

# Impact of Exercise on Physiological and Psychological Indicators of Sleep Quality in Pre-Diabetic Postmenopausal Women

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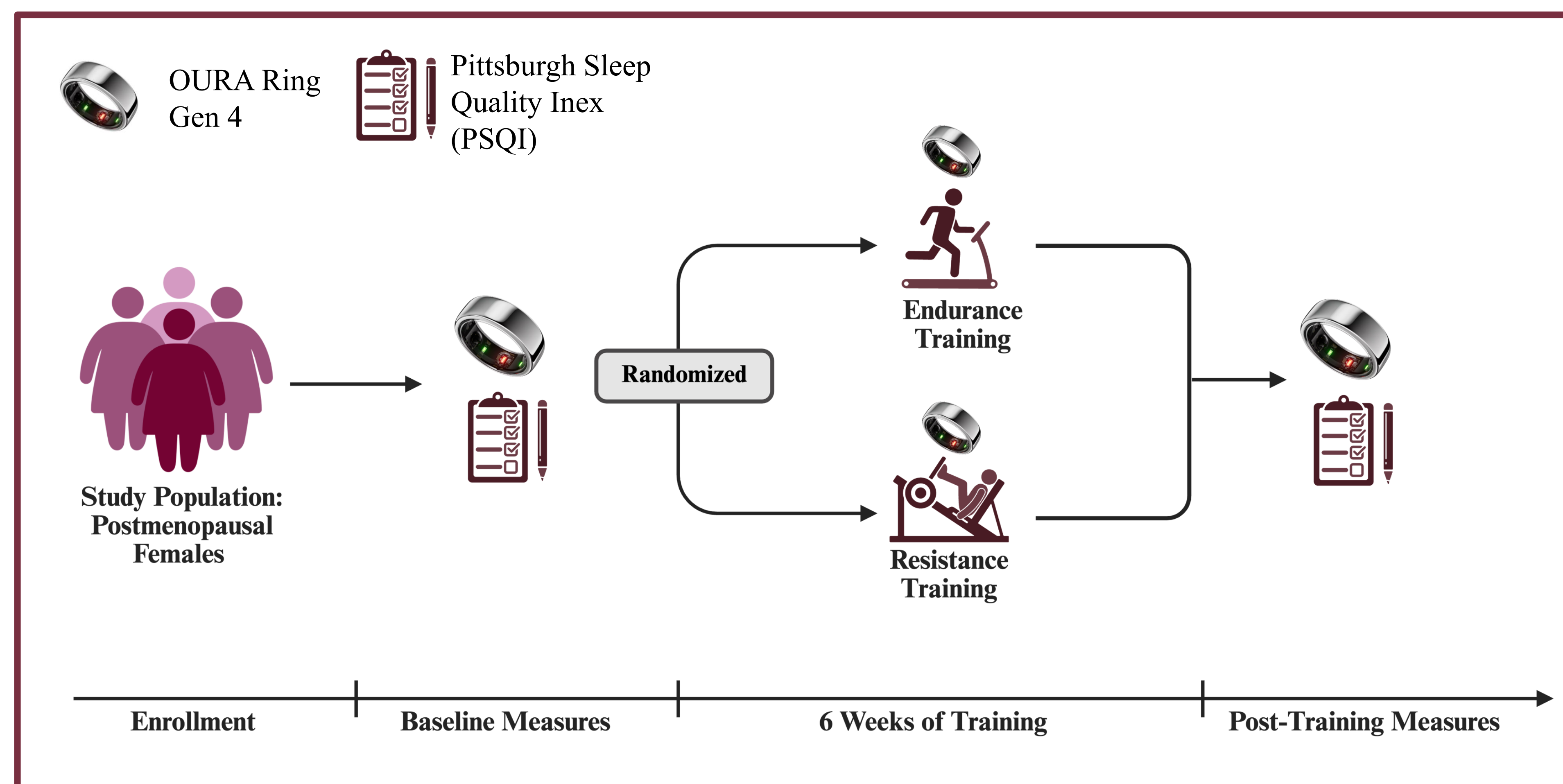
## Introduction

As women age, their bodies go through significant changes, including the menopause transition. Menopause is caused by a decrease in hormones such as estrogen and progesterone and is defined as the cessation of a woman's menstrual cycle. This decrease in hormones results in many negative symptoms for postmenopausal women and can reduce the production of other hormones like melatonin. Thus, one of the most reported symptoms of menopause is sleep disturbances such as difficulty falling asleep, frequent nighttime awakenings, or unusual early risings. These sleep disturbances can increase the risk of other health problems, like cardiovascular disease and hypertension, but most importantly, they affect women's quality of life.

## Methods

- Four participants completed a six-week exercise training program and were randomly assigned to either a resistance or endurance training group.
- Participants also wore an Oura Ring 4 throughout the duration of the study to measure differences in latency and time spent within distinct sleep stages (light, deep, and REM).
- This was used to assess objective sleep quality before and after exercise training.
- Participants also completed the Pittsburgh Sleep Quality Index (PSQI) before and after the training period to assess subjective sleep quality as well as menopause symptoms.

