



UNIVERSIDADE ESTADUAL DE CAMPINAS  
SISTEMA DE BIBLIOTECAS DA UNICAMP  
REPOSITÓRIO DA PRODUÇÃO CIENTÍFICA E INTELLECTUAL DA UNICAMP

**Versão do arquivo anexado / Version of attached file:**

Versão do Editor / Published Version

**Mais informações no site da editora / Further information on publisher's website:**

[https://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S2448-24552019000100230](https://www.scielo.br/scielo.php?script=sci_arttext&pid=S2448-24552019000100230)

DOI: 10.4025/jphyseduc.v30i1.3027

**Direitos autorais / Publisher's copyright statement:**

© by Universidade Estadual de Maringá/Departamento de Educação Física. All rights reserved.

DIRETORIA DE TRATAMENTO DA INFORMAÇÃO

Cidade Universitária Zeferino Vaz Barão Geraldo

CEP 13083-970 – Campinas SP

Fone: (19) 3521-6493

<http://www.repositorio.unicamp.br>

**ASSOCIATION OF THE PRACTICE OF PHYSICAL ACTIVITY AND OF HEALTH STATUS ON THE QUALITY OF LIFE OF WOMEN WITH FIBROMYALGIA****ASSOCIAÇÃO DA PRÁTICA DE ATIVIDADE FÍSICA E DO ESTADO DE SAÚDE SOBRE A QUALIDADE DE VIDA DE MULHERES COM FIBROMIALGIA**

Daniel Vicentini de Oliveira<sup>1</sup>, Angélica Alves Matias Ferreira<sup>2</sup>, Dayane Capra de Oliveira<sup>1</sup>, Daniel Eduardo da Cunha Leme<sup>1</sup>, Mateus Dias Antunes<sup>3</sup> and José Roberto Andrade do Nascimento Júnior<sup>4</sup>

<sup>1</sup>Universidade Estadual de Campinas, Campinas-SP, Brasil.

<sup>2</sup>Centro Universitário Metropolitano de Maringá, Maringá-PR, Brasil.

<sup>3</sup>Universidade de São Paulo, São Paulo-SP, Brasil.

<sup>4</sup>Universidade Federal do Vale do São Francisco, Petrolina-PE, Brasil.

**ABSTRACT**

This study analyzed the association between physical activity, health status and life quality among women with fibromyalgia. Cross-sectional study based on the clinical information of 177 women (42.1 ± 8.6 years old) diagnosed with fibromyalgia and assisted in rheumatology clinics of the private sector of the Unified Health System (UHS) in the city of Maringá-PR, Brazil. The instruments were the International Physical Activity Questionnaire (IPAQ), the Fibromyalgia Impact Questionnaire (FIQ) and the WHOQOL-Bref. Data analysis was conducted through *Mann-Whitney test*, *Spearman correlation* and Structural Equation Analysis ( $p < 0.05$ ). Results showed positive correlations between physical activity and life quality domain. Health status showed negative correlation life quality domains. Structural Equation Analysis revealed days of walking per week showed positive association with life quality domains. Model 3 showed that the impact of fibromyalgia on the health status showed a moderate negative association with life quality domains. Based on the results obtained, the conclusion is that light physical activity, characterized as walking, represents a positive factor in the domains of quality of life in women with fibromyalgia and also, the impact of this disease on the health status of the patients is associated negatively areas of quality of life

**Keywords:** Motor Activity. Exercise. Rheumatology.

**RESUMO**

Este estudo analisou a associação entre atividade física, estado de saúde e qualidade de vida de mulheres com fibromialgia. Estudo transversal baseado na informação clínica de 177 mulheres (42,1 ± 8,6 anos) diagnosticadas com fibromialgia e auxiliadas em clínicas de reumatologia do setor privado do Sistema Único de Saúde (SUS) na cidade de Maringá-PR, Brasil. Os instrumentos utilizados foram o Questionário Internacional de Atividade Física (IPAQ), o Questionário de Impacto da Fibromialgia (FIQ) e o WHOQOL-Bref. A análise dos dados foi realizada através do teste de Mann-Whitney, correlação de Spearman e Análise de Equações Estruturais ( $p < 0,05$ ). Os resultados mostraram correlações positivas entre a atividade física e o domínio da qualidade de vida. O estado de saúde apresentou correlações negativas com a qualidade de vida. A Análise de Equação Estrutural revelou que os dias de caminhada por semana se associou positivamente com domínios de qualidade de vida. O modelo 3 mostrou que o impacto da fibromialgia no estado de saúde apresentou associação negativa e moderada com os domínios de qualidade de vida. Com base nos resultados obtidos, conclui-se que a atividade física leve, caracterizada pela caminhada, representa um fator positivo nos domínios da qualidade de vida em mulheres com fibromialgia e também, o impacto desta doença sobre o estado de saúde dos pacientes está associado negativamente domínios da qualidade de vida.

**Palavras chave:** Atividade motora. Exercício. Reumatologia.

**Introduction**

Fibromyalgia (FM) is a musculoskeletal syndrome characterized by chronic diffuse pain lasting more than three months and presence of *tender points*<sup>1,2</sup>. Patients with FM frequently present physical and mental symptoms associated with typical pain such as generalized fatigue, sleep disturbances, morning stiffness, dyspnea, anxiety, depression and cognitive impairment<sup>3,4</sup>.

