Original Article

The Correlation Between Exercise Perception, Physical Activity and Satisfaction with Life of Fibromyalgia Patients and Healthy Individuals

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Abstract

Background: Individuals with fibromyalgia are subjects to research in physical activity situations and life satisfaction due to the problems they experience.
Objective: The present study was conducted to examine the correlation between exercise perception, physical activity, and satisfaction with life of the patients diagnosed with fibromyalgia syndrome and healthy individuals.
Methods: The descriptive and cross-sectional study was conducted with 51 patients diagnosed with fibromyalgia and 54 healthy individuals. The data of the study was collected in the digital environment by utilizing the Personal Information Form, the Exercise Benefits/Barriers Scale, the International Physical Activity Questionnaire, and the Satisfaction With Life Scale. Chi-square, correlation test, ANOVA, independent samples t-test, and Kruskal Wallis-H tests were used in the analysis of the data.
Results: The total score averages of fibromyalgia patients are 118.74±17.08 on the Exercise Benefits/Barriers Scale, 1682.94±664.18 on the International Physical Activity Questionnaire, and 12.62±5.17 on the Satisfaction With Life Scale. The total score averages of healthy individuals are 120.38±22.37 on the Exercise Benefits/Barriers Scale, 2501.31±1644.98 on the International Physical Activity Questionnaire, and 16.20±4.16 on the Satisfaction With Life Scale. A weak and positive correlation was determined between Fibromyalgia patients' Exercise Barriers and Moderate Physical Activity. A moderate negative correlation was found between the Exercise Barriers and walking activity of healthy individuals.
Conclusions: It has been determined that as the perceived benefits of exercise levels of fibromyalgia patients increases, their satisfaction with life increases, and as the sitting time increases, their satisfaction with life decreases. On the other hand, as the walking activity of healthy individuals increases, their level of exercise barriers decreases.

Keywords: Fibromyalgia, exercise, satisfaction

Introduction

The term fibromyalgia consists of the Latin word "fibra", the Greek word "myes", and the Greek word "algos". "Fibra" means fibrous tissue, "myes" means muscles, and "algos" means pain (Wolfe et al., 1990). Fibromyalgia syndrome (FMS) is accompanied by widespread musculoskeletal pain, stiffness and tender points in certain parts of the body, fatigue, sleep problems, dry mouth and eyes, memory and cognitive disorders, irritable bowel syndrome, dysmenorrhea, urethral syndrome, palpitations and somatic complaints, lethargy, and mood disorders such as anxiety and depression. In addition, it is a syndrome that does not have a specific laboratory finding (Inanici et al., 2002).

Since the onset time of the disease cannot be determined exactly, the prevalence information for FMS is more reliable than the incidence (McBeth & Jones, 2007). The prevalence of FMS was found to be higher in women. Its prevalence increases with age (Wolfe et al., 1995). In population studies, it has been reported that FMS is more common in those with low socioeconomic and educational levels. Although the prevalence increases with age, it can also be seen in childhood and adolescence (KashikarZuck et al., 2010).

The etiology of FMS is not clearly known. There is no single cause of this disease (Wolfe et al., 1990). The etiopathogenesis of FMS is thought to be related to genetic, environmental, immunological, inflammatory, autonomic, neuroendocrine, psychosocial, and environmental factors. In addition, it is thought that genetic predisposition triggers the disease with environmental, immunological, and inflammatory factors (Lund et al., 2003; Wysenbeek et al., 1991).

FMS, which negatively affects many different areas, greatly reduces satisfaction with life and decreases professional performance (Davis & Harrison, 1998). While regular and long-term exercise is a good prognostic factor, it has been reported that excessive pain during the exercise and intense pain in the anatomical region adversely affects especially the level of physical activity and exercise perception (Felson & Goldenberg, 1986; Henriksson, 1994).

FMS is a chronic disease that reduces the levels of physical activity and satisfaction with life. The current study was planned to evaluate the correlation between exercise perception, physical activity, and satisfaction with life of the patients diagnosed with fibromyalgia syndrome and healthy individuals, and to compare the values of fibromyalgia patients with the values of the healthy control group. In this context, answers to the following questions were sought.

