“Night Fuel: How Evening Food Impacts Metabolism, Performance & Sleep”

Webinar Questions Answered by Michael Ormsbee, PhD, FACSM, FNAK, FISSN, CDCD*D

- I work with airline transport pilots and I have them wear continuous glucose monitors. On late-night flights (after their normal bedtime), I see blood sugar dips, so I encourage them to eat. Does your research show similar findings, and what would you suggest to this unique demographic?

  We have not observed any unusual blood sugar dips in our overnight studies. Without knowing the blood sugar concentration, it is difficult to determine whether this is normal physiology. However, in general, a protein-centric snack in our data has maintained overnight blood glucose levels within the normal range.

- What were the placebos for the cottage cheese and chocolate milk studies, and how much chocolate milk was consumed?

  Placebos have been either a non-caloric, flavor matched, liquid and/or a carbohydrate matched to kcals (same as protein groups). Chocolate Milk: 355 ml: 180 kcals; 30g CHO; 12 PRO; 0 fat; 270 Na; 630 K+

- Please correct me, but I understand your mention of the updated Protein recommendations at 1.2 to 1.6 is based in part on the 2025-2030 DGA. I understand the RDA for adults, 0.8, has not changed to date, but it needs updating. Please advise me on how to reconcile?

  The RDA remains 0.8 g/kg/day, but the latest Dietary Guidelines recommend 1.2–1.6 g/kg/day. Most health professionals are using 1.2 – 1.6 g/kg/d now.

- What about the timing of the exercise impacting these results?

  Yes, that was covered in the presentation. Most, but not all, data indicate that the “benefits” for performance most often come when exercise is completed in the evening, and you have pre-sleep protein.

- Is there any benefit to working out fasted versus non-fasted?

  No, there is no unique benefit to working out fasted. One caveat is that what is sustainable is key! So, if you enjoy working out fasted and that is sustainable for you, keep doing it.

- When you say older in the studies, can you clarify?

  It varies by study. Many that I mentioned were 60 or 70 years old and up.

- Any pre-menopausal women in any studies, or planned to be?

Yes, much of the female data I presented was in pre-menopausal women under age 45. We also have data coming soon for menopausal women and how presleep feeding impacts sleep.

- Would you suggest explaining to someone who works out in the morning, fasting, that they should eat before bed? "

  Not necessarily. Presleep feeding is just a tool in the tool bag to increase daily calories and to boost protein intake to reach protein targets. This works for some, but some people do not prefer it for one reason or another. If the individual misses protein targets daily, then I would suggest this strategy of presleep protein.

- Is the nuance here that these trials were done with “protein snacks,” not big meals before bed AND performing athletics? None of these meals, the protein drinks, chocolate milk, or powdered cottage cheese, would require the same digestive effort as, for example, a chicken breast and broccoli meal, correct?

  Yes, partially true. Protein snacks at roughly 30-40grams of protein, taken 30-min presleep and 2h after dinner. We have trialed this in athletes and non-athletes. I showed data from men and women with obesity in the presentation. The athlete/active person data was used

- How close should you consume 40 g of protein prior to bed?

  All of our data had a protocol that was 2h after dinner and within 30 min of bed.

- What about your good ol' 70-year-old (in good shape) who plays tennis or pickleball in the mornings. Any thoughts on nighttime fueling for this group?

  Same as the others. Data on 70+ year olds used 40g of casein or whey presleep.

- Would you recommend the 40g pre-sleep protein to middle school/high school athletes as well?

  Yes. Mostly as a tool to achieve the total daily protein intake (and overall energy intake).

- What do you suggest people eat before bed for the 40 g protein? Protein shake?

  Protein shakes are the most common in the research. Cottage Cheese has also been used effectively. While there is no data yet, I would think that Greek yogurt or eggs would also be good at this time.

- Any data on nighttime eating and weight gain?

  None that I’ve seen when it is protein-dominant snacks presleep. If you mean the purpose is to gain weight for that individual, then you could use the presleep time to try and get more total kcals and protein.

- Do you have a comment on this recent release: A research letter published in the journal Clinical Gastroenterology and Hepatology found that late-night snacking may increase the risk of fatty liver

disease by 36% and cirrhosis by 28%. Study data, which included nearly 200,000 people over 16 years, held even after adjusting for age, diabetes status, physical activity, and body mass index.
Full Story: HealthDay News (10/9). Thoughts?

The study you refer to is Observational research using self-reported eating habits, so the findings show an association rather than demonstrating that late-night snacking causes liver disease. The study broadly defined this as "eating after dinner or after bedtime," so we can't distinguish whether people woke up late to eat after going to bed, and we don't know what they ate specifically (quantity or quality was not reported). It is certainly interesting, but I would not lean as much on the association data. It is a space I will watch.

- Curious about the minimum athletic training to fit into this category when we are considering non-athletes for night fueling?

  Athlete and non-athlete data were shared. I would think of non-athlete as sedentary (no planned exercise).

- Are there any downsides or contraindications to consuming protein later? Any suggestions for folks with PM GERD or would you have them avoid PM protein in general?

  Those data don't exist, but there are definitely concerns that will come up with some populations including GERD. This would, unfortunately, need to be trial and error. It is not a strategy for everyone.

- For our athletes who are having late games/matches and eat post-match meals, would you still recommend pre-sleep PRO or CHO fueling before bed, or just find ways to incorporate more protein throughout the day?

  I would recommend presleep PRO and CHO. It is an easy time of day to meet the total daily needs, recover, and prepare for the next day.

- What about patients with IBD that struggle with weight, would consuming 40g before bed assist them in maintaining and gaining weight?

  There are no data on this. It makes sense in theory.

- I work with home therapy dialysis patients, and trying to get them to increase their protein intake is hard; getting them to increase that and exercise is hard. Any plans for a study of PD pts and protein?

  That is very hard. Thank you for that work! No plans as of today but always open to it!

- 40 grams of protein is a lot for some people. Is any protein before bed better than none?

  Yes, I think so. However, 40g is optimal for the muscle-specific endpoints we discussed. 40g was ideal for increasing overnight muscle protein synthesis. However, less protein may be great for "other" endpoints like sleep, or simply bumping up total daily intake.

- Any research on night shift workers?

  Yes, there are data on Night Shift Workers. The data do not look great, and it is mostly observational data showing large kcals, lots of ultra-processed foods, and a mismatch with circadian rhythms from staying up all night. It is not hopeless, but the data show poor metabolic outcomes for many night-shift workers.

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