Previous data show that the prevalence of FM in the world population is 2.5%<sup>4</sup>. In Brazil, this estimate is 2%, and women in the age range between 35 and 60 years are the most affected. This disease is also the second most frequent cause of consultations in rheumatology

clinics and a public health problem that requires greater attention from researchers and/or professionals who provide care for these patients<sup>5</sup>.

It is known that non-pharmacological treatment is effective in reducing the symptoms of FM. Aerobic exercises (walking and cycling), resistance exercises and stretching are especially effective to minimize chronic pain and promote well-being<sup>5</sup>. Physical exercise stimulates the release of endorphin which in turn acts as an antidepressant, and also facilitates neuroendocrine changes that improve mood<sup>6,7</sup>. However, the literature emphasizes that because of intense pain and the attempt to prevent the exacerbation of symptoms, FM patients usually become inactive and vulnerable to the "vicious cycle", which includes physical inactivity, worsening of the health status, and loss of quality of life<sup>5,6</sup>.

Moderate physical activity is an alternative to promote health benefits of fibromyalgia patients, through the obstacles imposed by the symptomatology of this pathology, which were mentioned above. Physical activities such as climbing and descending stairs and household activities are essential in reducing pain and fatigue, and improving the life quality and is superior in such results in relation to the exercises vigorous physicalists in consecutive half-hour periods<sup>8,9</sup>.

The impact of fibromyalgia on the patient's health status and quality of life<sup>10</sup>, as well as the positive effect of physical activity on well-being<sup>11</sup> in this population are relevant conditions to be considered, due to the complexity of the disease and associated conditions. Therefore, there is a need to understand the association between level of physical activity, health status and quality of life of this multifactorial and multidimensional syndrome, through the concept of physical activity as a relevant component of a healthy lifestyle, health and well-being.

Thus, the present study aimed to analyze the association between the practice of physical activity and health status on the quality of life of women with fibromyalgia assisted in rheumatology clinics.

## Methods

### *Participants*

The sample consisted of 177 women aged  $42.1 \pm 8.6$  years, diagnosed with fibromyalgia and assisted in rheumatology clinics of the private sector of the Unified Health System (SUS) in the city of Maringá PR, Brazil. Inclusion criteria were: women aged between 30 and 59 years diagnosed with FM who were on FM treatment. Exclusion criteria were: women who had other rheumatologic conditions, osteoporosis and severe musculoskeletal disorders or who used walking aids.

### *Instruments*

The sociodemographic information collected through standardized questionnaires were: age; race; marital status; schooling; currently studying (yes or no); occupational situation and individual monthly income in terms of minimum wages (MW). The variables related to the health profile were: health perception; body perception; comorbidities; time elapsed after diagnosis of FM (months and years); self-reported pain; use of medications; satisfaction with sleep; participation in support groups (yes, no); and practice of any form of physical exercise (yes, no).

The level of physical activity was evaluated by the *International Physical Activity Questionnaire* (IPAQ), in which it is possible to classify the weekly time spent into light, moderate and vigorous physical activity performed in contexts such as work, transportation, domestic tasks and leisure, as well as the time spent in inactivity in the sitting position. The evaluated participants were classified into very active, active, irregularly active and sedentary.

The participant who did not report any physical activity for at least 10 continuous minutes during the week was considered “inactive”. “Active” was the participant who reported the practice of physical activity over a period of three or more days per week in 20-minute sessions; “Very active” was the individual who reported performing vigorous activity over a period of five or more days in the week in a time of thirty or more minutes per session<sup>12</sup>.

In order to evaluate the impact of FM on the health status of the patients, the *Fibromyalgia Impact Questionnaire- FIQ*<sup>13</sup> was used. This instrument assesses the functional capacity and health status of people with FM. The closer the result is to the score 100, the greater is the impact of the disease on the quality of life of the person evaluated.

The WHOQOL-BREF was used to evaluate the quality of life of the participants. This instrument is composed of 26 questions, two of which refer to the individual perception of quality of life and health. The questions are subdivided into four domains: physical, psychological, social relations and environment. The closer the score is to 20, the better is the quality of life in the assessed domain, and the closer to 100, the better is the overall quality of life<sup>14-16</sup>.

### Procedures

Data collection was performed at five rheumatology clinics in the city of Maringá, Paraná, Brazil, from April to August 2017. Patients were contacted after authorization from the physician responsible for the clinics. The days and times were previously scheduled. Patients were interviewed by trained researchers in the medical offices of the clinics. Each interview for data collection lasted on average 15 minutes.

This research was approved by the Human Research Ethics Committee of the Metropolitan Faculty of Maringá (FAMMA) under Opinion number 2,191,141/2017.

### Statistical analysis

Frequency and percentage values were used for analysis of the categorical variables. In the case of the numeric variables, the normality of data was checked through the *Kolmogorov-Smirnov* test. Because the data were not normally distributed, the median values (Md) and Quartiles (Q1, Q3) were used for characterization of the results. The *Kruskal-Wallis* test was used to compare the variables according to the level of physical activity, and the correlation between variables was verified by the *Spearman* coefficient.

