

From Workout to Lights Out

Looking at the Correlation Between Exercise Intensity and Sleep Quality

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Background

- Low sleep quality is associated with lower grade point averages, increases in mood swings, increase in the prevalence of academic probation, and increase in motor vehicle deaths².
- 75% of college students** report feeling sleep-deprived and experiencing low-quality, low-duration sleep¹.
- Moderate exercise has been associated with increased sleep quality, but a gap remains in the literature about the effects of low and high-intensity exercise.

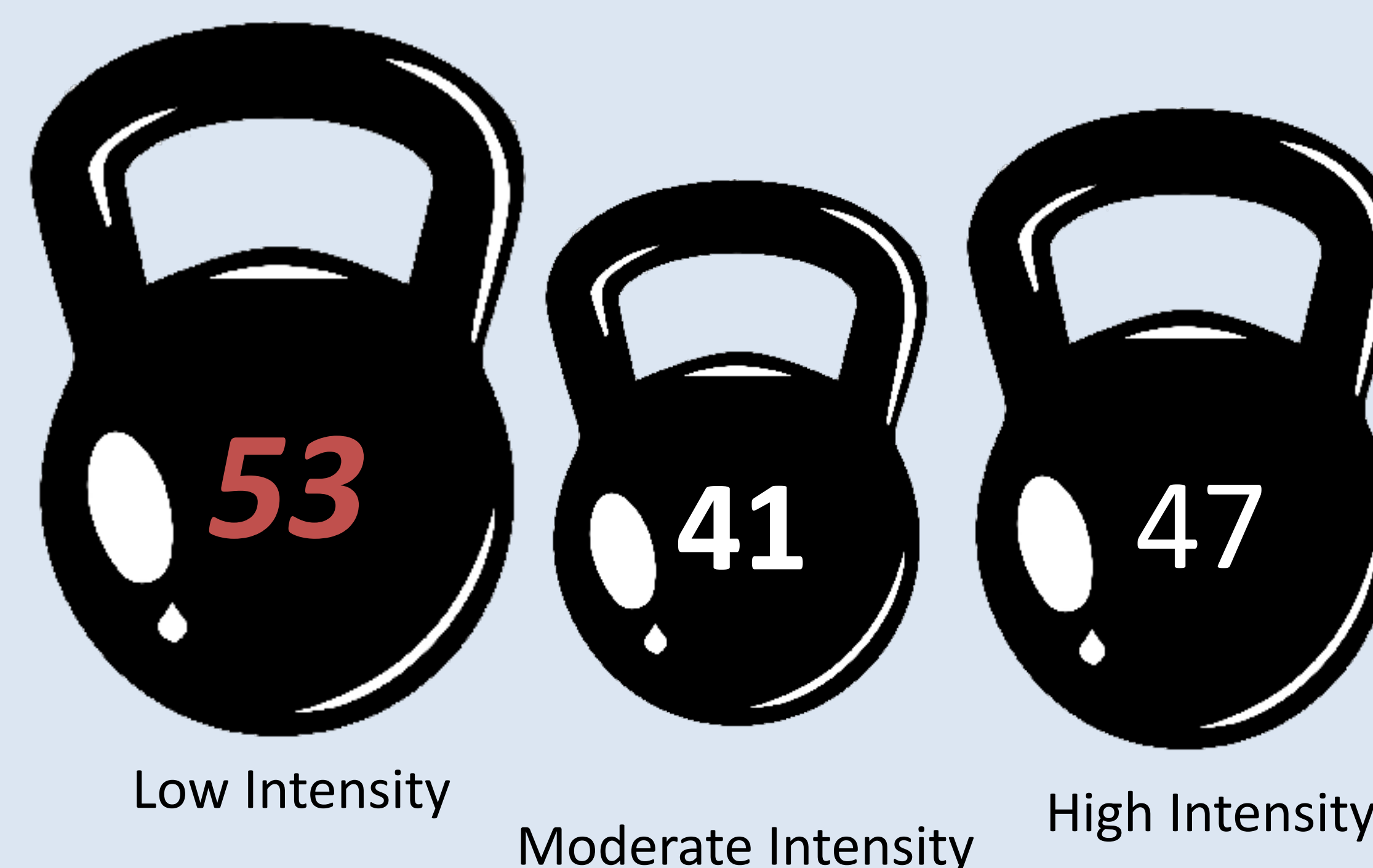
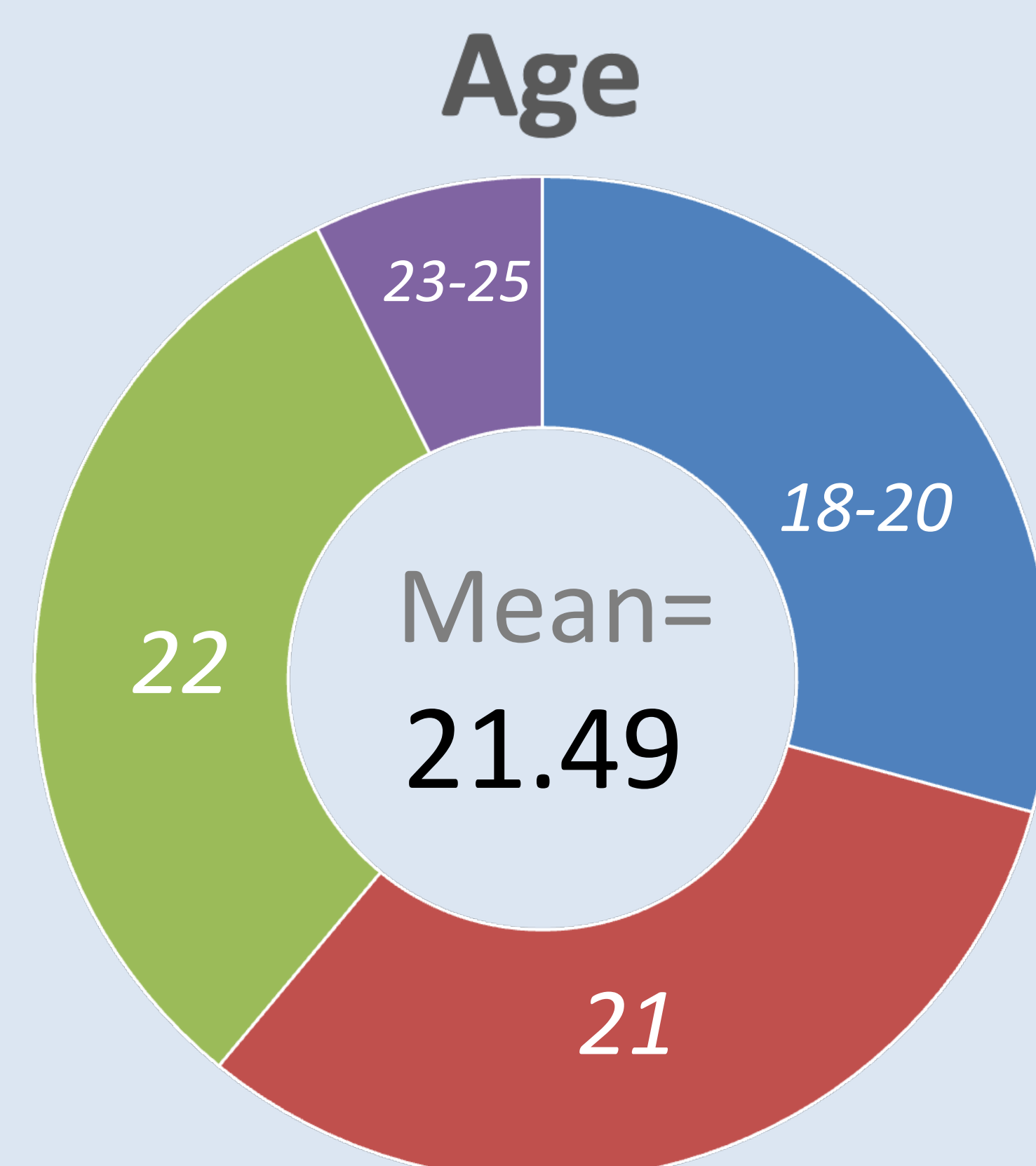
Objectives

- To identify any possible associations between low-intensity or high-intensity exercise and sleep quality.

