

# The Correlation Between Exercise and Sleep in Postmenopausal Women

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## Introduction

- Postmenopausal women are more likely to have sleep disturbances
- It could be caused by normal physiological changes associated with aging, postmenopausal related symptoms, stress, nervousness, and mood symptoms.
- Sleep deficiency can affect work, driving, social functioning, and lead to issues with focusing, learning, and reacting, negatively impacting quality of life.
- This could include feeling fatigued throughout the day and lead to them having a less healthy lifestyle, which could cause an increased risk of cancer.

## Objective

Since exercise has been found to significantly improve sleep problems, **identifying which aspects of sleep disturbances have the strongest relationship with exercise will allow us to improve postmenopausal women's lifestyle behaviors and decrease their risk of cancer.**

## Methods

- Women were recruited from MD Anderson Cancer Center employees and the general population.
- Women were screened for being 50-69 years old, postmenopausal woman, self-reported height and weight indicating a BMI  $\geq 18.5$  and  $< 25$  kg/m<sup>2</sup> from Project TONE's recruiting criteria.
- Participants completed survey on physical activity (Godin Leisure Time Exercise Questionnaire) and sleep (Pittsburgh Sleep Quality Index- PSQI).
- Descriptive statistics for each sleep component of the PSQI were examined
- The PSQI Global score was used to present the distribution of all the sleep components.
- Godin total minutes of moderate and vigorous exercise were assessed and used for this analysis.
- The correlations between Godin total minutes of moderate and vigorous exercise and the PSQI components and global score were analyzed to examine relationships between exercise and sleep.

Figure 1: Sleep Efficiency n=22 (score range 0 to 3)

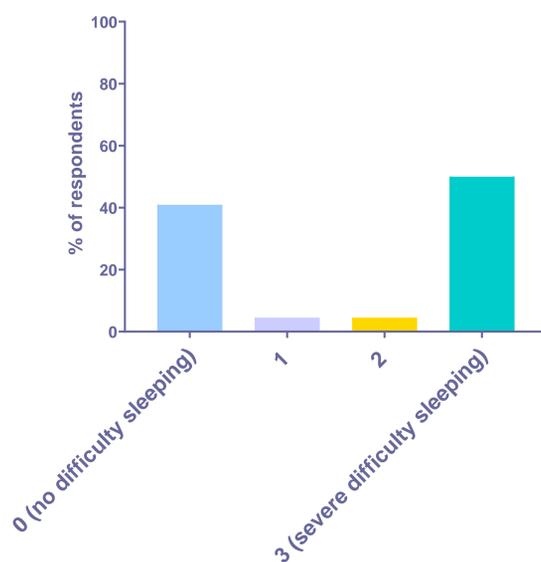


Figure 2: Sleep Disturbance n=22 (score range 0 to 3)