1. What are the exercise perception, physical activity, and satisfaction with life levels of fibromyalgia patients?
2. Is there a statistically significant difference among exercise perception, physical activity, and satisfaction with life levels of fibromyalgia patients and healthy individuals?
3. Is there a correlation among exercise perception, physical activity, and satisfaction with life levels of fibromyalgia patients and healthy individuals?

Methodology

Research Design: The data of the descriptive and cross-sectional study was collected digitally due to the current pandemic process. A digital form (Google forms) was created by the researchers. The created digital survey was shared out social fields such as Whatsapp, Instagram, Twitter, and the participants were called to share it with other individuals. Each participant answered the online survey only once. At the first of the questionnaire sent to the respondents, there was information about the purpose and content of the study and that participation in the study was based on volunteerism. Online consents were obtained from the participants. The identity information of the participants was not registered in the survey.

Population and Sample of the Study: The research population consists of people with fibromyalgia and healthy individuals. Without using any sampling method, all patients diagnosed with fibromyalgia and healthy individuals who supplied the inclusion criteria of the study between the dates of December 15th, 2021 and February 15th, 2022 included in the sample.

Data Collection: The study was conducted with 51 patients diagnosed with fibromyalgia and 54 healthy individuals who approved to participate in the study between the dates of

December 15th, 2021 and February 15th, 2022. Filling the questionnaire took approximately 10-15 minutes. Inclusion criteria for the patients diagnosed with fibromyalgia are volunteering to participate in the study, being over 18 years old, being able to read and understand Turkish, having a smartphone, and using social media. Inclusion criteria for the healthy group are not having any chronic pain complaints, not having any musculoskeletal problems, being over 18 years old, being able to read and understand Turkish, having a smartphone, and using social media.

Data Collection Tools: The "Personal Information Sheet", the "Exercise Benefits/Barriers Scale", the "International Physical Activity Questionnaire", and the "Satisfaction With Life Scale" were utilized to collect the data.

Personal Information Sheet: The personal information sheet was organizationed by the researchers in coherent with the literature. In the form, sociodemographic characteristics such as age, gender, educational level, income conditions, status of employment, and marital status of the participants included in the study were evaluated, as well as the characteristics of fibromyalgia patients regarding the duration of the disease, the status of daily limitations due to pain, and the presence of additional diseases.

Exercise Benefits/Barriers Scale (EBBS): The scale was improved by Sechrist, Walker, and Pender (1987), and it determines the exercise benefits/barriers perceptions of individuals who are going to participate in doing exercises. The validity and reliability research of the scale in Turkey was done by Ortabag et al. (2010). The scale has 43 items and is in the form of Likert type (4=strongly agree, 1=strongly disagree). The scale consists of two subscales: Exercise Barriers and Exercise Benefits. Items 4, 6, 9, 12, 14, 16, 19, 21, 24, 28, 33, 37, 40, and 42 of the scale are inverse scored. Scores that can be obtained from the scale 43 to 172. The score range of the exercise benefits is between 29 and 116, and the score range of exercise barriers is between 14 and 56. A high total scale score indicates that the individual understands the benefits of exercise. The higher the exercise benefits score on the scale, the greater the perception of benefits, the higher the exercise barriers score, the higher the perception of barriers (Ortabag, et al., 2010). The Cronbach's Alpha coefficient for the total scale was 0.95, and the Cronbach's Alpha coefficient for its subscales varied between 0.95 and 0.86 (Sechrist, Walker, & Pender, 1987). In this study, the Cronbach's Alpha coefficient was detect 0.95.