## Study Design



| Participant Characteristics | Baseline (n = 4) |
|-----------------------------|------------------|
| Age (years)                 | 59 ± 6           |
| Height (cm)                 | 167 ± 6          |
| Weight (kg)                 | 95.3 ± 6.8       |

Table 1. We present data as mean ± standard deviation.

## PSQI



## Results

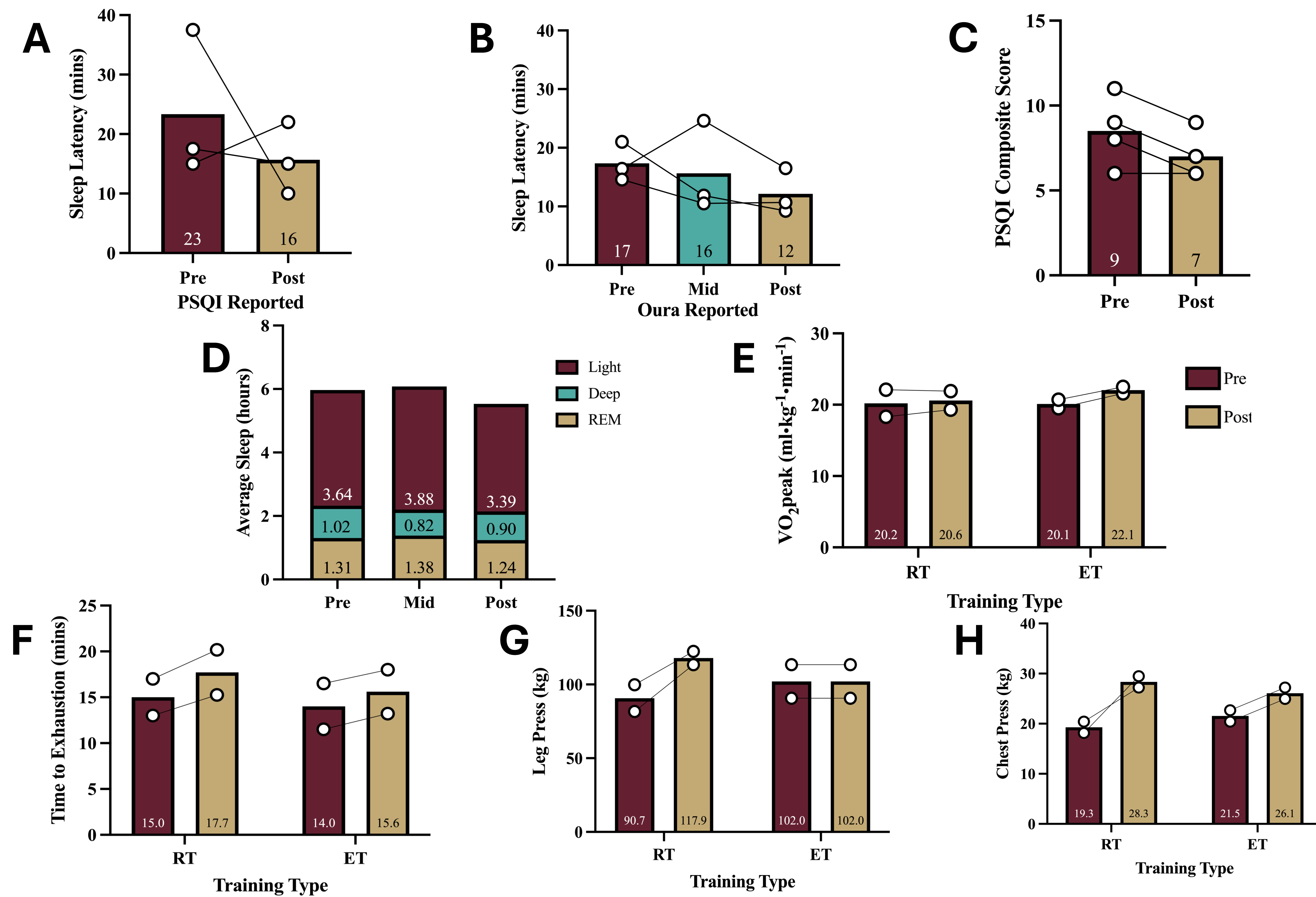


Figure 1. Pittsburgh Sleep Quality Index reported sleep latency (A), Oura reported sleep latency (B), measured pre and post for PSQI and pre, mid, and post for Oura. Composite Pittsburgh Sleep Quality Index score measured pre- and post (C). Average sleeping time and sleep stage averages measured pre, mid, and post (D).  $VO_{2Peak}$  (E), Time to Exhaustion (F), leg press (G), and chest press (H) for RT and ET groups pre- and post-training.

## Conclusion

- While our sample size was small, our data suggests that 6-weeks of resistance or endurance training, improve subjective sleep quality in previously sedentary postmenopausal women

## Acknowledgements

This research would not have been possible without FSU Anne Spencer Daves College of Education, Health, and Human Sciences, the support of our supervising professor, Dr. Robert Hickner, and the mentorship of Alayne Thompson, PhD student.

## References

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