

N

National

UNIVERSITY

Managing Midnight Miles: A Qualitative Descriptive Single-Case Study
on Sleep Strategies Among United States Ultra-Marathon Runners

Professor Bailey Lancaster, PhD, LPC-S, LADC/MH-S

NATIONAL UNIVERSITY - SAN DIEGO, CALIFORNIA

Abstract

Sleep is vital to performance, yet ultra-marathon runners often obtain inadequate sleep. This qualitative descriptive single-case study explored how U.S. ultra-marathon runners perceive sleep's role in their physical, psychological, and social functioning during endurance events. Using a biopsychosocial lens, 15 runners completed semi-structured virtual interviews. Reflexive thematic analysis produced nine themes. Core findings included strategic sleep optimization; bidirectional sleep negotiation across training and life demands; psychological disruption and adaptation; identity and community belonging; and consequences and contexts of sleep disruption. Athletes reported intentional practices (sleep-tracking, behavioral sleep hygiene, recovery strategies) but noted constraints from work and family. Sleep loss was linked to emotional instability, reduced motivation, and cognitive difficulties during key race moments. Recommendations emphasize targeted, athlete-centered interventions combining technology, behavioral approaches, and social support. Future work should evaluate specific sleep strategies in larger, more diverse samples to guide coaches and sports health professionals.

Background

- Sleep is critical for athletic performance; ultra-endurance athletes frequently experience sleep insufficiency.^{1-4,11}
- Ultra-marathons impose extreme physiological and psychological strain; disrupted sleep impairs recovery, cognition, and performance.^{3,7-10}
- Most sport-sleep research focuses on shorter-duration sports; ultra-marathons have unique demands (environment, travel, time zones) and rising participation, requiring tailored management.^{2,4,5,8,11}
- Inadequate sleep is common in adults (~27.7%) and carries substantial health and economic costs—stakes are higher for ultra-runners.⁶⁻⁷
- There is a documented gap in sleep interventions specifically tailored to ultra-marathon runners; targeted strategies are needed.^{2,4,5,12}
- The biopsychosocial model offers a useful lens to integrate biological, psychological, and social factors influencing sleep management in this group.¹³⁻¹⁴

Purpose

The purpose of this qualitative descriptive single-case study was to explore how U.S. ultra-marathon runners perceive the role of sleep (and sleep insufficiency) in their physical health, psychological health, and social factors during endurance events, to inform targeted sleep-management practices.^{2,5,12-14}

Design & Methods

This was a qualitative descriptive single-case study.¹⁵⁻¹⁷ Purposive sampling recruited U.S. ultra-marathon runners (18-62; ≥1 ultra in past year) via running clubs, forums, and social media; *n* = 15 (data saturation achieved).¹⁸⁻¹⁹ Participants completed a one-time, remote, audio-recorded, semi-structured interview via Zoom (60-90 min); verbal informed consent obtained; IRB approved.²⁰⁻²² Data were analyzed using reflexive thematic analysis.²³

Research Questions

RQ1 (Physical): How do ultra-marathon runners perceive the role of sleep in their physical health during endurance events?
RQ2 (Psychological): How do they perceive the role of sleep in their psychological health?
RQ3 (Social): How do they perceive the role of sleep in their social well-being?

Results

- The sample included 15 U.S. ultra-marathon runners; 8 female (53%), 7 male (47%); age 25-59 (*M*≈39.5).
- Experience ranged 8 months-10 years (*M*≈4.2); Novice *n*=4 (27%), Intermediate *n*=3 (20%), Seasoned *n*=8 (53%).
- One-time, remote, semi-structured Zoom interviews (60-90 min); data saturation at *n*=15.²³

Nine major themes were identified across the sample:

- Strategic Sleep Optimization for Physical & Mental Recovery
- Bidirectional Sleep Negotiation Across Training & Life Demands
- Psychological Disruption & Adaptation Across the Ultra-Endurance Journey
- Identity, Values, & Belonging in the Ultra-Endurance Community
- Lifestyle Trade-Offs & Internal Conflicts in Endurance Commitment
- Navigating Physical Limits & Health Behaviors in Endurance Training
- Navigating Social Expectations & Sleep Boundaries
- Physiological Consequences & Adaptations Related to Sleep
- Consequences and Contexts of Sleep Disruption

There was no consistent chronological ordering of themes across narratives; themes frequently overlapped across biological, psychological, and social domains of the Biopsychosocial Model.¹³
Cross-cutting theme: Theme 9 (Consequences and Contexts of Sleep Disruption) intersected with each domain and all three research questions.¹³

