Relationship Between Law Enforcement Cadet Perceived Recovery Metrics and Academy Physical Performance

Sarah N. Lanham[1], Margaret A. Lewis[1], Tom R. Nagel[1], Jamal L. Thruston[1], Jackson B. Miller[1], Susannah L. Reiner[1], Abigayle R. Spong[1], Emily L. Langford[2], Mark R. Mason[1], Mark G. Abel[1,2]

[1] First Responder Research Laboratory, University of Kentucky, Lexington, KY;
[2] Department of Health Sciences and Kinesiology, Georgia Southern University, Statesboro, GA

ABSTRACT

BACKGROUND: Law enforcement cadets are subjected to physically demanding training, high-stress simulations, and exposure to traumatic scenarios during an academy. Neglecting aspects of recovery can result in severe consequences to their mental, physical, and occupational readiness. Therefore, Aim #1 of this investigation was to examine the inter-relationships between self-perceived recovery score (PRS) parameters; Aim #2 was to assess the relationships between the aggregate PRS versus the change in health and performance outcomes throughout a law enforcement training academy. METHODS: 58 cadets (43 males, 15 females; Age: 26.2±6.4 yr) completed an online recovery survey each morning during the 11-week academy. Questions assessed perceived recovery via Likert scale (1=worst, 10=best) regarding Sleep quality, Soreness, Joint health, Hydration, Nutrition, Stress, Energy level, and Overall recovery. Health indicators (sleep duration, body mass, waist circumference, blood pressure) and performance tests (long jump, T-drill, push-ups, 500m row, 30:15 Intermittent Fitness Test) were conducted pre- and post-academy. Median scores for the 7 sub-recovery metrics were summed to create an aggregate PRS. The sample's global median value was used in the analysis. Spearman's correlations assessed relationships between recovery and relative and absolute change in health and performance variables. Significance was set to p<0.05. RESULTS: The global median PRS was 47.5 (interquartile range: 42.4-52.1) which included median recovery metric scores of 7 (IQR: 6-8) for Sleep quality, 7 (IQR: 7-8) for Soreness, 8 (IQR: 7-9) for Joint health, 7 (IQR: 5-8) for Hydration, 7 (IQR: 5.75-8) for Stress, 7 (IQR: 5-8) for Energy level. Cadets indicated a median Overall academy score of 7 (IQR: 6-8). Lesser soreness was associated with less joint discomfort (r=0.70, p<0.001), greater energy levels (r=0.30, p<0.05), and lower stress (r=0.53, p<0.001). Better sleep quality was associated with greater perceived energy (r=0.85, p<0.001), nutrition (r=0.65, p<0.001), hydration (r=0.70, p<0.001) and less stress (r=0.28, p<0.05). PRS and individual recovery subscales were not correlated to health or performance changes (p>0.05). Cadets averaged 6.96±0.60 hr of sleep per night. A positive correlation was observed between hours of sleep vs. PRS (r=0.28, p<0.05) and sleep quality (r=0.36, p<0.01). CONCLUSION: Although cadets perceived to have recovered adequately, they reported insufficient sleep duration (i.e., <7 hours per night). Observed relationships between recovery metrics support the importance of adequate sleep. Future research to examine the acute impact of recovery strategies on occupational stress and performance in this population is warranted. PRACTICAL APPLICATIONS: Law enforcement training academies are encouraged to educate law enforcement cadets on adequate health and recovery strategies during the academy. Academies should monitor cadet recovery and implement feasible regeneration strategies to enhance health, safety, and performance during the academy and across the career.

BACKGROUND

Law enforcement cadets are subjected to physically demanding training, high-stress simulations, and exposure to traumatic scenarios during an academy.[1-3] Neglecting aspects of recovery can result in severe consequences to cadets' mental, physical, and occupational readiness.[1,2] The limits of current law enforcement training academy research hinder the development of effective injury risk reduction strategies. Department implementation of stress monitoring/management strategies for academy use is paramount.[1,4] Development of academy-specific metrics are needed.

AIMS

Aim #1: To quantify self-perceived recovery score (PRS) parameters, health variable outcomes, and performance outcomes among law enforcement cadets.

Aim #2: To examine the association between individual PRS parameters.

Aim #3: To examine the relationship between the aggregate PRS versus the change in health and performance outcomes throughout a law enforcement training academy.

METHODS

- 58 law enforcement cadets (43 males, 15 females; Age: 26.2±6.4 yr) completed an online recovery survey each morning during the 11-week academy.