International Physical Activity Questionnaire (IPAQ): The questionnaire, which determines the physical activity levels that individuals report, started to be developed in Geneva (1998), and it was decided that it could be used internationally with validity and reliability studies in 12 countries (Craig et al., 2003). Turkish validity and reliability were determined by Saglam et al. (2010), the short form of the form consists of 7 questions. The questionnaire ensures report about walking activity, time spent in moderate and intense physical activities, and sitting time. Calculation of the total score contains the sum of the period and frequency of walking activity, moderate physical activity, and intense physical activity. The sitting part is calculated separately. In the assessment of all activities, the test is that each activity is done for at least 10 minutes at a single time. A point is obtained as "MET-minutes/week" by multiplying the times of minute, day, and resting oxygen consumption (MET value). When calculating the walking score, 3.3 METs for walking, 4 METs for moderate physical activity, and 8 METs for intense physical activity are taken. By the questionnaire, physical activity levels are classified into those who are not physically active (<600 MET-minutes/week), those who have low physical activity levels (600-3000 MET-minutes/week), and those who have convenient physical activity levels (beneficial for health) (>3000 MET-minutes/week) (Saglam et al., 2010).

Satisfaction With Life Scale (SWLS): The scale was improved by Diener et al. (1985), and its Turkish adaptation was made by Dagli and Baysal (2016) (Dagli & Baysal, 2016; Diener et al., 1985). The satisfaction with life scale is in the form of a 5-points Likert-type consisting of 5 items (1=not at all appropriate, 5=very appropriate), the highest score that can be obtained from this scale is 25, while the lowest score is 5. A low score indicates low satisfaction with life, and a high score indicates high satisfaction with life. The Cronbach's Alpha coefficient of the scale was

0.88, and the test-retest reliability was 0.97 (Dagli & Baysal, 2016). In this study, the Cronbach's Alpha coefficient was determined as 0.94.

Data Analysis: The data of the research was analyzed by utilizing the SPSS 22.0 statistical program. It was determined by the Kolmogorov Smirnov test. For the data, descriptive statistics with percentage, frequency, mean, and standard deviation values were calculated. The Chi-square test was utilized to compare the independent variables of the groups, and the ANOVA test was used to compare age, height, and weight averages. In the comparison of EEBS, IPAQ total and subscales, and SWLS score averages of patients diagnosed with fibromyalgia and healthy individuals, the independent samples t-test was used for the groups with normal dispersion and the Kruskal Wallis-H test for those who did not show normal distribution. The correlation test was used to determine the correlation between the scales' total score averages and their subscales' total score averages. For the internal consistency, Cronbach's alpha coefficient was computationed and the p significance level was taken as $p< 0.05$.

Ethical Aspect of the Study: In order to carry out the study, permission was obtained from the Ethics Committee of Kilis 7 Aralık University (Ethics Committee Number: 2021/03). Before the data was collected, the aim of the study was explained to the participants in digital form and their online consents were obtained. The research was planned and conducted congruent with the principles of the Declaration of Helsinki. This study was performed in line with the principles of the Declaration of Helsinki. Approval for the study was granted by the Ethics Committee of Kilis 7 Aralık University (Approval Date: 03.02.2021 and Approval Number: 2021/03).

Results

It was determined that 59.0% of fibromyalgia patients were >50 years old, 72.5% of them were female, 43.2% of them were primary school graduates, 68.6% of them had the income level of "income is equal to expenses", 64.8% of them were employed, 68,5% of them were married, 64.7% of them had FMS for 1-5 years, 47.0% of them had daily limitations due to pain, and 68.6% of them had an additional disease. Of the healthy individuals included in the study, it was determined that 66.7% of them were aged ≤50 years, 70.4% of them were female, 38.9% of them were primary school graduates, 68.5% had the income level of "income is equal to expenses", 64.8% of them were employed, 68,5% of them were married, and 55.6% of them had a disease (Table 1).

No statistically significant difference was determined among the age, gender, educational level, income level, employment condition, marital status, and the presence of an additional disease of fibromyalgia patients and healthy individuals ($p>0.05$). It was found that there was no statistically significant difference between the average age ($F=3,400$; $p=0.068$), average height ($F=2.452$; $p=0.120$), and average weight ($F=3.964$; $p=0.062$) of fibromyalgia patients and healthy individuals (Table 1).