Participant Quotes

RQ1 • Biological	RQ2 • Psychological	RQ3 • Social
"While you're sleeping, that's when your body heals. If you're not getting good sleep, those little nagging injuries are hard to recover from." —Eric	"Motivation and sleep are very connected... Good training, positive motivation, and a supportive community help your mental state." —Lisa	"I prioritize sleep over social activities. If I invited somewhere, I evaluate whether it fits my schedule. Often, I bow out because by evening, I am ready for bed." —Michelle
RQ1 • Biological	RQ2 • Psychological	RQ3 • Social
"Sleep deprivation contributes to immune issues." —Amy	"On tired days I call them my busy work days because I know I will not be able to do any deep thinking work." —Sarah	"Sometimes, I put a kid back to sleep at three or four in the morning. If I am halfway awake, I just go do my run then." —Jason
Counterpoint • Consistency Mindset		
"I am not going to miss a run because I did not sleep well, unless I did not" "sleep at all." —Justin		

The diagram illustrates the Biopsychosocial Model (Engel, 1977) and its application to the study. It is structured as follows:

- Biopsychosocial Model (Engel, 1977)** (Top Level)
 - Biological** (Left Column)
 - RQ1 - Physical Health** (Middle Level)
 - Theme 1: Strategic Sleep Optimization for Physical and Mental Recovery**
 - Theme 2: Bidirectional Sleep Negotiation Across Training and Life Demands**
 - Theme 6: Navigating Physical Limits and Health Behaviors in Endurance Training**
 - Theme 8: Physiological Consequences and Adaptations Related to Sleep**
 - Theme 9: Consequences and Contexts of Sleep Disruption**
 - Psychological** (Middle Column)
 - RQ2 - Psychological Health** (Middle Level)
 - Theme 1: Strategic Sleep Optimization for Physical and Mental Recovery**
 - Theme 3: Psychological Disruption and Adaptation Across the Ultra-Endurance Journey**
 - Theme 5: Lifestyle Trade-Offs and Internal Conflicts in Endurance Commitment**
 - Theme 9: Consequences and Contexts of Sleep Disruption**
 - Social** (Right Column)
 - RQ3 - Social Factors** (Middle Level)
 - Theme 2: Bidirectional Sleep Negotiation Across Training and Life Demands**
 - Theme 4: Identity, Values, and Belonging in the Ultra-Endurance Community**
 - Theme 7: Navigating Social Expectations and Sleep Boundaries**
 - Theme 9: Consequences and Contexts of Sleep Disruption**

Conclusions & Future Study

- Across 15 runners, sleep was treated as an intentional performance tool, not passive rest.
- Athletes continually negotiate sleep with training, work, and family; these life demands cut across all themes.
- Nine themes mapped to the Biopsychosocial Model; several (e.g., Strategic Optimization, Bidirectional Negotiation, and Consequences of Disruption) spanned domains.
- Physiological consequences (elevated HR, fatigue, slower paces) and psychological consequences (emotional reactivity, reduced focus) were common, even when injuries were not.
- Community identity and norms supported persistence but sometimes normalized sleep sacrifice.
- No consistent chronology of themes across narratives; experiences were context-dependent and cyclical (training → race → recovery).
- Further study: evaluate multi-component interventions, track critical windows (race-week “sleep banking,” race night(s), post-race), and examine gender and role (parent/crew) differences.

Implications for Research

- Provides foundational, athlete-derived components for sleep management in ultra-endurance sport.
- Supports mixed-methods and longitudinal designs (e.g., actigraphy + interviews) to map changes across training cycles.
- Test multi-component interventions (sleep education + CBT-I elements + tech-guided pacing/nap prompts + family/partner support).
- Study crewing/pacing as a distinct sleep-deprivation context influencing both runner and crew outcomes.
- Investigate technology's dual role (reassurance vs. over-reliance) and define dose-response thresholds between sleep loss and performance.
- Examine gender-specific patterns and social-norms (e.g., “toxic positivity”) as barriers/facilitators of restorative sleep.