- Questions assessed perceived recovery via Likert-type scale (1=worst, 10=best) in the following subcategories: sleep quality, stress level, soreness, and energy level.

- Health indicators (i.e., sleep duration, body mass, waist circumference, blood pressure) and performance tests (i.e., long jump, T-drill, push-ups, 500m row, 30:15 Intermittent Fitness Test) were conducted pre- and post-academy.

- 7 recovery metrics were summed to create an aggregate daily PRS, which was averaged among cadets across the academy, and subsequently, the sample's global median value was used in the analysis.

- Spearman's rho correlations assessed relationships between recovery versus relative and absolute change in health and performance variables. Significance was set to p < 0.05.
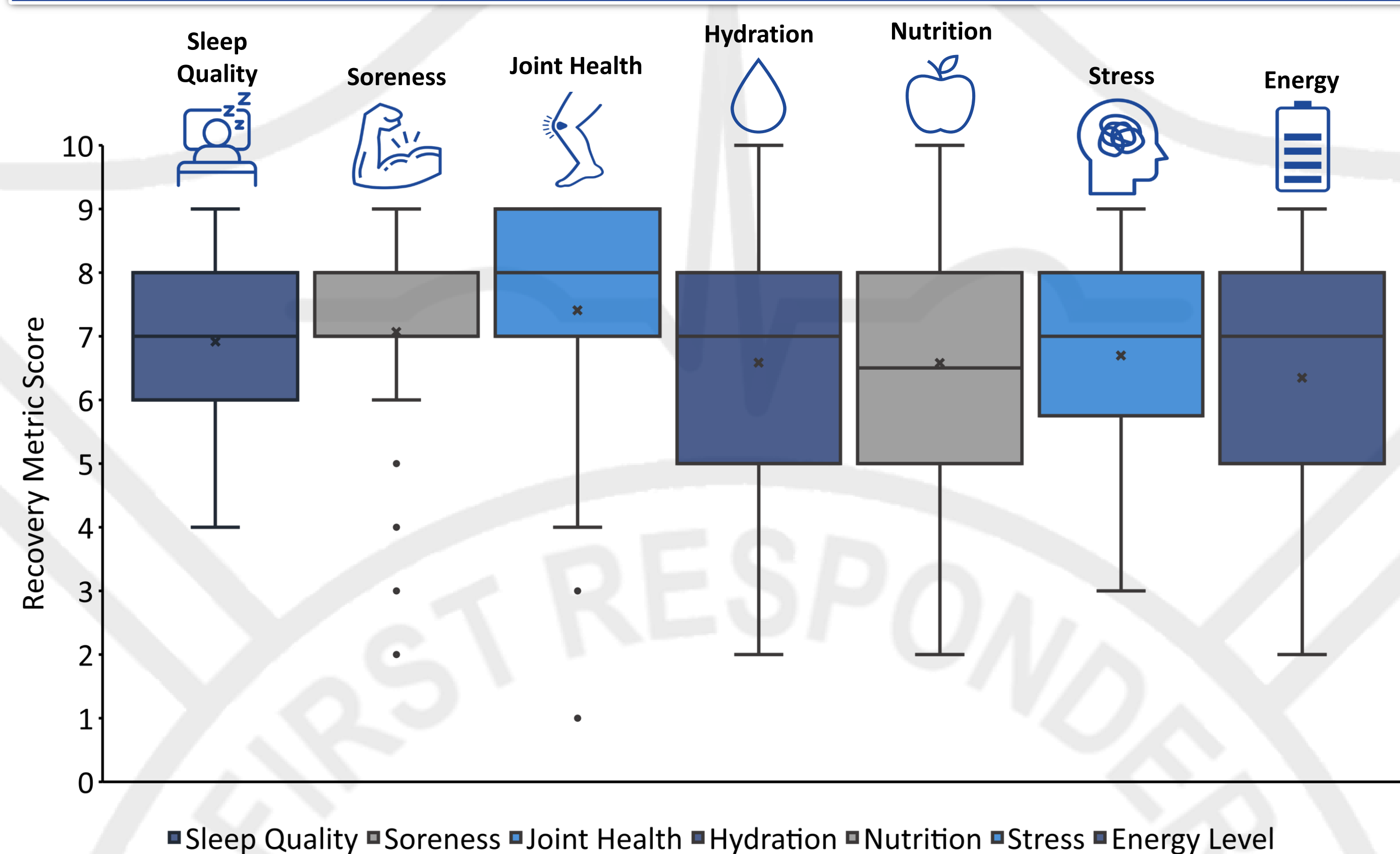
RESULTS

Figure 1. Box and whisker plots of perceived recovery score for each recovery metric during a law enforcement academy.