Regression models were constructed with variables that were significantly correlated ( $p < 0.05$ ) to verify the impact of duration and frequency of physical activity and of the health status on the quality of life of women with fibromyalgia. According to Kline's recommendations<sup>17</sup>, regression coefficients were interpreted as having a small effect in the case of values  $< 0.20$ ; having a medium effect in the case of values up to 0.49; and having a strong effect in the case of values  $> 0.50$ . The presence of *outliers* was evaluated by the square of the *Mahalanobis* distance ( $D^2$ ) and the univariate normality of the variables was evaluated based on asymmetry coefficients ( $ISkI < 3$ ) and uni and multivariate kurtosis ( $IKuI < 10$ ). As the data did not present a normal distribution, the Bollen-Stine *Bootstrap* technique was used to correct the coefficients estimated by the Maximum Likelihood method implemented in the software AMOS version 18.0. No  $DM^2$  values indicating the presence of *outliers* were observed, nor the presence of strong correlations between variables indicating problems with multicollinearity (*Variance Inflation Factors*  $< 5.0$ ). The significance level of  $p < 0.05$  or 5% was adopted in all statistical tests.

## Results

The sample consisted of a greater proportion of women aged between 40 and 49 years (37.9%), white (79.1%) and with a partner (66.1%). It was observed that the majority had more than 11 years of schooling (51.4%), had an active occupational situation (53.1%), and a monthly income above 1 minimum wage (68.6%). There was a greater proportion of women with a very active/active level of activity (62.1%) and who did not practice physical exercise (61.6%). The majority had regular/bad health perception (59.9%) and perceived themselves as too fat, or fat. Regarding FM, 33.3% had been diagnosed for more than five years, 72.3% reported significant pain and 76.8% were very dissatisfied, or dissatisfied with sleep.

Table 1 shows the medians and quartiles of the measures corresponding to the practice of physical activity, and the health status and quality of life *scores* in the sample studied. It was found that the study participants did not engage in vigorous physical activities (Md = 0.0) and remained seated for a considerable period of time during weekdays (Md = 300.0) and weekends (Md = 360.0). Fibromyalgia had a moderate impact on the health status of women with FM (Md = 76.5). Regarding the quality of life, the largest *scores* were observed in the environment domain (Md = 11.5).

**Table 1.** Practice of physical activity, health status and quality of life in women with fibromyalgia in the city of Maringá-PR

Variables	Md	Q1-Q3
Physical activity		
Days of walking	2.0	0.0-3.8
Min. of walking per day	20.0	0.0-40.0
Min. of walking per week	60.0	0.0-120.0
Days of moderate activity	2.0	0.0-4.0
Min. of moderate activity per day	30.0	0.0-60.0
Min. of moderate activity per week	85.0	0.0-240.0
Days of vigorous activity	0.0	0.0-2.8
Min. of vigorous activity per day	0.0	0.0-60.0
Min. of vigorous activity per week	0.0	0.0-120.0
Time spent in sitting position during the week	300.0	180.0-480.0
Time spent in sitting position during the weekend	360.0	180.0-600.0
Impact of FM on health status	76.5	68.9-84.9
Quality of life		
Domain 1 - Physical	8.0	6.3-10.7
Domain 2 - Psychological	10.0	8.0-12.7
Domain 3 - Social Relations	9.3	6.7-13.3
Domain 4 - Environment	11.5	9.0-14.0
Domain 5 - Self-assessment	8.0	4.0-12.0

**Note:** FM: fibromyalgia; Min.: minutes; Md: median; Q1-Q3: interquartile ranger

**Source:** Authors

Table 2 presents the comparison between health status and quality of life according to the level of physical activity. There was a significant difference between groups in all domains of quality of life, with higher *scores* among very active/active individuals ( $p < 0.05$ ).

**Table 2.** Comparison of the health status and quality of life according to the level of physical activity of women with fibromyalgia in the city of Maringá-PR

Variables	Level of physical activity			P
	Very active/active	Irregularly active	Sedentary	
	Md (q1;q3)	Md (q1;q3)	Md (q1;q3)	
Health status	77.0 (68.2; 84.0)	75.0 (65.7; 85.8)	81.5 (72.3; 89.5)	0.175
Quality of life				
Domain 1 - physical	9.1 (6.3; 10.9)	8.0 (6.3; 10.3)	6.9 (4.6; 8.4) <sup>a</sup>	0.007*
Domain 2 - psychological	10.7 (8.7; 12.7)	9.3 (7.3; 13.3)	7.7 (4.7; 10.5) <sup>b</sup>	0.001*
Domain 3 - social relations	10.7 (6.7; 13.3)	8.0 (5.3; 13.3)	6.7 (4.3; 10.3) <sup>c</sup>	0.012*
Domain 4 - environment	11.5 (9.5; 14.1)	11.5 (8.5; 14.0)	9.3 (8.0; 12.9) <sup>d</sup>	0.012*
Domain 5 - self-assessment	9.0 (6.0; 12.0)	6.0 (4.0; 10.0)	6.0 (4.0; 9.5) <sup>e</sup>	0.002*

**Note:** \*Significant difference:  $p < 0.05$ . *Kruskal-Wallis* test between: a, b, c, d, e) Sedentary with Very active/active and Irregularly active

**Source:** Authors

Table 3 presents the correlation between the practice of physical activity, sedentary behavior, quality of life and health status of women.