References

- Fullagar, H. H. K., Duffield, R., Skorski, S., Coutts, A. J., Julian, R., & Meyer, T. (2015). Sleep and recovery in team sport: Current sleep-related issues facing professional team-sport athletes. *International Journal of Sports Physiology and Performance*, 10(8), 950-957.
- Miller, D. J., Bianchi, D., & Lastella, M. (2022). Sleep-wake behaviour of 200-mile ultra-marathon competitors: A case study. *European Journal of Investigative Health Psychology and Education*, 12, 794-800. <https://doi.org/10.3390/ejihpe12090056>
- Roberts, S. S. H., Main, L. C., Condo, D., Carr, A., Jardine, W., Urwin, C., ... Snipe, R. M. J. (2022). Sex differences among endurance athletes in the pre-race relationships between sleep, and perceived stress and recovery. *Journal of Sports Sciences*, 40(14), 1542-1551. <https://doi.org/10.1080/02640414.2022.2091345>
- Brace, A. W., George, K., & Lovell, G. P. (2020). Mental toughness and self-efficacy of elite ultra-marathon runners. *PLOS ONE*, 15(11), e0241284. <https://doi.org/10.1371/journal.pone.0241284> ← (year in your in-text list = 2023; your provided ref is 2020)
- Fox, J. L., Scanlan, A. T., Stanton, R., & Sargent, C. (2020). Insufficient sleep in young athletes? Causes, consequences, and potential treatments. *Sports Medicine*, 50(3), 461-470. <https://doi.org/10.1007/s40279-019-01220-8>
- Office of Disease Prevention and Health Promotion. (2025). *Increase the proportion of adults who get enough sleep — SH-03 (Data & methodology)*. U.S. Department of Health and Human Services. <https://odphp.health.gov/healthypeople/objectives-and-data/browse-objectives/sleep/increase-proportion-adults-who-get-enough-sleep-sh-03/data-methodology>
- Hafner, M., Stepanek, M., Taylor, J., Troxel, W. M., & van Stolk, C. (2017). Why sleep matters—the economic costs of insufficient sleep: A cross-country comparative analysis. *Rand Health Quarterly*, 6(4), Article 11.
- Walsh, N. P., Halson, S. L., Sargent, C., Roach, G. D., Nédélec, M., Gupta, L., ... Samuels, C. H. (2020). Sleep and the athlete: Narrative review and 2021 expert consensus recommendations. *British Journal of Sports Medicine*. Advance online publication. <https://doi.org/10.1136/bjsports-2020-102025>
- Riegler, K. E., Guty, E. T., Thomas, G. A., Bradson, M. L., & Arnett, P. A. (2023). Prospective implications of insufficient sleep for athletes. *Journal of Athletic Training*, 58(5), 414-422. <https://doi.org/10.4085/1062-6050-0078.22>
- Bianchi, D., Miller, D. J., & Lastella, M. (2022). Sleep-wake behaviour of 200-mile ultra-marathon competitors: A case study. *International Journal of Environmental Research and Public Health*, 19(5), 3006. <https://doi.org/10.3390/ijerph19053006> ← (year in your in-text list = 2023; your provided refs is 2022)
- Byrne, J., Lynch, S., & Mokha, G. M. (2024). Training regimen of an elite ultramarathon runner: A case study of what led up to the 24-hour world-record run. *International Journal of Sports Physiology and Performance*, 19(4), 412-416. <https://doi.org/10.1123/ijsspp.2023-0182>
- Bender, A. M., & Lambing, K. A. (2024). A practical guide to improve sleep and performance in athletes. *International Journal of Sports Science & Coaching*, 19(1), 476-487. <https://doi.org/10.1177/17479541231201105>
- Engel, G. L. (1977). The need for a new medical model: A challenge for biomedicine. *Science*, 196(4286), 129-136.
- Engel, G. L. (1980). The clinical application of the biopsychosocial model. *The American Journal of Psychiatry*, 137(5), 535-544.
- Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches*(4th ed.). Sage Publications.
- Stake, R. E. (1995). *The art of case study research*. SAGE Publications, Inc.
- Yin, R. K. (2018). *Case study research and applications: Design and methods* (6th ed.). SAGE Publications, Inc.
- Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and Policy in Mental Health*, 42(5), 533-544. <https://doi.org/10.1007/s10488-013-0528-y>
- Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods*, 18(1), 59-82.
- U.S. Department of Health and Human Services. (1979). *The Belmont Report: Ethical principles and guidelines for the protection of human subjects of research*. <https://www.hhs.gov/ohrp/regulations-and-policy/belmont-report/index.html>
- Lincoln, Y., & Guba, E. G. (1985). *Naturalistic inquiry*. Sage.
- Merriam, S. B., & Tisdell, E. J. (2015). *Qualitative research: A guide to design and implementation* (4th ed.). Jossey-Bass. ← (year in your in-text list = 2016; your provided ref is 2015)
- Braun, V., & Clarke, V. (2023). Thematic analysis. In *APA handbook of research methods in psychology: Research designs: Quantitative, qualitative, neuropsychological, and biological* (Vol. 2, 2nd ed., pp. 65-81). American Psychological Association. <https://doi.org/10.1037/0000319-004>

RESEARCH POSTER PRESENTATION DESIGN © 2025
www.PosterPresentations.co
71