

## Physical activity level, climacteric symptoms and health-related quality of life in postmenopausal women

### Nível de atividade física, sintomas climatéricos e qualidade de vida relacionada à saúde em mulheres na pós-menopausa

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#### ABSTRACT

**Aim:** to assess the relationship between the level of physical activity, climacteric symptoms and health-related quality of life in postmenopausal women. **Methods:** The cross-sectional study included 100 postmenopausal women using a public leisure park. A questionnaire regarding the sociodemographic and clinical characteristics was applied. The Menopause Rating Scale (MRS) was used to assess climacteric symptoms and health-related quality of life, and the International Physical Activity Questionnaire (IPAQ) (short version) to estimate the level of physical activity. **Results:** The average age of women was 56.8 years. Insufficiently active women had higher overall score and MRS domains than physically active ones, indicating higher intensity of climacteric symptoms ( $<0.001$ ). Most (83.3%) of physically active women had a higher level of health-related quality of life, while in the insufficiently active group, only 10% had this condition ( $<0.001$ ). Active women were 10.6 times more likely to have better health-related quality of life than insufficiently active women. **Conclusion:** Regular physical activity seems to contribute positively to the reduction of climacteric symptoms and better health-related quality of life in postmenopausal women.

**Key-words:** Menopause, Physical activity, Quality of life.

#### RESUMO

**Objetivo:** avaliar a relação entre o nível de atividade física, a sintomatologia climatérica e a qualidade de vida relacionada à saúde em mulheres na pós-menopausa. **Métodos:** O estudo transversal compreendeu 100 mulheres pós-menopáusicas que frequentavam um parque público de lazer. Aplicou-se um questionário referente às características sociodemográficas e clínicas. Utilizou-se o Menopause Rating Scale (MRS) para avaliar a sintomatologia climatérica e a qualidade de vida relacionada à saúde, e o *International Physical Activity Questionnaire* (IPAQ) (versão curta), para estimar o nível de atividade física. A média de idade das mulheres foi de 56,8 anos. **Resultados:** As mulheres insuficientemente ativas apresentaram escore geral mais elevado e por domínios do MRS que as fisicamente ativas, indicando maior intensidade de sintomas climatéricos ( $<0,001$ ). A maioria (83,3%) das mulheres fisicamente ativas apresentou maior nível de qualidade de vida relacionada à saúde, enquanto no grupo das insuficientemente ativas, apenas 10% obteve essa condição ( $<0,001$ ). As mulheres ativas tiveram 10,6 vezes mais chances de ter melhor qualidade de vida relacionada à saúde do que as insuficientemente ativas. **Conclusão:** A prática de atividades físicas regulares parece contribuir positivamente para a redução dos sintomas climatéricos e para melhor qualidade de vida relacionada à saúde em mulheres na pós-menopausa.

**Palavras-chave:** Menopausa, Atividade física, Qualidade de vida.

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## Introduction

Population aging is a phenomenon that has been observed recently in the world. If the current trend of increasing human life expectancy persists, women will soon spend half their life in post-menopause [1]. Menopause is related to the last period confirmed after 12 months of amenorrhea due to ovarian failure [2]. The physical aspects of general health, emotional well-being, and health-related quality of life decline during the menopause transition [1,3].

The incidence of risk factors for cardiovascular disease and mortality from all causes is higher in menopausal women compared to women of reproductive age [4]. Besides, with the decrease in estrogen levels, most women refer to the increased incidence of psychological, somatic, vasomotor and urogenital symptoms, in which they tend to negatively influence the quality of life [5-7].

Climacteric symptoms affect between 60 and 80% of women and are recognized as inducing physical and emotional discomfort that increases with the severity of symptoms [1,7]. Some of the most common symptoms are hot flashes, hot palpitations, dizziness, tiredness, headache, poor memory, insomnia, joint pain, anxiety, irritability, depression, dry skin, increased abdominal fat, vaginal dryness and urinary urgency [7,8].

Middle-aged women may experience less well-being, lower levels of health, and quality of life due to menopause [9]. Currently, the hypothesis is that health-related quality of life in this period would be influenced both by the severity of symptoms resulting from estrogenic decline and by psychosocial and cultural factors linked to the aging process itself [2].

Studies show that one of the most effective non-pharmacological alternatives for reducing climacteric symptoms and for the primary and secondary prevention of numerous chronic diseases is the practice of regular physical exercises [10-12].