**Table 3.** Correlation between the practice of physical activity, sedentary behavior, quality of life and health status

	Level of physical activity								sedentary behavior			Quality of life			Health status		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1.		0.74*	0.92*	0.32*	0.28*	0.30*	0.23*	0.17*	0.20*	0.02	-0.04	0.24*	0.29*	0.21*	0.16	0.26*	-0.08
2.			0.90*	0.34*	0.42*	0.40*	0.20*	0.18*	0.21*	-0.05	-0.01	0.21*	0.25*	0.20*	0.15	0.20*	-0.03
3.				0.33*	0.38*	0.37*	0.21*	0.18*	0.21*	-0.02	-0.03	0.23*	0.27*	0.21*	0.16	0.24*	-0.05
4.					0.69*	0.87*	0.42*	0.40*	0.42*	-0.24*	-0.11	0.18	0.18	0.14	0.17	0.18	-0.06
5.						0.91*	0.29*	0.40*	0.37*	-0.12	-0.06	0.12	0.14	0.10	0.07	0.15	-0.06
6.							0.37*	0.42*	0.42*	-0.17	-0.07	0.13	0.13	0.10	0.12	0.15	-0.06
7.								0.87*	0.94*	-0.17	-0.17	0.11	0.15	0.08	0.12	0.17	0.01
8.									0.96*	-0.10	-0.14	0.07	0.10	0.04	0.06	0.14	0.05
9.										-0.16	-0.17	0.10	0.13	0.06	0.09	0.17	0.05
10.											0.63*	-0.03	-0.15	-0.09	-0.07	-0.05	0.09
11.												-0.03	-0.11	-0.10	-0.05	-0.05	0.03
12.													0.72*	0.54*	0.56*	0.71*	-0.54*
13.														0.69*	0.60*	0.72*	-0.45*
14.															0.53*	0.53*	-0.30*
15.																0.50*	-0.23*
16.																	-0.48*
17.																	

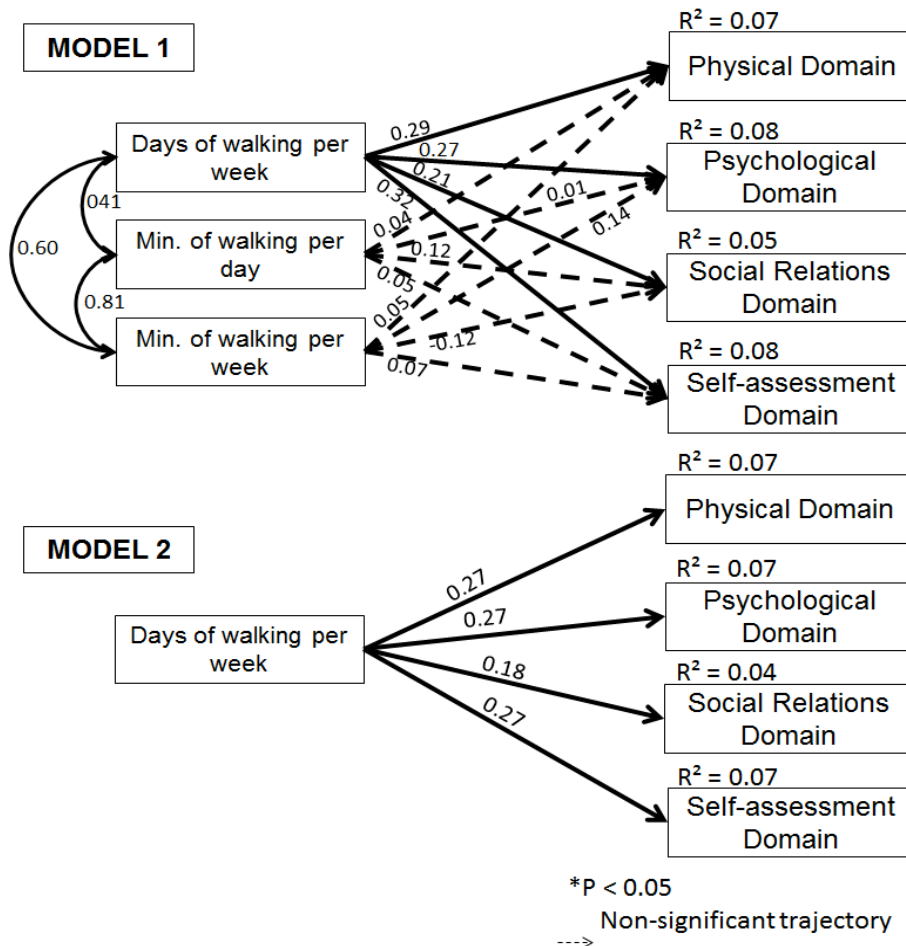
**Note:** \* Significant Correlation -  $p < 0.05$ . Note: 1. Days of walking; 2. Min. of walking per day; 3. Min. of walking per week; 4. Days of moderate activity; 5. Min. of moderate activity per day; 6. Min. of moderate activity per week; 7. Days of vigorous activities; 8. Min. of vigorous activity per day; 9. Min. of vigorous activity per week; 10. Time spent in sitting position during the week; 11. Time spent in sitting position during the weekend; 12. Physical domain; 13. Psychological domain; 14. Social Relationships Domain; 15. Environment domain; 16. Self-assessment domain; 17. Health status

**Source:** Authors

The following significant correlations ( $p < 0.05$ ) were found (Table 3): physical domain with days of walking ( $r = 0.24$ ), minutes of walking per day ( $r = 0.21$ ) and per week ( $r = 0.23$ ); psychological domain with days of walking ( $r = 0.29$ ), minutes of walking per day ( $r = 0.25$ ) and per week ( $r = 0.27$ ); social relations domain with days of walking ( $r = 0.21$ ) and minutes of walking per week ( $r = 0.21$ ); self-assessment domain with days of walking ( $r =$

0.26), minutes of walking per day ( $r = 0.20$ ) and per week ( $r = 0.24$ ); health status with the physical ( $r = -0.54$ ), psychological ( $r = -0.45$ ), social relations ( $r = -0.30$ ), environment ( $r = -0.23$ ), and self-assessment ( $r = -0.48$ ) domains.

