

Nutritional Strategies For Mitigating Fatigue in Physicians

Some of the negative effects of sleep deprivation due to shiftwork or long work hours can be mitigated by deliberate modifications in hydration and nutrition. Try incorporating some of the following strategies into your daily life.

1. **Hydration strategies**

- a. Maintaining hydration status helps reduce fatigue and sleepiness, improve mood, concentration, memory, reflexes, and visual focus and acuity.
- b. Hydration can also improve sleep quality among those with existing respiratory disorders.
- c. Use your urine color, especially 1st morning urine, as a way of gauging your hydration status (lemonade color: hydrated, apple juice color: need to drink more fluids).
- d. In order to overcome dehydration without frequent restroom visits:
 - i. When possible, drink small amounts of fluids frequently throughout the day.
 - ii. Consume at least a cup of fruits and vegetables with your main meals. Consider fruits and vegetables as time-release fluids as they contain large amounts of water that is gradually released during digestion.
- e. Despite containing caffeine, for majority of people, up to 3 cups tea and coffee count towards daily fluid intake requirements (fluid requirements: 2.7 liters for women and 3.7 liters for men).¹

2. **Caffeine consumption strategies**

- a. During periods of sleep deprivation, caffeine can be used to improve reaction times, reduce error rates, increase alertness and improve mood.
- b. Given that caffeine takes about 60 to 90 minutes to reach its peak effects, you can drink coffee or tea right before taking a short nap (caff-nap) and benefit from the combined alerting effects of caffeine and nap.
- c. Use caffeine to reduce grogginess after taking a nap or when waking up outside of your normal daily routine.²
- d. Coffee is a better choice, compared to tea, for tasks that involve physical activity, attention-switching and short-term alertness, whereas tea, in particular green tea, is a better choice for tasks that require concentration and sustained attention.
- e. Avoid caffeine for at least 5 hours prior to your bedtime or daytime recovery sleep, as it can result in increased sleep latency, decreased sleep duration, and less restorative sleep.

3. **Meal timing strategies**

- a. When you are sleep deprived, eat a protein rich meal shortly after waking, and a carbohydrate rich meal 4 hours before bedtime to help with alertness and during work and better sleep at bedtime.
- b. If you need to eat within 4 hours of sleeping, opt for a meal that is easy to digest.
- c. Avoid caffeinated products, chocolate, alcohol, and heavy and spicy meals 4 hours before bedtime.

4. **Meal composition strategies**

- a. Adding one fruit and one vegetable to your existing diet can improve your sense of well-being.³
- b. When you are sleep deprived, eating a light meal with higher lean protein sources and lower carbohydrate and fat contents can reduce postprandial sleepiness.
- c. Having at least 3 servings of fruit and vegetables is associated with improved sleep duration and quality.⁴⁻⁶

Nutritional Strategies For Mitigating Fatigue in Physicians

- d. Limit foods with added sugar and saturated fat, as regular consumption of meals high in fat or sugar exacerbate fatigue levels and impair your alertness, cognitive performance and sleep quality.⁷⁻⁹

5. Nightshift strategies

- a. Try to consume two meals before 10 pm, one after waking up after your recovery sleep and one before or at the beginning of your nightshift, and try to avoid eating between midnight and 6 am.¹⁰⁻¹⁴
- b. Consuming tea or coffee at the beginning of your night shifts can help with increasing your core body temperature in the middle of the night and reduce sleepiness.¹⁵
- a. Chewing gum can improve alertness, mental focus and reduce stress.¹⁶⁻¹⁸
- b. Drinking about 250-500 ml of water during your nightshifts may reduce fatigue and improve your energy levels and mood.¹⁹

6. Other strategies:

- a. During high stress periods or at times when you cannot follow a healthy diet, consider taking a good quality broad-spectrum (multi) vitamin and mineral supplement every other day. To ensure safety and quality of supplements, only choose ones that have a USP or GMP certification. Inadequate intakes of B vitamins, vitamin C, vitamin D, zinc, magnesium, potassium, selenium and iron can lead to feeling fatigued and disrupted sleep patterns.²⁰⁻²³

[Video Series on Nutritional Strategies for Fatigue Mitigation in Physicians](#)

References:

