

“Performance Nutrition for Active Adults: Fueling Work and Fitness”

Webinar Questions Answered by Kelly Jones, MS, RD, CSSD

Please note that these are brief answers to complex questions and are not meant as medical advice. Please seek medical advice from your personal healthcare professional for more complete information.

- Do you have a preferred type of sugar (glucose, fructose, dextrose, etc.) for ultra endurance client? If so, any specific products you recommend?

For ultras you definitely want mixed carbohydrate sources. For GI tolerance it's important that we don't fill up all of a single GLUT transporter as if there's excess in the intestines, fluids pool in to cause cramping, bloating, and even diarrhea. [Research summarized here.](#)

Also important is that ultra and even endurance clients new to competition (ex: half marathon) train with adequate carbs early on and don't wait until they approach race day to eat adequate amounts of carbs. The gut needs to be trained just like muscles, or GI issues will come about even with mixed carb sources. More on [training the gut here.](#)

- Can you comment on performance nutrition for adults preparing for weight loss surgery. Would you recommend anything different from this presentation?

In preparation of weight loss surgery, I would say the most important thing is that you're helping them build habits that they can sustain for a lifetime. I've found and heard from colleagues how so many people preparing are doing something that they wouldn't be able to maintain forever, surgery or not, and it really just continues the diet cycle these individuals may have been in before. Emphasize adequate energy early in the day and at each meal to both support the immune system for recovery and to avoid binge tendencies, protein at each meal/snack to support the immune system and recovery, and plant / fish fats for satiety and supporting healthy inflammatory responses.

- For those protein recs, for an overweight individual, would we use IBW or current body weight?

I believe this was covered at the end of the webinar, but current body weight is what I would use. We can see many improvements in healthy behaviors and biometrics even without weight loss. By emphasizing those behaviors over calorie and macro counting, we can help people build lasting change for more intrinsic vs extrinsic reasons. They may more easily start to listen to their body since they will hopefully be eating enough to support their activity and lifestyle and therefore be less likely to binge.

- What is meant by half of weight in ounces?

Weight in pounds, divided by 2 = minimum ounces to drink per day. More accurate would be 35 ml/kg, but it's close enough and easier to divide weight by 2 for most people.

- Do you have a sodium recommendation for endurance athletes?

This can vary *dramatically*. While a bit old the [ACSM position stand](#) on fluid replacement is a good read (+summarized [in here](#) if you don't have access to ACSM) and gives perspective on this. If you have an athlete really interested in data, likely the most valid option available for individuals is Precision hydration testing, though it may be hard for some people to find a location nearby and we know losses can vary under different conditions. For those normally training 2 hours or more, look for things like salt stains on their clothes, sandy feelings on their skin, etc, to know if they're the type that needs higher sodium solutions before/during/after activity. I haven't had athletes use Precision personally and instead just slowly increase the sodium concentration of their fluids until we find a point where their fluid weight loss during training isn't as severe and they maintain energy better during training (among a few other things... [free hydration download here](#)).

- Regarding osmolarity/osmolality, what are your recommendations for juices or sports beverages?

Sports beverages are typically formulated to have multiple transportable carbohydrates whereas juice is strictly fructose. Those with IBS may be very sensitive to fructose and want to avoid juice / juice based homemade sports drinks for that reason. Fructose is absorbed a bit more slowly than glucose so while we want a little fructose (either on its own or via sucrose) in sports hydration/fueling products to ease up SGLT1 transporter demand from glucose, too much is more likely to cause GI distress. [More here](#).

- Why does iron absorption improve in the morning and after exercise?

Higher hepcidin levels can impair iron absorption and hepcidin is thought to be at its lowest in the AM within 30 minutes of exercise. Hepcidin is at its highest 3-6 hours post exercise and increases throughout the day. [reference](#)

- At what point do you recommend iron supplements to your patients and what type of iron do you recommend?

If I have an athlete or female with low ferritin, I'll recommend they take a low dose supplement while working on their diet *or* may recommend they take the supplement just before, during and after their menstrual cycle, but then back off the rest of the month, again while also working on enhancing iron intake and pairings with vitamin C. I do not recommend waiting until they have low hemoglobin. Additionally, you may need to consider iron with nutrition periodization. A runner may need to supplement in season, but not in the off-season, for example, but you will need regular blood work to inform these changes.