In order to verify the impact of duration and frequency of physical activity and health status on the quality of life of women with fibromyalgia, after the regression analysis, regression models (Figures 1 and 2) were fitted with the variables that presented as insignificant correlation ( $p < 0.05$ ).

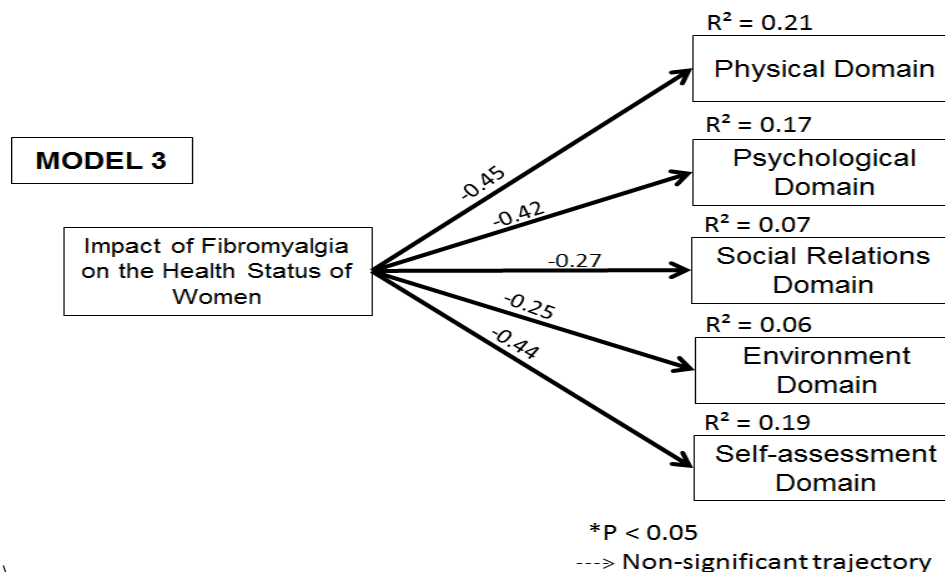


**Figure 1.** Regression models of the association between the practice of physical activity and the perception of quality of life of women with fibromyalgia

Source: Authors

The Model 1 explained between 5% and 8% of the variability of the domains of quality of life (Figure 1); however, only the trajectories of days of walking per week were significant ( $p < 0.05$ ). As the trajectories of the minutes of walking per day and per week were not significant, we opted for excluding them and tested the model again. The Model 2 revealed that the number of days that the women walked during the week explained between 4% and 7% of the variability of the domains of quality of life (Figure 1). All trajectories were significant ( $p < 0.05$ ) and moderate ( $\beta > 0.20$ ). These findings indicate that light activities favor a moderate increase in the perception of quality of life in the Physical ( $\beta = 0.27$ ), Psychological ( $\beta = 0.27$ ), Social Relations ( $\beta = 0.18$ ) and Self-assessment ( $\beta = 0.27$ ) domains.

The Model 3 presents the association between health status and perception of quality of life in women with fibromyalgia (Figure 2).



**Figure 2.** Regression model of the association between the impact of fibromyalgia on health and the perception of quality of life of women

Source: Authors

The model 3 showed that the association between impact of fibromyalgia on the women's health status explained between 6% and 21% of the variability of the domains of quality of life (Figure 2). All trajectories were significant ( $p < 0.05$ ) and moderate ( $\beta > 0.20$ ). These findings indicate that the stronger is the effect of fibromyalgia on the women's health, the worse is their perceived quality of life in the Physical ( $\beta = -0.45$ ), Psychological ( $\beta = -0.42$ ), Social Relations ( $\beta = -0.27$ ), Environment ( $\beta = -0.25$ ) and Self-assessment ( $\beta = -0.44$ ) domains.

## Discussion

In this study, robust models illustrated notable relationships between the variables related to physical activity, health status and quality of life of women with FM. The main results showed that the practice of physical activity of light intensity, described as walking, moderately impacted the quality of life in the physical, psychological, social relations and self-assessment domains. Moreover, the impact of the syndrome on the health status of the patients influenced the quality of life in the above mentioned domains.

The literature emphasizes that physical inactivity in FM patients is associated with loss of functionality and worsening of quality of life<sup>4</sup>. The reduced level of physical activity may further favor the maintenance or aggravation of the disease and some physical and physiological parameters not directly linked to the morbid process such as muscular strength and endurance, aerobic capacity and flexibility are affected over time<sup>18</sup>.

It has been hypothesized that FM patients are less physically active, but our study showed otherwise, with the majority of participants being physically active, specifically in activities classified as mild and moderate. Previous study<sup>19</sup> performed with fibromyalgic or healthy middle-aged women, showed that fibromyalgia group was less active in relation to the control group, and these results were obtained through the indirect (IPAC) and direct (accelerometer) methods to evaluate the physical activity level. This trend was observed in a study conducted by McLoughlin et al.<sup>20</sup>, which observed lower levels of physical activity among FM patients compared to the control group composed of healthy women.