Elevated levels of physical activity are associated with lower risks of cardiovascular disease, myocardial infarction, and mortality from all things [4]. The climacteric symptoms are less intense among physically active women when compared to less active and/or sedentary women [6,10,13]. Kim *et al.* [7] showed in their studies that a moderate level of physical activity was associated with a reduction in psychosocial and physical symptoms in Korean women in perimenopause.

Tairova *et al.* [14] state that physical exercises are quite effective in reducing vasomotor symptoms, such as hot flashes and night sweats. Zanesco *et al.* [15] add that a single session of aerobic exercise (such as half an hour of walking, for example) provides significant improvements in some symptoms of climacteric, among them, anxiety and depression.

Regular physical exercise seems to be an effective therapeutic option to decrease the symptoms of menopause and improve the quality of life of women during the climacteric period [5,9,10,13]. Physically active women tend to have natural endogenous benefits, as physical exercise increases the release of adrenocorticotrophic hormone (ACTH), and consequently, adrenaline and corticosteroids, testosterone, prolactin, GH and endorphins, at the same time, which decreases luteinizing hormone (LH), follicle-stimulating hormone (FSH), increasing ovarian steroids, and thyroid-stimulating hormone (TSH) [16].

Women in the climacteric period become a public that requires greater attention and care, therefore, there is a need for better performance by the professionals involved with women's health. Given the above, this study aims to assess the relationship between the level of physical activity, climacteric symptoms, and health-re-

lated quality of life in postmenopausal women.

## Methods

A descriptive cross-sectional study was carried out, involving 100 postmenopausal women who frequented a public leisure park with adequate infrastructure for physical and sports activities in the city of Teresina/PI.

Postmenopausal women, who did not use hormone replacement and were literate, were included in the study. The participants were randomly approached by the researchers during visits to the park and those who met the inclusion criteria were invited to participate in the study, by clarifying the research objectives and signing the Free and Informed Consent Form. For data collection, three questionnaires were used, dealing with sociodemographic, clinical, and behavioral aspects; assessment of climacteric symptoms and health-related quality of life, and assessment of the level of physical activity.

For the assessment of climacteric symptoms and health-related quality of life, the Menopause Rating Scale (MRS) was used. It was elaborated with a multidimensional character, allowing to assess, in addition to climacteric symptoms, the general perception of the quality of life in health [17]. This instrument is specific, validated, and recognized for use in Brazil.

The MRS consists of 11 questions, divided into three domains: somato-vegetative symptoms (hot flashes, heart discomfort, problems with sleep and muscle and joint problems), urogenital (bladder and sexual problems and vaginal dryness) and psychological (depressive mood, irritability, anxiety, physical and mental exhaustion). Each symptom can be classified by its absence and/or intensity in this way: 0 = absence, 1 = mild, 2 = moderate, 3 = severe and 4 = very severe. Scoring by domains is performed by adding the aforementioned symptoms and the severity of symptoms in each domain is as follows: absent or occasional (0 to 4 points); light (5 to 8 points); moderate (9 to 15 points); or severe (16 points). The higher the score obtained, the more severe the symptoms and the worse the woman's quality of life [17].

The level of physical activity was assessed using the domains of the short version of the International Physical Activity Questionnaire (IPAQ). The instrument assesses the total reported time of weekly physical activity in minutes, which is represented by the sum of the time spent on insufficient, moderate, and vigorous activities [18]. The categorization of women (active or insufficiently active) was based on the criteria established by the World Health Organization (WHO), which recommends at least 150 minutes of moderate physical activity per week, or 75 minutes or more of vigorous physical activity for the improvement of health [19]. Thus, women who met this recommendation were considered physically active.

Data processing and statistical analysis were performed using the SPSS® program, version 18.0. Quantitative variables were presented using descriptive statistics, such as mean and standard deviation, and qualitative variables using proportion. The Kolmogorov-Smirnov test was applied to assess the normality of quantitative variables. Student's t-test or Mann-Whitney test was used when analyzing the difference between groups. To check the association between variables, a chi-square test ( $X^2$ ) was applied. Prevalence Ratio (PR) was also used as an effect measure, with a 95% confidence interval (95% CI), to analyze the association between quality of life and level of physical activity. The criterion of statistical significance established for all tests in the study was 5%.