1. Institute of Medicine. *Water. Dietary Reference Intakes for Water, Potassium, Sodium, Chloride, and Sulfate*. The National Academies Press. ; 2005.
2. Van Dongen HP, Price NJ, Mullington JM, Szuba MP, Kapoor SC, Dinges DF. Caffeine eliminates psychomotor vigilance deficits from sleep inertia. *Sleep*. Nov 1 2001;24(7):813-9.
3. Conner TS, Brookie KL, Carr AC, Mainvil LA, Vissers MC. Let them eat fruit! The effect of fruit and vegetable consumption on psychological well-being in young adults: A randomized controlled trial. *PloS one*. 2017;12(2):e0171206. doi:10.1371/journal.pone.0171206
4. Peuhkuri K, Sihvola N, Korpela R. Diet promotes sleep duration and quality. *Nutrition research (New York, NY)*. May 2012;32(5):309-19. doi:10.1016/j.nutres.2012.03.009
5. Katagiri R, Asakura K, Kobayashi S, Suga H, Sasaki S. Low intake of vegetables, high intake of confectionary, and unhealthy eating habits are associated with poor sleep quality among middle-aged female Japanese workers. *Journal of occupational health*. 2014;56(5):359-68.
6. Noorwali EA, Cade JE, Burley VJ, Hardie LJ. The relationship between sleep duration and fruit/vegetable intakes in UK adults: a cross-sectional study from the National Diet and Nutrition Survey. *BMJ open*. Apr 27 2018;8(4):e020810. doi:10.1136/bmjopen-2017-020810
7. Oosterman JE, Kalsbeek A, la Fleur SE, Belsham DD. Impact of nutrients on circadian rhythmicity. *American journal of physiology Regulatory, integrative and comparative physiology*. Mar 1 2015;308(5):R337-50. doi:10.1152/ajpregu.00322.2014
8. St-Onge MP, Roberts A, Shechter A, Choudhury AR. Fiber and Saturated Fat Are Associated with Sleep Arousals and Slow Wave Sleep. *Journal of clinical sleep medicine : JCSM : official publication of the American Academy of Sleep Medicine*. Jan 2016;12(1):19-24. doi:10.5664/jcsm.5384

Nutritional Strategies For Mitigating Fatigue in Physicians

9. Hamidi MS, Shanafelt TD, Hausel A, Bohman BD, Roberts R, Trockel MT. Associations Between Dietary Patterns and Sleep-Related Impairment in a Cohort of Community Physicians: A Cross-sectional Study. *American Journal of Lifestyle Medicine*. 2019;1559827619871923. doi:10.1177/1559827619871923
10. Al-Naimi S, Hampton SM, Richard P, Tzung C, Morgan LM. Postprandial metabolic profiles following meals and snacks eaten during simulated night and day shift work. *Chronobiol Int*. 2004;21(6):937-47.
11. Lowden A, Moreno C, Holmback U, Lennernas M, Tucker P. Eating and shift work - effects on habits, metabolism and performance. *Scandinavian journal of work, environment & health*. Mar 2010;36(2):150-62.
12. Grant CL, Dorrian J, Coates AM, et al. The impact of meal timing on performance, sleepiness, gastric upset, and hunger during simulated night shift. *Ind Health*. Oct 07 2017;55(5):423-436. doi:10.2486/indhealth.2017-0047
13. Gupta CC, Dorrian J, Grant CL, et al. It's not just what you eat but when: The impact of eating a meal during simulated shift work on driving performance. *Chronobiology international*. 2017;34(1):66-77. doi:10.1080/07420528.2016.1237520
14. Gupta CC, Centofanti S, Dorrian J, et al. Subjective Hunger, Gastric Upset, and Sleepiness in Response to Altered Meal Timing during Simulated Shiftwork. *Nutrients*. 2019;11(6):1352. doi:10.3390/nu11061352
15. McHill AW, Smith BJ, Wright KP, Jr. Effects of caffeine on skin and core temperatures, alertness, and recovery sleep during circadian misalignment. *Journal of biological rhythms*. Apr 2014;29(2):131-43. doi:10.1177/0748730414523078
16. Johnson AJ, Muneem M, Miles C. Chewing gum benefits sustained attention in the absence of task degradation. *Nutritional neuroscience*. Jul 2013;16(4):153-9. doi:10.1179/1476830512y.0000000041
17. Allen AP, Smith AP. Chewing gum: cognitive performance, mood, well-being, and associated physiology. *BioMed research international*. 2015;2015:654806. doi:10.1155/2015/654806
18. Hirano Y, Onozuka M. Chewing and attention: a positive effect on sustained attention. *BioMed research international*. 2015;2015:367026. doi:10.1155/2015/367026
19. Leedo E, Beck AM, Astrup A, Lassen AD. The effectiveness of healthy meals at work on reaction time, mood and dietary intake: a randomised cross-over study in daytime and shift workers at an university hospital. *British Journal of Nutrition*. 2017;118(2):121-129. doi:10.1017/S000711451700191X
20. Mayer G, Kröger M, Meier-Ewert K. Effects of vitamin B12 on performance and circadian rhythm in normal subjects. *Neuropsychopharmacology*. Nov 1996;15(5):456-64. doi:10.1016/s0893-133x(96)00055-3
21. Bertisch SM, Sillau S, de Boer IH, Szklo M, Redline S. 25-Hydroxyvitamin D Concentration and Sleep Duration and Continuity: Multi-Ethnic Study of Atherosclerosis. *Sleep*. Aug 01 2015;38(8):1305-11. doi:10.5665/sleep.4914
22. McCarty DE, Reddy A, Keigley Q, Kim PY, Marino AA. Vitamin D, race, and excessive daytime sleepiness. *J Clin Sleep Med*. Dec 15 2012;8(6):693-7. doi:10.5664/jcsm.2266
23. Bourre JM. Effects of nutrients (in food) on the structure and function of the nervous system: update on dietary requirements for brain. Part 1: micronutrients. *J Nutr Health Aging*. Sep-Oct 2006;10(5):377-85.