■ Sleep Quality ■ Soreness ■ Joint Health ■ Hydration ■ Nutrition ■ Stress ■ Energy Level

- Cadets averaged 6.96 ± 0.60 hr of sleep per night.

- Cadets indicated median global PRS = 47.5 (IQR: 42.4-52.1) and Overall academy score of 7 (IQR: 6-8) (Figure 2).

- Lesser soreness was associated with less joint discomfort (r=0.70, p<0.001), greater energy levels (r=0.30, p<0.05), and lower stress (r=0.53, p<0.001).

- Better sleep quality was associated with greater perceived energy (r=0.85, p<0.001), nutrition (r=0.65, p<0.001) (Figure 3), hydration (r=0.70, p<0.001) and less stress (r=0.28, p<0.05).

- PRS and individual recovery subscales were not correlated to health or performance changes (p>0.05).

- A positive correlation was observed between hours of sleep and PRS (r=0.28, p<0.05) and sleep quality (r=0.36, p<0.01).
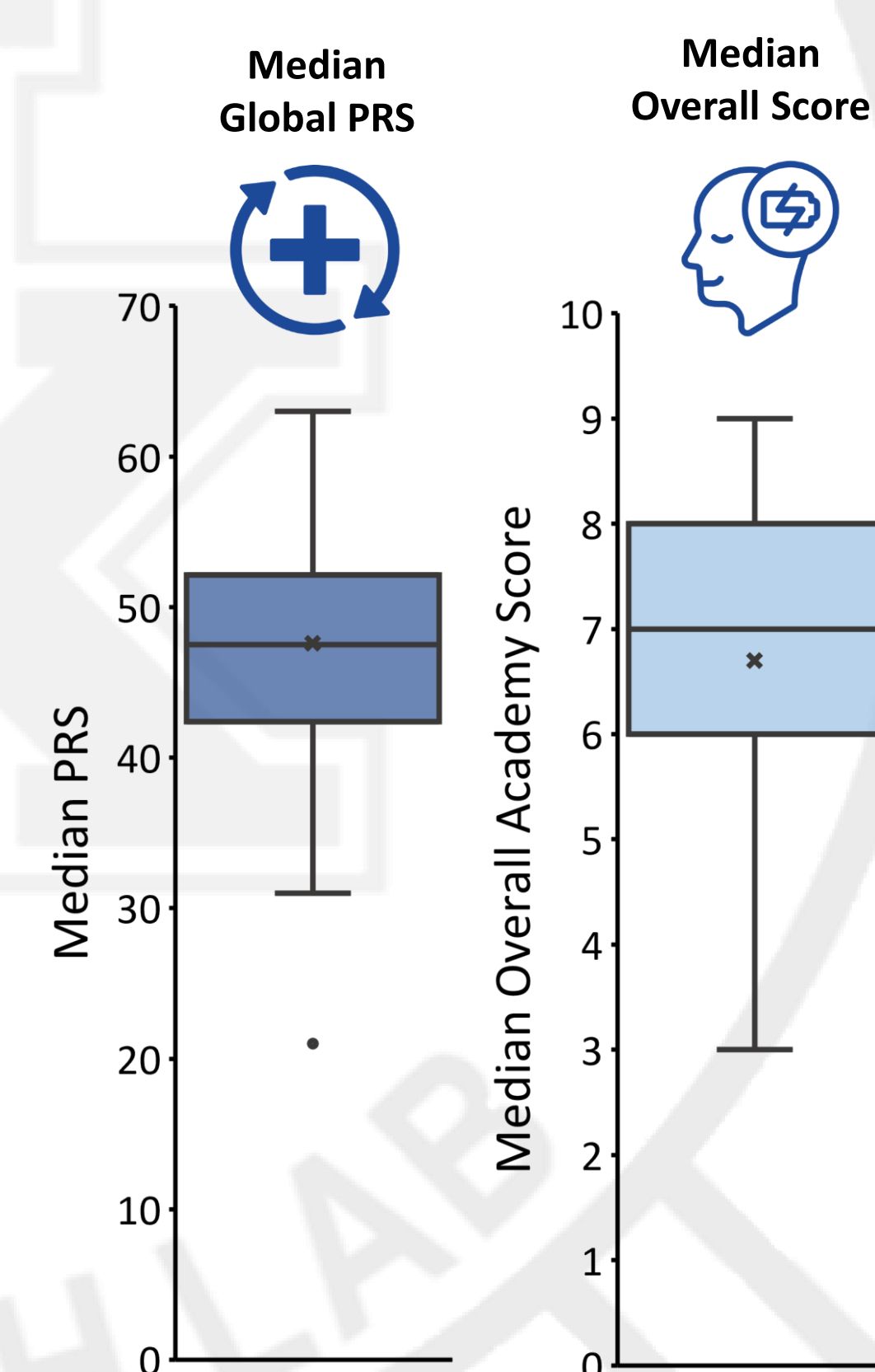