Methods

- Cross-sectional survey was conducted among undergraduate students between the ages of 18 to 25 (n=208) in the United States.
- In April 2024, the survey was distributed to students via social media (Instagram and Snapchat), UCSD Athletic Council, & co-workers.
- Exposure:** Exercise Intensity
- Outcome:** Sleep Quality
- Covariates/Confounders: Caffeine intake and stress levels
- A modified **Pittsburg Sleep Quality Index** and a modified **Rate of Perceived Excursion Scale** were used to conduct correlation analysis and ANOVA analysis.

Results



of Participants per Exercise Intensity

AVERAGE EXERCISE DURATION		
QUESTION: On average, how long do you work out at a moderate or high intensity?	Intensity	Duration
	Moderate	130-300 MIN
	High	150+ MIN

Tables show the duration of moderate and high-intensity exercise among participants that participants exercise.

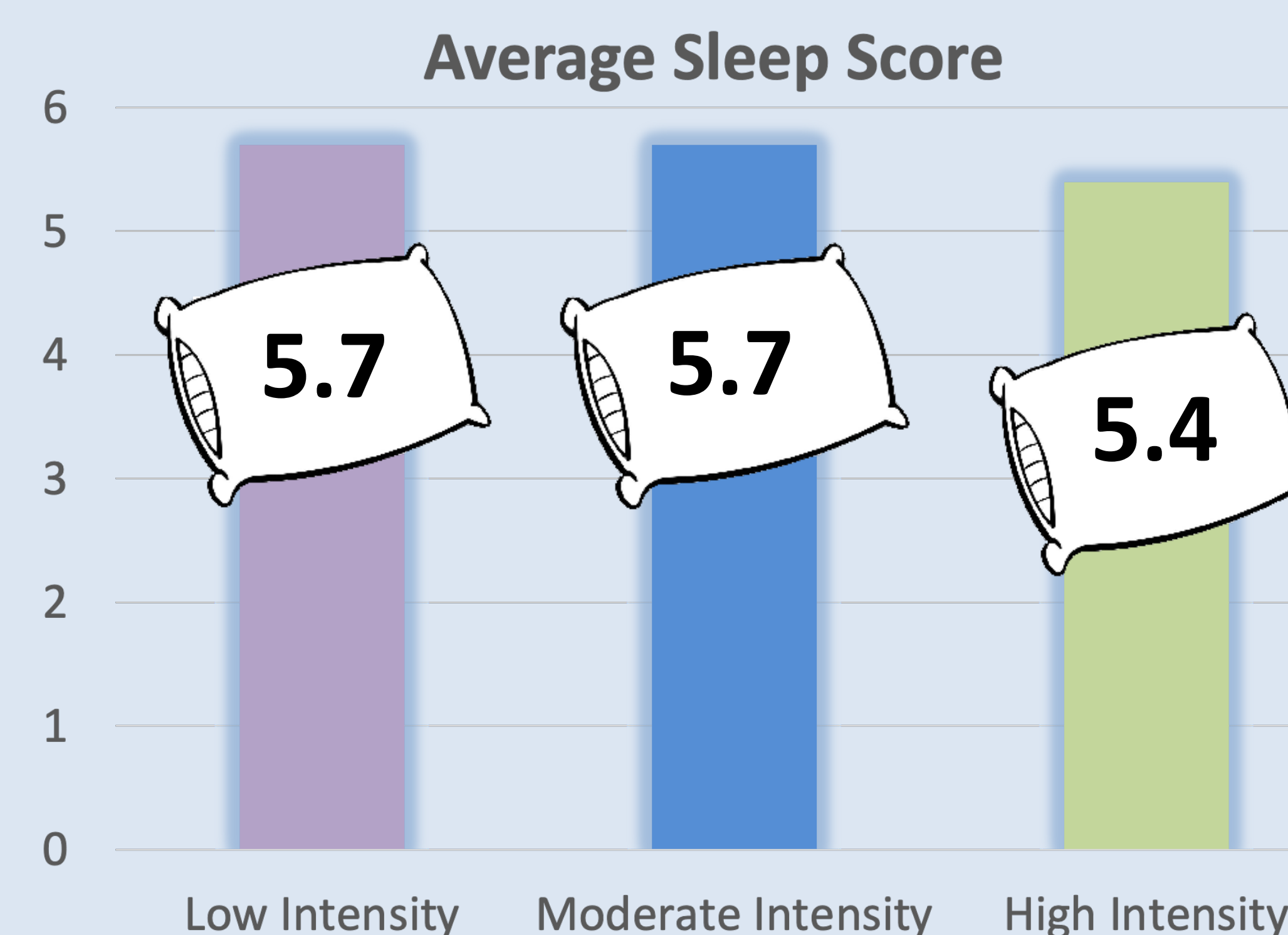


Chart showing average sleep scores across the three exercise intensities, the score is obtained from a modified Pittsburg Sleep Index and ranges from 0-9