This study was approved by the Ethics Committee of the State University of Piau  under opinion number 785.261 and CAAE: 28787114.2.0000.5209, and all women who agreed to participate in the research signed the Free and Informed Consent Term, according to ethical standards contained in the rules of Resolution 466/12 of the National Health Council for research with human beings of the Ministry of Health.

## Results

Table I presents the sample characterization. It is observed that 60 women were considered physically active and 40 insufficiently active. Their average age was  $56.8 \pm 8.2$  years old, with an average menopause time of  $11.2 \pm 6.9$  years old. The results showed that there were no significant differences ( $p < 0.05$ ) between active and insufficiently active in the questions evaluated.

Table I - Sociodemographic and clinical characteristics of the women evaluated.

Variables	Active (n=60)		Insufficiently active (n=40)		Total (n=100)		p Value
	n	%	n	%	n	%	
<b>Age group</b>							0.741 <sup>a</sup>
42-49 years old	26	43.3	16	40.0	42	42.0	
50-65 years old	34	56.7	24	60.0	58	58.0	
Mean $\pm$ SD	57.9 $\pm$ 9.2		55.2 $\pm$ 6.1		56.8 $\pm$ 8.2		0.103 <sup>b</sup>
<b>Marital status</b>							0.251 <sup>a</sup>
No companion	16	26.7	15	37.5	31	31.0	
With companion	44	73.3	25	62.5	69	69.0	
<b>Educational level</b>							0.211 <sup>a</sup>
Incomplete elementary	08	13.3	10	25.0	18	18.0	
Complete elementary	19	31.7	10	25.0	29	29.0	
Incomplete secondary	13	21.7	05	12.5	18	18.0	
Complete secondary	11	18.3	12	30.0	23	23.0	
University	09	15.0	03	7.5	12	12.0	
<b>Household income (monthly)</b>							0.349 <sup>a</sup>
Less than 1 minimum wage	03	5.0	04	10.0	07	7.0	
Between 1-2 minimum wages	18	30.0	17	42.5	35	35.0	
Between 2-3 minimum wages	25	41.7	13	32.5	38	38.0	
More than 3 minimum wages	14	23.3	06	15.0	20	20.0	
<b>Menopause time</b>							0.627 <sup>a</sup>
1-10 years	29	48.3	18	45.0	47	47.0	
10-19 years	22	36.7	18	45.0	40	40.0	
$\geq$ 20 years	09	15.0	04	10.0	13	13.0	
Mean $\pm$ SD	11.3 $\pm$ 7.4		11.1 $\pm$ 6.4		11.2 $\pm$ 6.9		0.053 <sup>b</sup>

Table I - Continuation

Variables	Active (n=60)		Insufficiently active (n=40)		Total (n=100)		p Value
	n	%	n	%	n	%	
<b>BMI</b>							0.088 <sup>a</sup>
Underweight	02	5.1	03	7.7	05	6.4	
Normal	14	35.9	24	61.5	38	48.7	
Overweight	19	48.7	09	23.1	28	35.9	
Obesity	04	10.3	03	7.7	07	9.0	

<sup>a</sup>Teste Qui-quadrado ( $X^2$ ); <sup>b</sup>Student's T-test; BMI = body mass index.

Table II shows that insufficiently active women have higher scores on all symptoms of MRS when compared to active women, thus indicating a greater intensity of symptoms in these women and lower quality of life. The results showed that there was a statistically significant difference ( $p < 0.001$ ) for each symptom between groups of women.

Table II - Climacteric symptoms according to the MRS of the women evaluated.

Symptoms	Insufficiently active (n=40)		Active (n=60)		p Value <sup>a</sup>
	Scores	SD	Scores	SD	
Hot flashes	2.05	1.30	0.88	1.13	<0.001
Heart discomfort	1.70	1.22	0.48	0.65	<0.001
Sleeping problems	2.28	1.41	0.70	0.85	<0.001
Depressed mood	2.28	1.30	0.65	0.95	<0.001
Irritability	2.33	1.11	0.73	0.86	<0.001
Anxiety	2.83	0.90	1.02	1.00	<0.001
Physical and mental exhaustion	2.13	1.15	0.65	0.95	<0.001
Sexual problems	2.80	1.18	0.72	0.96	<0.001
Bladder problems	2.33	1.33	0.35	0.71	<0.001
Vaginal dryness	2.40	1.27	0.90	0.98	<0.001
Muscle and joint problems	2.83	1.03	1.05	1.08	<0.001

<sup>a</sup>Mann-Whitney Test; MRS: Menopause Rating Scale; SD = Standard deviation.