- I thought with caffeine there is no benefit to performance if used habitually?

While some people can adapt to caffeine, that usually is the case when consumption is high, versus moderate. For those looking to maximize the effects of caffeine for performance at a particular competitive event, abstaining or drastically reducing intake for 5 days - 2 weeks can help them optimize their responses. This may mean reducing caffeine during a 1-2 week taper for the biggest event of the year, for example. Timing also matters - you'll see effects peak about an hour after consumption.

- What is a safe amount or upper limit of caffeine consumption daily for active adults?

We absolutely don't want anyone above 9 mg/kg body weight, though [3-6 mg/kg](#) is most often recommended for performance. Note that caffeine is a tested substance in the NCAA so I advise collegiate athletes to use sparingly for training and focus timed usage for competition.

- Is it better to workout fasted? Or if you can tolerate it, should you make sure to eat before?

I almost never recommend working out fasted unless it's a morning walk 30 min or less or something low intensity like yoga that lasts under 45 minutes. Most people will wind up overly hungry and then either make a compulsive decision about what to eat or overeat. This may happen right away or come back to them later in the day. Delaying intake *may* also cause increased AM cortisol in women especially.

- How do you know what dose of vitamin D to recommend to clients based on their labs ex: 600IU vs 1000IU vs 2000IU?

If they are below 30 ng/dl, I would have their doc Rx a very high dose for several weeks and then drop to somewhere between 1000-5000 depending on their original #s, their sun exposure, and how much fatty fish they consume. If levels are below 50, I might keep it to 1-2k.

- Is there a specific recommendation on creatine supplementation amounts that works best?

3-5 grams per day

- Which sports drinks do you recommend, especially for active children playing sports?

There are a variety out there, but my main recommendation for kids is to avoid artificial sweeteners. It's also important that a product actually provides energy and sodium. There is a lot of marketing related to "electrolytes" without actually replacing this key electrolyte lost in sweat. At the same time, the age, body size activity level, environment and other factors vary child to child, so amount of sodium needed can vary a lot.

For teens participating in sports during a rapid growth period, options like Orgain's Hydro Boost, formulated for adults, can be great. There are unfortunately no kid's sports drinks on the market that offer the energy from carbs they need as well as the sodium in amounts appropriate for small bodies. I like the Hydro Boost is a bit lower in sugar than Gatorade, for example, but again the sodium is more appropriate for teens and adults, so you may want to dilute an option like that for a younger child. I actually use half a packet with the full water rec and add some honey to his water bottle and shake it up so there's enough carbs for a long game after a day of running around in the summer.

- What's the recommended time frame to eat before activity?

As long as you want, up to the time of activity. What changes is the amount of fat fiber and protein. They should decrease as activity approaches. Examples in **this post**.

- Thoughts on powdered vs liquid collagen supplements? Is absorption better with one vs other? Should supplement include Type 1, 2, 3, 5, etc?

I can't personally speak to absorption of powdered vs. liquid, but undenatured type II collagen may be best for joint health while hydrolyzed may be best for skin health. More research is needed to clarify joint health benefits, types/forms, doses.

- Please give references for Olympic Performance Committee on Nutrition and International Society of Sports Nutrition position statements.

ISSN has varied position papers with open access:

<https://jissn.biomedcentral.com/articles/10.1186/s12970-017-0177-8>

<https://jissn.biomedcentral.com/articles/10.1186/s12970-018-0242-y>

[IOC Consensus on RED-S](#) also open access via BJSM

- In order to hit the protein recommendations on a plant-based diet, are protein supplements required?

Never required, ideally, we would obtain everything we need from food, and some certainly may, but it's more that busy schedules and the time required planning and cooking is the challenging in our fast paced society, especially if we need to make a meal after a workout!

- What's the calculation for recommended carbs in meals/snacks?

This varies dramatically from person to person. For physically active adults the range is 3-12 g/kg carb per day (upper end for ultra endurance and carb loading protocols)

- Do you recommend electrolyte supplementation either before, during, or after exercise?

