coping*. Springer.
- Luque-Suarez, A., Martinez-Calderon, J., Falla, D., 2019.** Role of kinesiophobia on pain, disability and quality of life in people suffering from chronic musculoskeletal pain: a systematic review. *British Journal of Sports Medicine*, 53, 554–559. <https://doi.org/10.1136/bjsports-2017-098673>
- Madenci, E., Herken, H., Yağız, E., Keven, S., Gürsoy, S., 2006.** Kronik ağrılı ve fibromiyalji sendromlu hastalarda depresyon düzeyleri ve ağrı ile başa çıkma becerileri. *Türk Fiz Tıp Rehab Derg*, 52(1), 19-21.
- Meints, S. M., Edwards, R. R., 2018.** Evaluating psychosocial contributions to chronic pain outcomes. *Progress in Neuro-Psychopharmacology*, 87(Pt B), 168-182. <https://doi.org/10.1016/j.pnpbp.2018.01.017>
- Öztürk, M., 2005.** A research on reliability and validity of international physical activity questionnaire and determination of

physical activity level in university students. Yüksek Lisans Tezi, Hacettepe Üniversitesi Sağlık Bilimleri Enstitüsü, Ankara.

- Peres, M. F., Lucchetti, G., 2010.** Coping strategies in chronic pain. *Current Pain and Headache Reports*, 14(5), 331–338. <https://doi.org/10.1007/s11916-010-0137-3>
- Picavet, H., Vlaeyen, J. W., Schouten, J. S., 2002.** Pain catastrophizing and kinesiophobia: predictors of chronic low back pain. *American Journal of Epidemiology*, 156(11), 1028-1034.
- Shmagel, A., Foley, R., Ibrahim, H., 2016.** Epidemiology of chronic low back pain in US adults: data from the 2009–2010 National Health and Nutrition Examination Survey. *Arthritis Care & Research*, 68(11), 1688–1694. <https://doi.org/10.1002/acr.22890>
- Skuladottir, H., Halldorsdottir, S., 2008.** Women in chronic pain: Sense of control and encounters with health professionals. *Qualitative Health Research*, 18(7), 891–901. <https://doi.org/10.1177/1049732308318036>
- Snow-Turek, A. L., Norris, M. P., Tan, G., 1996.** Active and passive coping strategies in chronic pain patients. *Pain*, 64(3), 455–462. [https://doi.org/10.1016/0304-3959\(95\)00190-5](https://doi.org/10.1016/0304-3959(95)00190-5)
- Snyder, C. R., (Ed.), 1999.** *Coping: The psychology of what works.* Oxford University Press, USA.
- Van Damme, S., Crombez, G., Eccleston, C., 2008.** Coping with pain: A motivational perspective. *Pain*, 139(1), 1–4. <https://doi.org/10.1016/j.pain.2008.07.022>
- Varela, A. J., Van Asselt, K. W., 2022.** The relationship between psychosocial factors and reported disability: the role of pain self-efficacy. *BMC Musculoskeletal Disorders*, 23(1). <https://doi.org/10.1186/S12891-021-04955-6>
- Yakut, E., Düger, T., Öksüz, Ç., Yörükan, S., Üreten, K., Turan, D., Güler, Ç., 2004.** Validation of the Turkish version of the Oswestry Disability Index for patients with low back pain. *Spine*, 29(5), 581-585.
- Yılmaz, Ö., Yakut, Y., Uygur, F., Uluğ, N., 2011.** Tampa Kinezyofobi Ölçeği'nin Türkçe versiyonu ve test-tekrar test güvenilirliği. *Fizyoterapi Rehabilitasyon*, 22(1), 44-49.
- Zeidner, M., Endler, N. S., (Eds.), 1995.** *Handbook of coping: Theory, research, applications.* John Wiley & Sons.