Although active, most of the participants did not practice physical exercises. It is known that regular physical exercise can modulate pain and consequently have a positive effect on the quality of life of FM patients. It has been presumed that aerobic training, for example, is a consistent and effective treatment in these cases and indicated as an alternative non-pharmacological treatment<sup>21</sup>. However, it is worth mentioning that physical activity encompasses aspects of everyday activities and, thus, the level of activity is not always related to the practice of physical exercise<sup>22</sup>.

The symptomatology of pain is a fundamental aspect to be evaluated because of its limiting character when it comes to the realization of routine and professional activities, besides being a warning sign for the search of treatment among patients. In FM patients, the main objective of interdisciplinary treatment is pain control<sup>4</sup>. This research showed a high percentage of women reporting intense pain, corroborating the findings of previous studies<sup>23</sup>. Such studies have emphasized the consequences of this symptom in the life of FM patients, including physical and functional limitations, muscular fatigue and lack of aerobic conditioning.

Dissatisfaction with sleep was frequent among patients in the present study. According to a research published in the international<sup>24,25</sup> literature, sleep disorders are common and affect more than 90% of the people suffering from this syndrome. The most frequent complaints among patients are nocturnal restlessness, involuntary movements of the legs, frequent awakening from sleep, and perception of light sleep, being this problem associated with pain, anxiety, cognitive impairment and worsening of quality of life<sup>26</sup>. Low level of physical activity is one of the contributors to worsening of sleep quality in women with fibromyalgia. It is known that the report of bad sleep is frequent among sedentary patients<sup>6</sup>.

It was found that more than half of the participants in this study perceived their health as regular or poor. Self-perception of health is a relevant indicator of individual and collective well-being, besides a predictor of disability, depression and inactivity<sup>27</sup>. A study carried out in Canada<sup>28</sup> showed that there is an association between the symptomatology of chronic pain and poorer self-perception of health among middle-aged and elderly individuals. In addition, the authors emphasized that the frequent complaint of pain is also associated with poorer perception of health and serves as an alert for screening and interventions to minimize such impacts, which may influence the increase in physical/psychic morbidity and mortality.

Active, very active or irregularly active women presented higher scores in all domains of quality of life in relation to the sedentary ones. The literature emphasizes that sedentary lifestyles are admittedly related to risk factors for the development or aggravation of cardiovascular, metabolic and musculoskeletal diseases, as well as poor mental health, and such factors can directly influence the poorer quality of life. Otherwise, remaining active regardless of health condition, promotes physical, psychological and social benefits<sup>29</sup>.

On the other hand, there was no statistically significant association between the groups of active, irregularly active and sedentary women in relation to the health status measured by the FIQ. In the long run, it is known that somatic and/or psychological symptoms can lead to deterioration of health. FM patients have poorer health status than those with other chronic diseases such as osteoarthritis, rheumatoid arthritis, systemic lupus erythematosus, cardiovascular disease, chronic obstructive pulmonary disease, congestive heart failure, hypertension, and diabetes<sup>4</sup>. Differently from our results, studies with sedentary or active FM patients<sup>30,31</sup> have confirmed the negative impact of this syndrome on health status.

The daily practice of walking stands out as a positive factor for the quality of life of women with fibromyalgia, specifically in the physical, psychological, social relations and self-assessment domains. This finding gives evidence of the importance of regular practice of light physical activities by patients who have this disease. This is true even when the practice of physical exercise is not frequent due to the intense fatigue and worsening of pain that lead

these individuals to give up in the first phases of muscle strength training programs, for example<sup>6</sup>.

Martínez et al.<sup>31</sup> carried out a longitudinal study where 140 women with FM were evaluated and noticed that the weekly physical activity described as walking significantly reduced the number of falls and the fear of falling, and ultimately led to better quality of life indices in the evaluated sample. Previous studies<sup>31-34</sup> have shown the association between physical activity and overall quality of life, as well as the positive implications of regular physical activity on specific domains (physical and mental) of the quality of life<sup>35</sup>.

Although such positive association has been reported in several studies, this relationship has not been fully established because the results vary according to the use of generic or specific instruments to measure the quality of life. The literature emphasizes the importance of using more specific measures to explore the results, among them the FIQ, which also evaluates the health status of FM individuals<sup>36</sup>.

The present study analyzed the impact of FM on the health status in relation to quality of life, and the influence of this parameter on the outcome of interest was confirmed. In line with these findings, Hernández-Petrea et al.<sup>37</sup> conducted a meta-analysis to review the relationship between FM and the overall health status in 21 researches involving 6,394 patients. The authors acknowledged the need to incorporate the FIQ in the research, in the clinical evaluation and in the interventions in rheumatology and other areas, allowing the holistic perspective of the patient in relation to this multifactorial syndrome.

Some limitations should be noted. Initially, care should be taken to extrapolate the findings to the general population, since the sample is composed of women with fibromyalgia from a single municipality, which does not imply generalizations for the entire Brazilian population. Finally, the fact that this is a cross-sectional study impedes the evaluation of direct causality relationships between the studied variables. Similar research is suggested in other Brazilian municipalities in order to compare the results. Another limitation of the study is the absence of the control group of healthy women, which may make it difficult to explain the results and compare it with other previously published studies.

It is also worth noting that the use of the self-report measure as an evaluation of the level of physical activity can generate disparate results when compared to the studies that used direct measures of quantification of physical activity, such as accelerometers, and sometimes proving to be a limitation of the study. However, questionnaires are easy to apply and low cost tools for this purpose. It is emphasized that advanced techniques in technology and refined have greater obstacles in their application.