Table III shows that insufficiently active women have the highest scores in all domains of the MRS when compared to physically active women. The general MRS score was much higher ( $26.1 \pm 7.3$ ) in the insufficiently active, than in the physically more active ( $8.2 \pm 6.3$ ), thus meaning that the insufficiently active had greater climacteric symptoms and less quality of life. All domains showed a statistically significant difference ( $p < 0.001$ ) between groups.



**Table III – MRS domains of the women evaluated, according to the level of physical activity.**

Domains MRS	Active (n=60)		Insufficiently active (n=40)		p Value <sup>a</sup>
	Scores	SD	Scores	SD	
Psychological	3.1	2.5	9.0	3.1	<0.001
Somato-vegetative	3.1	3.0	9.6	3.2	<0.001
Urogenital	2.0	1.9	7.5	3.1	<0.001
Total MRS score	8.2	6.3	26.1	7.3	<0.001

<sup>a</sup>Mann-Whitney test; MRS: Menopause Rating Scale; SD: Standard deviation.

In Table IV, the majority (83.3%) of physically active women was classified as having a higher/better level of quality of life, while only 10% of insufficiently active women had this condition. Active women were 10.6 times more likely to have higher levels of quality of life when compared to insufficiently active women. The results showed a significant difference ( $p < 0.001$ ) between the groups.

**Table IV – Quality of life assessment by the MRS of the women assessed, according to the level of physical activity.**

Quality of life - MRS	Active (n=60)		Insuficientemente ativas (n=40)		PR (CI 95%)	p Value <sup>a</sup>
	n	%	n	%		
Menor qualidade de vida (MRS>14)	10	16,7	36	90,0	ref.	<0,001
Maior qualidade de vida (MRS≤13)	50	83,3	04	10,0	10,6 (4,1-27,5)	

<sup>a</sup>Chi-square Test ( $X^2$ ); MRS: Menopause Rating Scale; PR= Prevalence Ratio; CI 95%= Confidence Interval of 95%.

## Discussion

Studies addressing the relationship between climacteric symptoms, quality of life, and level of physical activity in postmenopausal women are still scarce in the literature. This study showed that all 11 menopause symptoms assessed using MRS had lower scores (lesser intensity of symptoms) in physically active women than in insufficiently active women. Several studies have shown similar results, in which the climacteric symptoms were significantly less intense in the group of more active women [6,8,20].

In this study, it is also observed that the most active women have, in addition to fewer climacteric symptoms in all areas, better health-related quality of life. Gonçalves *et al.* [10], in a population-based survey, showed that physically active middle-aged women had fewer menopausal symptoms and a better quality of life than sedentary women.

Tairova and Lorenzi [14] observed that 63.6% of sedentary women reported climacteric symptoms of moderate to severe intensity, the same was reported by only 33.4% of the physically active group, and yet, physically active middle-aged women, showed the higher quality of life in the somato-vegetative, urogenital and psychological domains, when compared to sedentary ones, results that corroborate our findings.

The total MRS score, which involves all domains (Psychological, somato-vegetative, urogenital) was much higher ( $26.1 \pm 7.3$ ) in insufficiently active women than inactive women ( $8.2 \pm 6.3$ ), indicating a greater intensity of climacteric symptoms

in insufficiently active ( $p < 0.05$ ). A population-based study carried out in Natal/RN with 370 women aged 40 to 65 years old, also showed that active women reported lower intensity and lower prevalence of climacteric symptoms when compared to sedentary ones [13].

The impact of a sedentary lifestyle on the increase in complaints related to climacteric symptoms and the incidence of chronic non-communicable diseases is negatively reflected in the quality of life of menopausal women [10,12,21]. In our study, when the MRS score was used as an indicator of the health-related quality of life of menopausal women, it was observed that the more active women had a better health-related quality of life than the insufficiently active women.

Studies have shown that aerobic exercises alone or combined with muscle resistance exercises can be an effective strategy in reducing vasomotor symptoms and improving the quality of life of women in menopause [20]. Kim *et al.* [7] state that physical exercises are quite effective in reducing vasomotor symptoms, such as hot flashes and night sweats.