It has been determined that the EBBS total score average of fibromyalgia patients is 118.74±17.08, Exercise Barriers' score average is 36.60±7.41, Exercise Benefits' score average is 84.66±15.12; The IPAQ total score average is 1682.94±664.18, Vigorous Physical Activity's score average is 242.96±304.07, Moderate Physical Activity's score average is 632.94±531.33, Walking Activity's score average is 795.29±392.80, Sitting Time's score average is 622.94±211.33; The SWLS total score average is 12.62±5.17. It has been determined that the EBBS total score average of healthy individuals is 120,38±22,37, Exercise Barriers' score average is 38,20±6,94, Exercise Benefits' score average is 84,70±20,76; The IPAQ total score average is 2501,31±1644,98, Vigorous Physical Activity's score average is 254,70±342,28, Moderate Physical Activity's score average is 895,18±436,91, Walking Activity's score average is 1422,05±1535,94, Sitting Time's score average is 494,44±178,74; The SWLS total score average is 16,20±4,16. The SWLS total score average of fibromyalgia is 12.62±5.17, and the SWLS total score average of healthy individuals is 16.20±4.16 (Table 2).

A statistically significant difference was determined between the IPAQ total, Moderate Physical Activity, Walking Activity, Sitting

Time, and the SWLS score averages of fibromyalgia and healthy individuals ($p< 0.05$) (Table 2).

No correlation was found between the EBBS total and the IPAQ total and its subscales' score averages of fibromyalgia patients ($p> 0.05$). A weak and positive correlation was found between Fibromyalgia patients' perceptions of Exercise Barriers and their Moderate Physical Activity levels ($r=0.290$, $p=0.039$). A correlation was determined between the EBBS total ($r=0.552$, $p=0.001$), the Exercise Benefits ($r=0.554$, $p=0.001$), Sitting Time ($r=-0.320$, $p=0.022$) and the SWLS of fibromyalgia patients. No correlation was found between the EBBS total, the IPAQ total and its subscales, and the SWLS of healthy individuals ($p> 0.05$). A moderate negative correlation was found between the Perception of Exercise Barriers and the Walking Activity ($r=-0.433$, $p=0.001$) of healthy individuals. A moderately positive correlation was determined between the Perception of Exercise Benefits and Walking Activity ($r=0.350$, $p=0.009$) of healthy individuals (Table 3).

Table 1. The Comparison of Sociodemographic Characteristics of Patients with Fibromyalgia and Healthy Individuals

	Groups				
	Patients with Fibromyalgia (n=51)		Healthy Individuals(n=54)		
	n	%	n	%	Statistics
Age					
≤ 50 years	25	41.0	36	66.7	*x^2=3.355
> 50 years	26	59.0	18	33.3	p=0.067
Gender					
Female	37	72.5	38	70.4	x^2=0.061
Male	14	27.5	16	29.6	p=0.805
Educational Level					
Primary school graduate	22	43.2	20	38.9	x^2=0.221
High school graduate	12	23.5	13	24.1	p=0.895
University graduate	17	33.3	20	37.0	
Income Level					
Income is less than expenses	10	19.6	6	11.1	x^2=2.442
Income is equal to expenses	35	68.6	37	68.5	p=0.295
Income is more than expenses	6	11.8	11	20.4	
Employment Status					
Employed	23	45.1	35	64.8	x^2=3.365
Unemployed	28	54.9	19	35.2	p=0.067
Marital Status					
Married	38	74.5	37	68.5	x^2=0.461
Single	13	25.5	17	31.5	p=0.497
Duration of the Disease					
Between 1-5 years	33	64.7			
Between 6-10 years	11	21.6			

> 10 years	7	13.7			
Daily Limitation due to Pain					
Present	24	47.0			
Absent	1	2.0			
Partially Present	26	51.0			
The Status of an Additional Disease					
Present	35	68.6	30	55.6	x^2=1.900
Absent	16	31.4	24	44.4	p=0.168
	$\bar{X}$±SD		**$\bar{X}$±SD**		
Average Age	53.70±10.62		51.79±11.76		**F=3.400 p=0.068
Average Height	161.29±8.19		126.59±7.52		F=2.452 p=0.120
Average Weight	74.35±12.08		71.96±12.26		F=3.964 p=0.062

$\bar{X}$= Mean, SD=Standard Deviation. *Chi-square test **ANOVA test, p < 0.05.