## Conclusion

Based on the results obtained, the conclusion is that light physical activity, characterized as walking, represents a positive factor in the domains of quality of life in women with fibromyalgia and also, the impact of this disease on the health status of the patients is associated negatively areas of quality of life. There is evidence of the need to maintain an active lifestyle independent of symptomatology and incapacitating conditions in these cases. Above all, this information can help professionals who care for fibromyalgic patients about measures of maintenance of health and well-being.

## References

1. Wolfe F, Fitzcharles MA, Goldenberg DL, Häuser W, Katz RL, Mease PJ, et al. Comparison of physician-based and patient-based criteria for the diagnosis of fibromyalgia. *Arthritis Care Res* 2016;68(5):652-659. DOI: 10.1002/acr.22742.

2. Ablin JN, Wolfe F. A Comparative evaluation of the 2011 and 2016 criteria for fibromyalgia. *J Rheumatol* 2017;44(8):1271-1276. DOI: 10.3899/jrheum.170095.
3. Johnson MI, Claydon LS, Herbison GP, Jones G, Paley CA. Transcutaneous electrical nerve stimulation (TENS) for fibromyalgia in adults. *Cochrane Database Syst Rev* 2017;10:CD012172. DOI: 10.1002/14651858.CD012172.pub2.
4. Lorena S, Pimentel E, Fernandes V, Pedrosa M, Ranzolin A, Duarte A. Evaluation of pain and quality of life of fibromyalgia patients. *Revista Dor* 2016;17(1):8-11. DOI: 10.5935/1806-0013.20160003
5. Oliveira L, Mattos R, Castro J, Barbosa J, Chame F, Vale R. Effect of supervised physical exercise on flexibility of fibromyalgia patients. *Revista Dor* 2017;18(2):145-149. DOI: 10.5935/1806-0013.20170029
6. Munguía-Izquierdo D, Legaz-Arrese A. Determinants of sleep quality in middle-aged women with fibromyalgia syndrome. *J Sleep Res* 2012;21(1):73-79. DOI: 10.1111/j.1365-2869.2011.00929.x.
7. Bote ME, Garcia JJ, Hinchado MD, Ortega E. Fibromyalgia: anti-inflammatory and stress responses after acute moderate exercise. *PLoS One* 2013;8(9):e74524. DOI: 10.1371/journal.pone.0074524.
8. Fontaine KR, Conn L, Clauw DJ. Effects of Lifestyle Physical activity in adults with fibromyalgia: Results at follow-up. *J Clin Rheumatol* 2011;17(2): 64-68. DOI: 10.1097/RHU.0b013e31820e7ea7.
9. Fontaine KR, Conn L, Clauw DJ. Effects of lifestyle physical activity on pain and function in adults with fibromyalgia: results of a randomized trial. *Arthritis Res Ther* 2010;12(5):R55. DOI: 10.1186/ar2967
10. Mengshcel AM, Haugen M. Health status in fibromyalgia--a followup study. *J Rheumatol* 2001;28(9):2085-2089.
11. Cadenas-Sánchez C, Ruiz-Ruiz J. Effect of a physical activity programme in patients with fibromyalgia: a systematic review. *Med Clin* 2014;143(12):548-553. DOI: 10.1016/j.medcli.2013.12.010.
12. Matsudo S, Araújo T, Matsudo V, Andrade D, Andrade E, Oliveira LC, et al. Questionário Internacional De Atividade Física (IPAQ): Estudo de validade e reprodutibilidade no Brasil. *Rev Bras Ativ Fis Saúde* 2001;6(2):5-18. DOI: 10.12820/rbafs.v.6n2p5-18
13. Marques AP, Santos AMB, Assumpção A, Matsutani LA, Lage LV, Pereira CAB. Validation of the Brazilian version of the Fibromyalgia Impact Questionnaire (FIQ). *Rev Bras Reumatol* 2006;46(1):24-31. DOI: 10.1590/S0482-50042006000100006
14. Almeida Fleck MP. O instrumento de avaliação de qualidade de vida da Organização Mundial da Saúde (WHOQOL-100): características e perspectivas. *Ciênc Saúde Coletiva* 2000;5(1):33-38. DOI: 10.1590/S1413-81232000000100004.
15. Fleck MP, Louzada S, Xavier M, Chachamovich E, Vieira G, Santos L, et al. Aplicação da versão em português do instrumento abreviado de avaliação da qualidade de vida" WHOQOL-bref". *Rev saúde públ* 2000;34(2):178-183. DOI: 10.1590/S0034-89102000000200012
16. Chachamovich E, Fleck MP, Trentini C, Power M. Brazilian WHOQOL-OLD Module version: a Rasch analysis of a new instrument. *Rev saude publ* 2008;42(2):308-316. DOI: 10.1590/S0034-89102008000200017
17. Kline RB. Principles and practice of structural equation modeling . London: Guilford publications; 2015.
18. Homann D, Stefanello JM, Góes SM, Leite N. Impaired functional capacity and exacerbation of pain and exertion during the 6-minute walk test in women with fibromyalgia. *Rev Bras Fisioter* 2011;15(6):474-480. DOI: 10.1590/S1413-35552011000600008
19. McLoughlin MJ, Colbert LH, Stegner AJ, Cook DB. Are women with fibromyalgia less physically active than healthy women? *Med Sci Sports Exerc* 2011;43(5):905-912. DOI: 10.1249/MSS.0b013e3181fca1ea.
20. McLoughlin MJ, Stegner AJ, Cook DB. The relationship between physical activity and brain responses to pain in fibromyalgia. *J Pain* 2011;12(6):640-651. DOI: 10.1016/j.jpain.2010.12.004.
21. Ellingson LD, Stegner AJ, Schwabacher IJ, Koltyn KF, Cook DB. Exercise strengthens central nervous system modulation of pain in fibromyalgia. *Brain Sci* 2016;6(8):1-13. DOI: 10.3390/brainsci6010008.
22. Frontera W. Physical Activity and Rehabilitation in Elderly. In: Masiero S, Carraro U, editors. *Rehabilitation medicine for elderly patients* . Cham:Springer; 2018, p. 3-13. DOI: 10.1007/978-3-319-57406-6
23. Letieri RV, Furtado GE, Letieri M, Góes SM, Pinheiro CJ, Veronez SO, et al. Pain, quality of life, self perception of health and depression in patients with fibromyalgia, submitted to hydrokinesiotherapy. *Rev Bras Reumatol* 2013;53(6):494-500. DOI: 10.1016/j.rbr.2013.04.004
24. Bigatti SM, Hernandez AM, Cronan TA, Rand KL. Sleep disturbances in fibromyalgia syndrome: relationship to pain and depression. *Arthritis Rheum* 2008;59(7):961-967. DOI: 10.1002/art.23828.
25. Moldofsky H. The significance of the sleeping-waking brain for the understanding of widespread musculoskeletal pain and fatigue in fibromyalgia syndrome and allied syndromes. *Joint Bone Spine* 2008;75(4):397-402. DOI: 10.1016/j.jbspin.2008.01.021.
26. Choy EH. The role of sleep in pain and fibromyalgia. *Nat Rev Rheumatol* 2015;11(9):513-520. DOI: 10.1038/nrrheum.2015.56

