RECOVERY FOUNDATIONS FOR ATHLETIC SUCCESS

Steven Basham, MS | Scientist, Gatorade Sports Science Institute

The foundation for successful recovery begins with **nutrition, hydration, and sleep.**

NUTRITION

When maximizing recovery and bolstering performance in athletes; consider the foundational macronutrients – carbohydrates and protein.

- Carbohydrates before training/competition may help support fueling needs, while ingesting carbohydrates during will aid to maintain performance[1].
- Carbohydrates should be emphasized to restore muscle glycogen if there is <8 hours between training/competitions. [1, 2]
- When carbohydrate use is sub-optimal, adding protein may aid in restoring muscle glycogen. [2, 3]
- Protein considerations should take into account the following [2, 4, 5]:
  - Total amount protein
  - Type of protein
  - Timing of protein

HYDRATION

A 2% or more decrease in bodyweight from dehydration may negatively reduce cognitive and physical performance, especially in training or competition in a hot and humid environment. [1]

- Athletes should aim to drink fluid with sodium to replace their losses during and after competition to avoid starting the next training/competition dehydrated.[1, 6]

SLEEP

Poor sleep may reduce performance and recovery, while negatively impacting memory retention, skill-based learnings and academics. [7, 8] Educate athletes on the importance of sleep. [9]

- Factors disrupting sleep include: training/competition, environment and social demands. [7, 10]
- Promoting good sleep solutions/hygiene include: consistent nighttime routine and sleep schedule, napping, elimination of nighttime electronics and room considerations (dark, cool, quiet). [7]

ATHLETE MONITORING

Athlete monitoring may help drive appropriate nutrition/training strategies to optimize recovery and performance.

- Considerations for Athlete Monitoring:
  - Simple and effective
  - Balancing resources
  - Buy-in from both coaches and players

PRACTICAL LOAD MEASURES

- Body weight
- Training load
- Perceived recovery status
- Duration
- Session RPE
- Heart rate
- Weight room volume

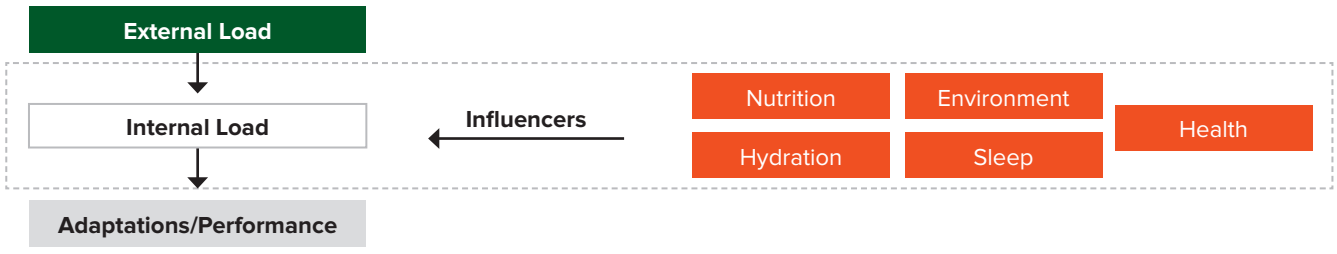

Figure 1. A theoretical framework adopted from Impellizzeri, Marcora and Coutts[11] depicting external load and other influencers on internal load which moderate adaptation and performance.

REFERENCES

1. Thomas DT, Erdman KA, Burke LM. American College of Sports Medicine Joint Position Statement. Nutrition and Athletic Performance. Medicine and science in sports and exercise. 2016;48(3):543-68
2. Kerksick CM, Arent S, Schoenfeld BJ et al. International society of sports nutrition position stand: nutrient timing. J Int Soc Sports Nutr. 2017;14:33.
3. Heaton LE, Davis JK, Rawson ES et al. Selected In-Season Nutritional Strategies to Enhance Recovery for Team Sport Athletes: A Practical Overview. Sports medicine (Auckland, N.Z.). 2017;47(11):2201-18.
4. Witard OC, Garthe I, Phillips SM. Dietary Protein for Training Adaptation and Body Composition Manipulation in Track and Field Athletes. International Journal of Sport Nutrition and Exercise Metabolism. 2019;29(2):165-74.
5. Res PT, Groen B, Pennings B et al. Protein ingestion before sleep improves postexercise overnight recovery. Medicine and science in sports and exercise. 2012;44(8):1560-9.
6. Shirreffs SM, Sawka MN. Fluid and electrolyte needs for training, competition, and recovery. Journal of sports sciences. 2011;29 Suppl 1:S39-46.
7. Kolling S, Duffield R, Erlacher D, Venter R, Halson SL. Sleep-Related Issues for Recovery and Performance in Athletes. International journal of sports physiology and performance. 2019;14(2):144-8.
8. Rae DE, Chin T, Dikgomo K et al. One night of partial sleep deprivation impairs recovery from a single exercise training session. European journal of applied physiology. 2017;117(4):699-712.
9. O'Donnell S, Beaven CM, Driller MW. From pillow to podium: a review on understanding sleep for elite athletes. Nature and science of sleep. 2018;10:243-53.
10. Moore M, Meltzer LJ. The sleepy adolescent: causes and consequences of sleepiness in teens. Paediatric respiratory reviews. 2008;9(2):114-20; quiz 20-1.
11. Impellizzeri FM, Marcora SM, Coutts AJ. Internal and External Training Load: 15 Years On. International journal of sports physiology and performance. 2019;14(2):270-3.