Table 2. The Comparison of EBBS, IPAQ, and SWLS Mean Scores of Fibromyalgia Patients and Healthy Individuals

	Groups		
	Patients with Fibromyalgia	**Healthy Individuals**	
	$\bar{X}$±SD	**$\bar{X}$±SD**	**Statistics/p**
EBBS Total	118.74±17.08	120.38±22.37	*0.674
Exercise Barriers	36.60±7.41	38.20±6.94	*0.257
Exercise Benefits	84.66±15.12	84.70±20.76	*0.992
IPAQ Total (MET-minutes/week)	1682.94±664.18	2501.31±1644.98	**0.001**
Vigorous Physical Activity (MET-minutes/week)	242.96±304.07	254.70±342.28	**0.068
Moderate Physical Activity (MET-minutes/week)	632.94±531.33	895.18±436.91	**0.007**
Walking Activity (MET-minutes/week)	795.29±392.80	1422.05±1535.94	**0.006**
Sitting Time (minutes)	622.94±211.33	494.44±178.74	**0.001**
SWLS	12.62±5.17	16.20±4.16	*0.031

EBBS= The Exercise Benefits/Barriers Scale. IPAQ= The International Physical Activity Questionnaire. SWLS= The Satisfaction With Life Scale. $\bar{X}$=Mean. SD=Standard Deviation. *t= Independent Samples t Test. **Kruskal Wallis-H test. p < 0.05.

Table 3. The Correlation Distribution of Total and Subscales' Scores of EBBS, IPAQ, and SWLS of Fibromyalgia Patients and Healthy Individuals

		1	2	3	4	5	6	7	8	9
1 EBBS Total	r	1	*0.352*	*0.957*	*-0.117*	*0.047*	*0.277*	*-0.210*	*0.001*	*0.096*
	p		***0.009***	***0.001***	*0.398*	*0.734*	*0.042*	*0.127*	*0.999*	*0.488*
2 Exercise Barriers	r	0.463	1	*0.067*	*0.056*	*-0.006*	*0.186*	*-0.433*	*-0.223*	*0.078*
	p	**0.001**		*0.630*	*0.653*	*0.964*	*0.178*	***0.001***	*0.105*	*0.574*
3 Exercise Benefits	r	0.915	0.066	1	*-0.255*	*0.059*	*0.236*	*0.350*	*0.069*	*0.080*
	p	**0.001**	0.643		*0.063*	*0.,674*	*0.086*	***0.009***	*0.618*	*0.565*
4 IPAQ Total (MET-minutes/week)	r	0.093	0.271	-0.015	1	*0.346*	*0.124*	*0.678*	*0.253*	*0.113*
	p	0.514	0.054	0.916		***0.010***	*0.246*	***0.001***	***0.019***	*0.418*
5 Vigorous Physical Activity (MET-minutes/week)	r	0.061	0.122	0.020	0.361	1	*0.111*	*0.053*	*0.079*	*-0.251*
	p	0.668	0.395	0.889	**0.009**		*0.232*	*0.717*	*0.606*	*0.068*
6 Moderate Physical Activity (MET-minutes/week)	r	0.089	0.290	-0.033	0.901	0.101	1	*-0.170*	*0.041*	*0.012*
	p	0.537	**0.039**	0.818	**0.001**	0.529		*0.218*	*0.768*	*0.934*
7 Walking Activity (MET-minutes/week)	r	-0.015	-0.040	0.002	0.643	0.133	-0.102	1	*-0.491*	*0.171*
	p	0.915	0.782	0.990	**0.001**	0.332	0.477		***0.001***	*0.216*
8 Sitting Time (minutes)	r	0.195	0.050	0.190	0.563	0.010	-0.383	-0.163	1	*-0.032*
	p	0.170	0.728	0.183	**0.001**	0.892	**0.006**	0.252		*0.817*
9 SWLS	r	0.552	0.166	0.554	0.033	0.039	-0.022	0.050	-0.320	1
	p	**0.001**	0.244	**0.001**	0.820	0.784	0.881	0.727	**0.022**	