Our results showed that the most active women had lower scores in the somato-vegetative domain, which involve several symptoms, hot flashes, and problems with sleep, than the insufficiently active ones. According to Boecker *et al.* [22], physical exercise can increase the production of beta-endorphins and stimulate central opioid activity, thus reducing hot flashes. Moudi *et al.* [8], when analyzing the relationship between lifestyle and sleep quality in postmenopausal women, observed that more than half of the women evaluated in their study (56.6%) reported poor sleep quality and low level of physical activity showed the strongest risk factor related to this condition.

Still in this regard, a study evaluating women in climacteric using the Women's Health Questionnaire found that women who practice physical exercises had less intensity of vasomotor symptoms and fewer problems with sleep than women who do not exercise [21].

Through a systematic review, Shepherd-Banigan *et al.* [23] observed that the practice of Yoga seems to cause improvements in vasomotor and psychological symptoms, and this fact can contribute to the improvement of the quality of life of menopausal women. Zanesco *et al.* [15] suggest that a single session of aerobic exercise (such as half an hour of walking, for example) provides significant improvements in some symptoms of the climacteric, including anxiety and depression.

A study that compared 2,204 less active women with more active women, observed that the practice of physical activities was related to the improvement of climacteric symptoms, among them those of a psychological nature [7]. Bener *et al.* [24] evaluated 1101 Arab women in menopause and post-menopause and found that only 26.8% practiced physical exercises. In this study, depression, anxiety, and stress were more prevalent in women who reported not exercising.

Our study showed that active women had a much lower score in the psychological domain, as well as in all symptoms that involve the same (depressive mood, irritability, anxiety, physical and mental exhaustion), meaning fewer climacteric symptoms in active women when compared to insufficiently active women. Other studies claim that physical exercise, especially aerobic exercise, can be as effective as sertraline or cognitive-behavioral therapy for the relief of depression, and can be an effective means of intervention in mild or moderate depression [20,24].

This study also showed that insufficiently active women had higher scores on the MRS requirements that involved sexual problems and vaginal dryness, as well as in the urogenital domain than women considered active. A study by Cabral *et al.* [25]

revealed that sedentary women had a high prevalence (78.9%) of sexual dysfunction, while very active women had a lower prevalence (57.6%) of this condition ( $p = 0.002$ ).

Dabrowska *et al.* [26] found a significant association between high levels of physical activity and the best sexual function of Polish women in perimenopause. However, it is important to note that investigations suggest that there is a significant and inversely proportional relationship between climacteric symptoms and sexual function, in which women with higher levels of climacteric symptomatology presented low levels of sexual function [27,28].

Thus, for Bailey [29] an active lifestyle and regular physical exercise should be provided as a means of inserting women into the active universe, improving their lifestyle by introducing regular physical exercises, such as promoting quality of life and improving physical, social and physiological conditions, demystifying the physical decline associated with this menopausal period.

Taking into account the findings of the research in question, the results of this study should be interpreted according to its limitations. Climacteric symptoms were assessed by self-report, without having been considered clinical diagnoses. However, studies state that self-administered questionnaires with a high degree of reliability, validity, and reliability may be the most appropriate instruments, as they are capable of evaluating subjective aspects involved with climacteric symptoms [5,30].

Other alternative research representations are needed, preferably population-based, with assessments before and after physical activity interventions, to offer new horizons on the relationship between the practice of physical activities and climacteric symptoms.

## Conclusion

Physically active women had a lower intensity of climacteric symptoms and better health-related quality of life when compared to insufficiently active women. The practice of regular physical activities seems to contribute to the reduction of climacteric symptoms, positively influencing the health and quality of life of postmenopausal women.

### Potential conflict of interest

No conflicts of interest with potential potential for this article have been reported.

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There were no external sources of funding for this study.

### Academic link

There is no link between this study and graduate programs.

### Authors' contributions

Conception and research design: Cabral PUL, Carvalho BE, Silva MS. Obtaining Data: Carvalho BE, Silva MS. Data analysis and interpretation: Cabral PUL, Soares NIS, Madeira FB. Obtaining financing: None. Writing of the manuscript: Cabral PUL, Carvalho BE, Silva MS, Spíndola PS, Silva MCB. Critical revision of the manuscript for important intellectual content: Meneses YPSE, Madeira FB.



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