Correlation Between Exercise and Sleep Quality

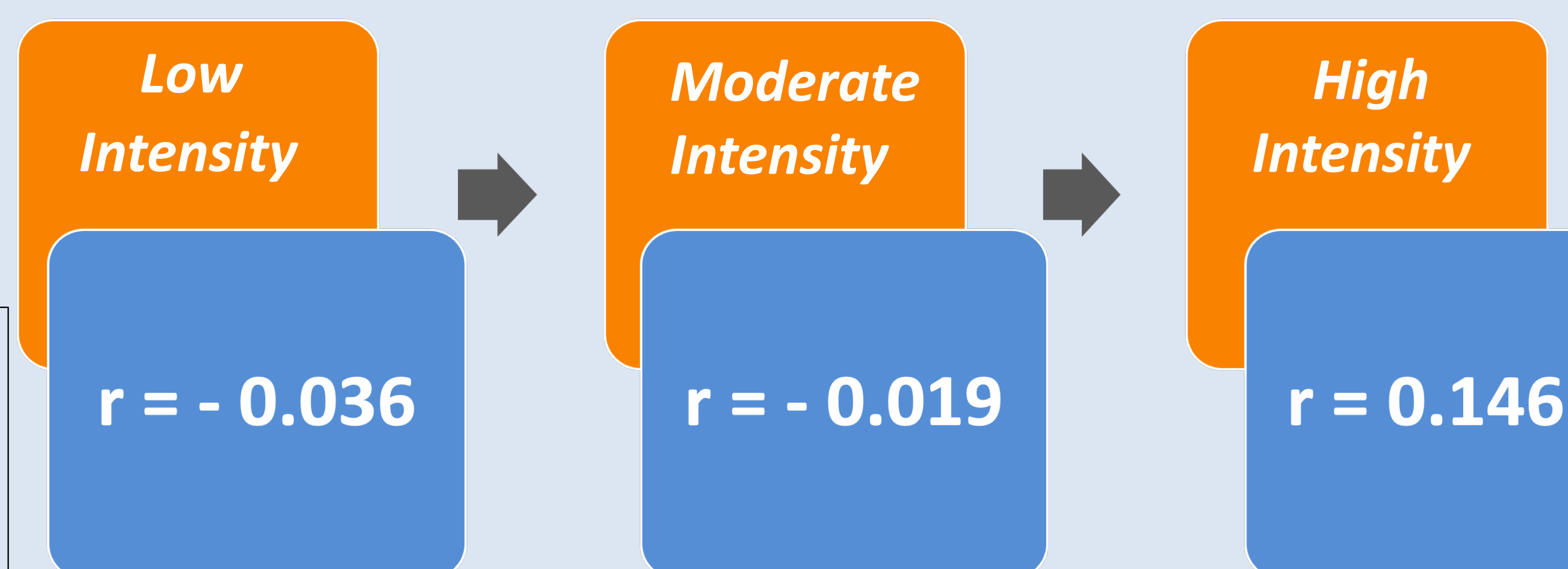


Chart showing correlation analysis results, r values close to zero show no correlation between exercise intensity and sleep quality

Conclusions

- Results suggested that varying workout intensities do not have a statistically significant association with sleep quality ($p=0.201$).
- Correlation analysis showed weak relationships between exercise intensity and sleep quality, with high intensity being a slightly stronger relationship.
- Linear regression showed no significant association between stress and caffeine intake and sleep quality, but this may be due to a small sample and limited questioning.

Policy Implications

- Introduce a campaign that raises awareness of the potential benefits of moderate exercise on sleep and design specific programs for at-risk populations.
- Introduce more education to the public and college students about the affects caffeine intake can have on sleep quality if consumed before going to sleep.

Acknowledgements

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References