EBBS= The Exercise Benefits/Barriers Scale, IPAQ= The International Physical Activity Questionnaire, SWLS= The Satisfaction With Life Scale, r=Correlation test, p < 0,05 (The colored part is the correlation values of Healthy Individuals. The other part is the correlation values of Fibromyalgia Patients.)

Discussion

In the present study, it was aimed to assess the correlation between exercise perception, physical activity, and satisfaction with life of the patients diagnosed with fibromyalgia syndrome and healthy individuals, and to compare these values. The biggest problem in patients with fibromyalgia is chronic pain and disability over time. Patients cannot continue their normal daily activities due to severe pain, sleep disturbance, and disability (Boomershine, 2015). In studies examining the duration of sedentary activity and physical activity of the patients with fibromyalgia, it was reported that the patients with fibromyalgia spent more sedentary time and less time for physical activity than the healthy control group (McLoughlin et al., 2011; Segura-Jimenez et al., 2015). It has been reported that exercise relieves the symptoms and improves the psychological state associated with fibromyalgia (Gowans et al., 2001). Similarly, the positive effects of exercise on patients with a diagnosis of fibromyalgia have been reported in many studies, and exercise ranks first in treatment recommendations (Estevez-Lopez et al., 2021; Sosa-Reina et al., 2017). Although the benefits of physical activity are known for patients with fibromyalgia, they lead a more sedentary lifestyle compared to healthy individuals (Segura-Jimenez et al., 2017). It has been reported that physical activity facilitators, exercise barriers, and compliance with exercise remain uncertain in the patients with fibromyalgia, but many factors, not just one, are effective on participation in physical activity. In healthy pain-free individuals, a typical single exercise has been reported to reduce pain-causing hypoalgesia. On the other hand, the variable pain response to exercise in chronic pain may affect exercise compliance (Rice et al., 2019). Various factors can affect physical activity (Pastor-Mira et al., 2020). To increase the level of physical activity, elements such as training given on the benefits of exercise, advice, confidence in the ability to be more active (self-efficacy), and starting an exercise program (intention) can provide motivation to increase the level of physical activity (Lopez-Roig et al., 2021). In the individuals with

fibromyalgia, exercise self-efficacy, perceived barriers to exercise, and intention to exercise are also important issues in increasing physical activity (Kaleth et al., 2022). In the study, it was found that patients with a diagnosis of fibromyalgia thought like healthy individuals about the benefits of exercise, but had lower scores on physical activity averages than healthy individuals. Consistent with the literature, it can be stated that individuals diagnosed with fibromyalgia lead a more sedentary lifestyle, spending less time walking, and sitting longer than healthy individuals. These results made us think that encouraging methods should be developed to increase the physical activity levels of patients with fibromyalgia.

It has been reported that female patients with the diagnosis of fibromyalgia have more symptoms of anxiety and depression, and their satisfaction with life is lower than that of healthy controls (Mesci et al., 2015). It has been emphasized that health-related quality of life parameters are affected in fibromyalgia, especially the physical functions (Ekici & Akbayrak, 2007). In the current study, the life satisfaction of individuals was evaluated with the Satisfaction With Life Scale as "the state of being satisfied with the living conditions they live". Similar to the literature, in the current study, it was determined that fibromyalgia patients had less satisfaction with life than healthy controls. The results obtained showed that fibromyalgia patients had problems in terms of satisfaction with their living conditions. As a result of the analysis, the importance of practices and measures that increase the satisfaction with life of individuals with fibromyalgia has been revealed. In the light of these data, it would be beneficial to consider strategies that increase the patients' satisfaction with life, while planning to increase the participation in exercise and physical activity levels of fibromyalgia patients.