27. Borim FS, Neri AL, Francisco PM, Barros MB. Dimensions of self-rated health in older adults. *Rev saude publ* 2014;48(5):714-722. DOI: 10.1590/S0034-8910.2014048005243.
28. Perruccio AV, Badley EM, Hogg-Johnson S, Davis AM. Characterizing self-rated health during a period of changing health status. *Soc Sci Med* 2010;71(9):1636-1643. DOI: 10.1016/j.socscimed.2010.07.042
29. Silva RS, Silva ID, Silva RAD, Souza L, Tomasi E. Physical activity and quality of life. *Ciencia & saude coletiva. Cien saude colet* 2010;15(1):115-120. DOI: 10.1590/S1413-81232010000100017
30. Burckhardt CS, Mannerkorpi K, Hedenberg L, Bjelle A. A randomized, controlled clinical trial of education and physical training for women with fibromyalgia. *J Rheumatol* 1994;21(4):714-720.
31. Martínez-Amat A, Hita-Contreras F, Latorre-Román PA, Gutierrez-López MeL, García-Pinillos F, Martínez-López EJ. Association of the weekly practice of guided physical activity with the reduction of falls and symptoms of fibromyalgia in adult women. *J Strength Cond Res* 2014;28(11):3146-3154. DOI: 10.1519/JSC.0000000000000503.
32. Bize R, Johnson JA, Plotnikoff RC. Physical activity level and health-related quality of life in the general adult population: a systematic review. *Prev Med* 2007;45(6):401-415. DOI: 10.1016/j.ypmed.2007.07.017
33. Anokye NK, Trueman P, Green C, Pavey TG, Taylor RS. Physical activity and health related quality of life. *BMC public health* 2012;12(1):624. DOI: 10.1186/1471-2458-12-624.
34. Rejeski WJ, Brawley LR, Shumaker SA. Physical activity and health-related quality of life. *Exerc Sport Sci Rev* 1996;24(1):71-108.
35. Shibata A, Oka K, Nakamura Y, Muraoka I. Recommended level of physical activity and health-related quality of life among Japanese adults. *Health Qual Life Outcomes* 2007;5(64):1-8. DOI: 10.1590/1517-869220152104133477
36. Pucci GC, Rech CR, Fermino RC, Reis RS. Association between physical activity and quality of life in adults. *Rev saude publ* 2012;46(1):166-179. DOI: 10.1590/S0034-89102012000100021
37. Hernández-Petro AM, Cardona-Arias JA. Effect of fibromyalgia on health status and health related quality of life, 2004-2014. *Revista Colombiana de Reumatología* 2015;22(2):110-118. DOI: 10.1016/j.rcreu.2015.03.005

**ORCID** dos autores:

Daniel Vicentini de Oliveira: 0000-0002-0272-9773  
Angélica Alves M. Ferreira: 0000-0002-5816-9592  
Dayane Capra de Oliveira: 0000-0001-5825-4511  
Daniel Eduardo da Cunha Leme: 0000-0003-0025-1275  
Mateus Dias Antunes: 0000-0002-2325-2548  
José Roberto Andrade do Nascimento Júnior: 0000-0003-3836-6967

Received on, Mar, 06, 2018.

Reviewed on Jun, 10, 2018.

Accepted on Jul, 05, 2018.

---

**Author address:** Daniel Vicentini de Oliveira. Rua Tessalia Vieira de Camargo, 126. Cidade Universitária Zeferino Vaz. Campinas, SP, CEP 13083-887, E-mail: d.vicentini@hotmail.com