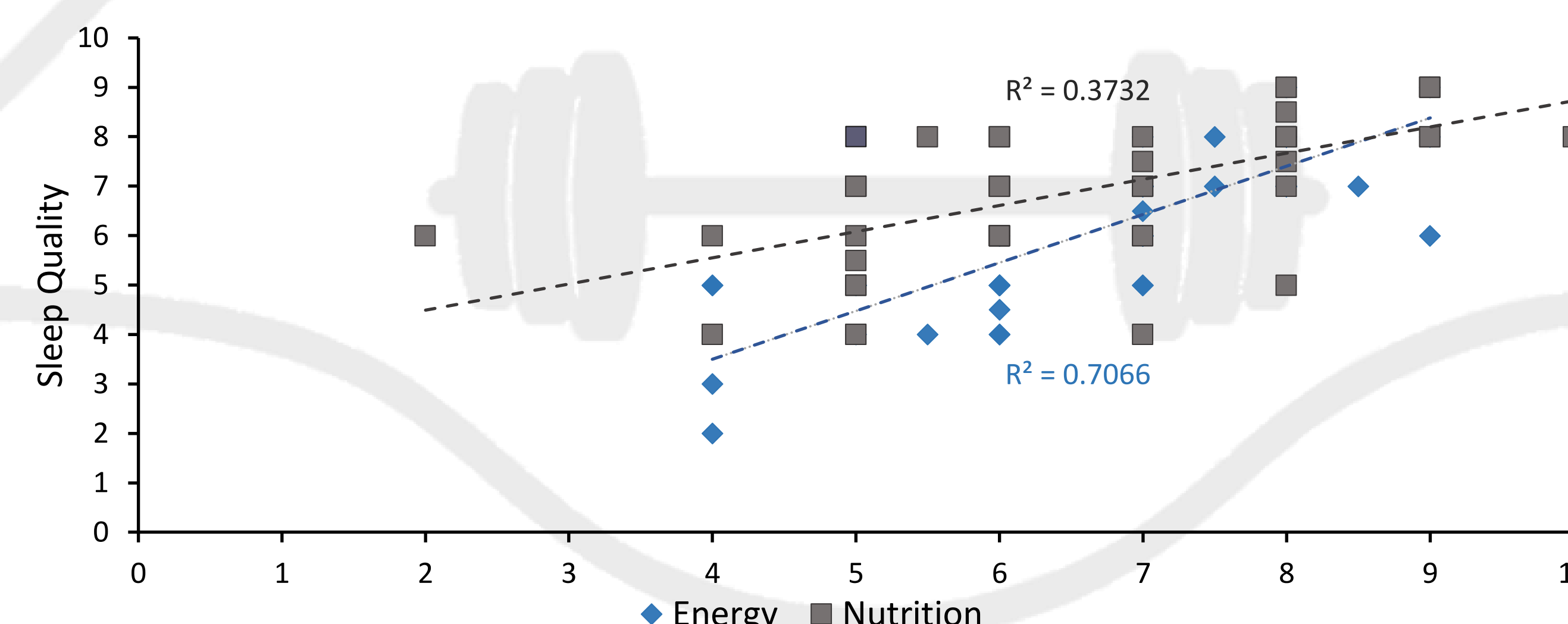**Figure 2.** Cadet median Overall Recovery score and median PRS.

Figure 3. Correlation between cadets' sleep quality and nutrition and energy.

CONCLUSION

- Although cadets perceived to have recovered adequately, they reported **insufficient sleep duration** (i.e., < 7 hours per night).

- **More sleep** was associated with **greater perceived recovery**.

- Recovery scales were **not related** to changes in **health or performance** outcomes.

PRACTICAL APPLICATION

- Training academies are encouraged to monitor cadet training loads and recovery status with validated methods.

- Departments should employ qualified practitioners to educate cadets on the importance of recovery and associated behaviors.

- Departments should implement feasible regeneration strategies (i.e., sleep hygiene) to enhance health, safety, and performance throughout LEO careers.

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