Conclusions: As a result, in the present study, it was found that fibromyalgia patients had lower physical activity levels and lower satisfaction with life than healthy individuals. It was determined that as the level of exercise benefits of fibromyalgia patients increased, their satisfaction with life increased, and as the sitting time increased, their satisfaction with life decreased. It was determined that as the walking activity of healthy individuals increased, their perception of exercise barriers decreased. In addition, it was determined that fibromyalgia patients well defined the benefits of exercise and the barriers that prevent exercise participation. We think that it would be useful to base it on theoretical models that adequately explain and predict the benefits of increased physical activity in fibromyalgia patients.

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References

Boomershine, CS. (2015). Fibromyalgia: the prototypical central sensitivity syndrome. Current Rheumatology Reviews, 11(2), 131-145.

Craig, CL., Marshall, AL., Sjostrom, M., Bauman, AE., Booth, ML., & Ainsworth, BE. (2003). International physical activity questionnaire: 12-country reliability and validity. Medicine and Science in Sports and Exercise, 35(8), 1381–1395.

Dagli, A., & Baysal, N. (2016). Adaptation of life satisfaction scale to Turkish: validity and reliability study.Electronic Journal of Social Science, 59(15), 1250-1262.

Davis, B., & Harrison, RA. (1988). Hydrotherapy in practice, Churchill Livingstone, Singapore; 137-170.

Diener, E., Emmon, RA., Larsen, RJ., & Griffin, S. (1985). The satisfaction with life scale. Journal of Personality Assessment, 49(1), 71-75.

Ekici, G., & Akbayrak, T. (2007). Investigation of the effects of pain on depression and health related quality of life in patients with primary fibromyalgia syndrome. Turkish Journal of Physiotherapy Rehabilitation, 18(2), 59-64.

Estevez-Lopez, F., Maestre-Cascales, C., Russell, D., Alvarez-Gallardo, IC., Rodriguez-Ayllon, M., Hughes, C.M., & et al. (2021). Effectiveness of exercise on fatigue and sleep quality in fibromyalgia: a systematic review and meta-analysis of randomized trials. Archieves of Physical Medicine and Rehabilitation, 102(4), 752-61.

Felson, DT., & Goldenberg, DL. (1986). The natural history of Fibromiyalgia. Arthritis and Rheumatism, 29(12), 1522-6.

Gowans, SE,. deHueck, A., Voss, S., Silaj, A., Abbey, SE., & Reynolds, WJ. (2001). Effect of a randomized, controlled trial of exercise on mood and physical function in individuals with fibromyalgia. Arthritis and Rheumatism, 45(6), 519-529.

Henriksson, CM. (1994). Longterm effects of Fibromiyalgia on everyday life. A study of 56 patients. Scandinavian Journal of Rheumatology, 23(1), 36-41.

Inanici, F., Yunus, M., Edward, S., & Rachlin, M. (2002). Fibromiyagia Syndrome: Clinical Features, Diagnosiss, and Biopathophysiologic Mechanisms. In: Rachlin ES, Rachlin IS, editor. Myofascial Pain and Fibromiyalgia Trigger Point Management.

Kaleth, A.S., Bigatti, SM., Slaven, JE., NicholasKelly, N., & Ang, DC. (2022). Predictors of physical activity in patients with fibromyalgia: a path analysis. Journal of Clinical Rheumatology, 1;28(1), 203-209.

KashikarZuck, S., Parkins, IS., Ting, TV., Verkamp, E., LynchJordan, A., Passo, M., & et al. (2010). Controlled follow-up study of physical and psychosocial functioning of adolescents with juvenile primary Fibromiyalgia syndrome. Rheumatology, 49,2204-2209.

Lopez-Roig, S., PastorMira, MA., Penacoba, C., Nunez, R., Nardi, A., Ivorra, S., & et al. (2021). Assessing self-efficacy for physical activity and walking exercise in women with fibromyalgia. Pain Management Nursing, 22(5),571–578.