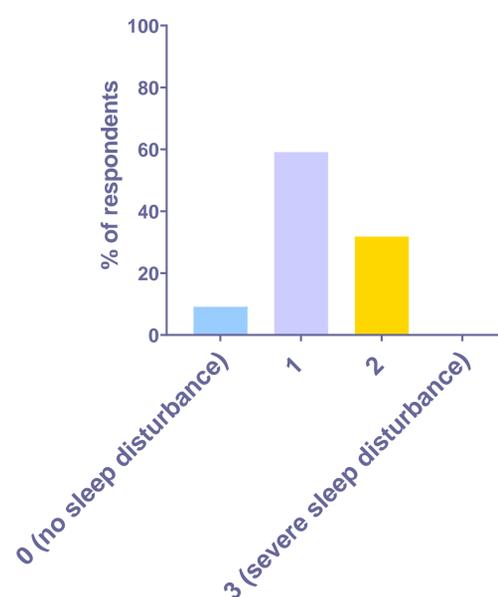
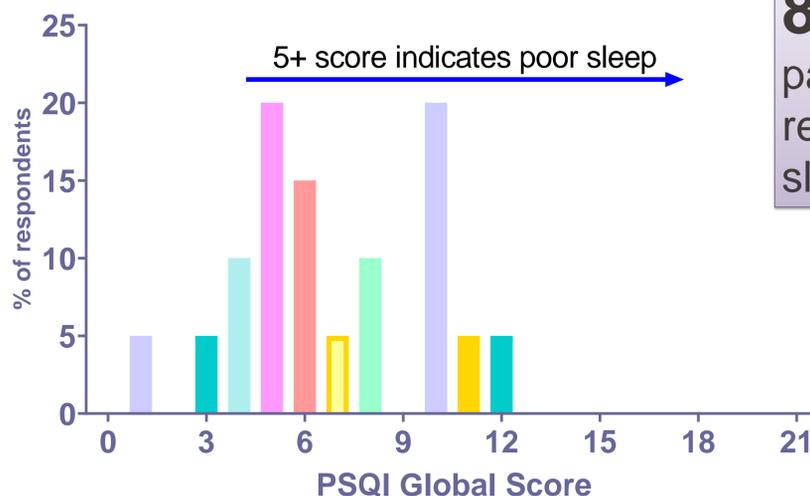


Figure 3: Global Sleep Score n=20 (score range 0 to 21)



80% of participants report poor sleep

Figure 4: Minutes of Moderate and Vigorous Exercise n=22

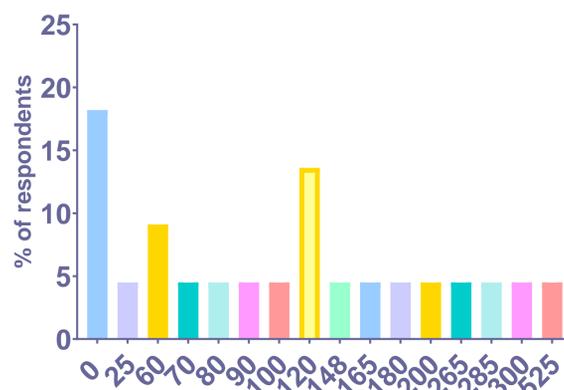


Table 1: Correlations between moderate/vigorous exercise and domains of sleep (PSQI)

PSQI Domain	Pearson Correlation	P value
Sleep Quality	-0.397	0.075
Sleep Latency	0.065	0.780
Sleep Duration	-0.246	0.271
Sleep Efficiency	-0.341	0.120
Sleep Disturbance	0.110	0.626
Use of Sleep Medication	-0.236	0.302
Global PSQI Score	-0.536	0.015

## Results

- 22 postmenopausal women were included in this analysis from Project Tone (an intervention for women with normal BMI but high body fat)
- PSQI Component 4 Sleep efficiency had the highest mean (1.64), median (2.50), and standard deviation (1.465) (Figure 1).
- Component 5 Sleep disturbance has the next highest mean (1.23), median (1.00), and standard deviation (0.612) (Figure 2).
- The baseline data PSQI Global score was from the range of 1-12 and the mean (6.80), median (6.00). (Figure 3).
- Most participants reported completing 0 and 120 minutes of moderate and vigorous exercise (Figure 4).
- PSQI Component 1 Subjective Sleep quality had the largest negative Pearson Correlation of -0.397, sig. (2-tailed) 0.075.
- PSQI Global score had the highest overall Pearson Correlation -.536, sig. (2-tailed) 0.015 (Table 1).

## Conclusions

- PSQI 4 Sleep efficiency was the sleep disturbance that affected the study participants the most.
- PSQI Component 1 Subjective Sleep quality and PSQI Component 4 Sleep efficiency had the largest negative Pearson Correlations.
- PSQI Global score had the largest overall negative Pearson Correlation that is significant at the 0.05 level (2-tailed).
- Based on these results, there isn't a strong correlation between the sleep disturbances and exercise, but there is a moderate correlation between the PSQI Global score and exercise.

## References

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