Lund, E., Kendall, S., Janerot-Sjoberg, B., & Bengtsson, A. (2003). Muscle metabolism in fibromiyalgia studied by P-31 magnetic resonance spectroscopy during aerobic and anaerobic exercise. Scandinavian Journal of Rheumatology, 32,138-145.

McBeth, J., & Jones, K. Epidemiology of chronic musculoskeletal pain. (2007). Best Practice & Research Clinical Rheumatology, 21,403-425.

McLoughlin, MJ., Colbert, L.H., Stegner, AJ., & Cook, DB. (2011). Are women with fibromyalgia less physically active than healthy women? Medicine and Science in Sports and Exercise, 43(5),905–12.

Mesci, E., Mesci, N., Yildirim, P., & Icagasioglu, A. (2015). Evaluation of loneliness and level of life satisfaction in women with fibromyalgia syndrome. Kocaeli Medical Journal, 4;2,23-28.

Ortabag, T., Ceylan, S., Akyuz, A., & Bebis, H. (2010). The validity and reliability of the exercise benefits/barriers scale for Turkish Military nursing students. South African Journal for Research in Sport Physical Education and Recreation, 32(2),55-70.

PastorMira, MA., Lopez-Roig, S., Penacoba, C., Sanz-Banoz, Y., Lledo, A., & Velasco, L. (2020). Predicting walking as exercise in women with fibromyalgia from the perspective of the theory of planned behavior. Women Health, 60(4), 412–425.

Rice, D., Nijs, J., Kosek, E., & et al. (2019). Exercise-induced hypoalgesia in pain-free and chronic pain populations: state of the art and future directions. The Journal of Pain, 20,1249–1266.

Saglam, M., Arikan, H., Savci, S., InalInce, D., BosnakGuclu, M., Karabulut, E., & et al. (2010). International physical activity questionnaire: reliability and validity of the Turkish version. Perceptual and Motor Skills, 111(1), 278–284.

Sechrist, KR., Walker, SN., & Pender, NJ. (1987). Development and psychometric evaluation of the exercise benefits/barriers scale. Research in Nursing and Health, 10(6), 357–365.

Segura-Jimenez, V., Alvarez-Gallardo, IC., Estevez-Lopez, F., Soriano-Maldonado, A., Delgado-Fernandez, M., & et al. (2015). Differences in sedentary time and physical activity between female patients with fibromyalgia and healthy controls. Arthritis and Rheumatism, 67(11),3047–3057.

Segura-Jimenez, V., Borges-Cosic, M., Soriano-Maldonado, A., Estevez-Lopez, F., Alvarez-Gallardo, IC., & et al. (2017). Association of sedentary time and physical activity with pain, fatigue, and impact of fibromyalgia: the al-Ándalus study. Scandinavian Journal of Medicine and Science in Sports, 27(19),83–92.

Sosa-Reina, MD., Nunez-Nagy, S., Gallego-Izquierdo, T., Pecos-Martín, D., Monserrat, J., & Álvarez-Mon, M. (2017). Effectiveness of therapeutic exercise in fibromyalgia syndrome: a systematic review and meta-analysis of randomized clinical trials. BioMed Research International, 2017,2356346.

Wolfe, F., Ross, K., Anderson, J., Russell, IJ., & Hebert, L. (1995). The prevalence and characteristics of Fibromiyalgia in the general population. Arthritis and Rheumatism, 38,19-28.

Wolfe, F., Smythe, H.A., Yunus, MB., Bennett, RM., Bombardier, C., Goldenberg, DL., & et al. (1990). The American College of Rheumatology 1990 criteria for the classification of Fibromiyalgia. Arthritis and Rheumatism, 33,160-172.

Wysenbeek, A., Shapira, Y., & Leibovici, L. (1991). Primary Fibromiyalgia and the chronic fatigue syndrome. Rheumatology International, 10,227-229.