Depends on the individual and their opportunities to consume fluid during. I am big on pre-hydrating for longer events, especially in the heat and having the sodium and carbs present right before movement to try to reduce fluid losses of training itself. If you have someone exercising 90 min or longer, they absolutely will need to start consuming carbs + sodium with fluid by 45 minutes into movement. For heavy sweaters, the amount needed post exercise can vary vs those who sweat less or sweat less salt. Trial and error is important!

- How would you adapt concepts discussed to work with the "industrial athlete"? This encompasses utility workers with physically demanding jobs that work long hours and have minimal motivation and limited time to adopt healthier eating behaviors in and out of the workplace.

This population needs to fuel early and often. They may be more likely to skip meals and snacks while expending more energy during the day, so a solid, balanced breakfast is crucial and then they want to rely on compact, packaged energy via dried fruit, nuts, bars/RTDs etc to get balanced energy in before they can sit down for their next full meal. I recommend hydration products as a daily necessity to this population to help maintain hydration and blood sugar and avoid their desire for a pick-me-up from excess coffee or even energy drinks, and then overeating at the end of their shift/day. If they're in a hot environment too (delivery workers in summer, construction, tech worker walking the hot floor of a database facility) I might have them use electrolyte solutions 2-3 times a day.

- Recommendations for how to best choose supplements (i.e., what third-party testing to look for)?

NSF Certified for Sport (not simply NSF) and Informed Sport Certified for any athletes or military members who are subject to drug testing.

- Is there a max amt of protein that can be absorbed/utilized in one meal?

No, we can absorb whatever protein we eat. What may be limited is the amount we utilize for protein functions after consumption. This is why we want to spread protein intake out into, at minimum, 3 meals in a day, though 4-5 may be best for those in need of optimized recovery. .25-.45 g/kg each time someone eats, depending on their goals. Still, to be used as protein, we need to eat enough calories from carbs and fat or we'll convert small amounts of protein to energy too.

- What do you tell clients who believe in fasting before they workout in the morning or those who want to build muscle while losing weight (both situations where we are adding more food into their day)?

Working out on a morning fast is more likely to keep your stress levels up and workout intensity down, on top of increasing the chances the body uses muscle for fuel. It also is more likely to impact appetite post-workout, whether immediately or later. If blood sugar continues to drop during exercise because energy wasn't supplied to the blood stream, you're going to either have a harder time making a reasonable decision about what to eat, overeat, or be stressed and preoccupied with food. Some do experience postexercise appetite suppression which can mask the need for refuel post workout and fuel these ideas to support fasting. Unfortunately we usually see hunger increase dramatically out of nowhere 1-2 hours later and again, lead to those consequences mentioned earlier, just in a delayed fashion.

- What is the best way to assess sodium needs and best replacements for endurance athletes? For those that are "salty sweaters"

See above answer on sodium losses. Continuous sodium intake throughout the day is important, don't just rely on consumption immediately before, during and after exercise. Ensure carb intake is appropriate as often poor hydration may be due to that vs. sodium, or due to a combo.

- Do you use indirect calorimetry in your practice?

I do not, my practice is much more focused on building habits versus getting wrapped up in numbers. On top of it being so hard to track calorie intake accurately, especially without being obsessive, calorie needs vary day to day and for women throughout their cycle. Using data from either rest or from a time where they were wearing a device or experiencing a "lab effect" can then lead to distrust with their bodies needs and under or overeating, or having a hard time learning to listen to their body in the first place.

- Does research support HMB & Vit D supplementation for athletes?

Vitamin D: absolutely <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3725481/>
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4924215/>
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7071499/>

HMB: still need more research, may help athletes with recovery a bit, but not if they aren't focused on appropriate calorie, carb, protein intake and timing as well as sleep, hydration, etc. May have more potential benefits in elderly population <https://jissn.biomedcentral.com/articles/10.1186/1550-2783-10-6>

- Thoughts on high salt content electrolyte powders becoming popular (Some being targeted towards athletes and some towards the general population)

Not needed for the general population, as gen pop is mostly sedentary and not meeting even the minimum guidelines for physical activity. For those who are active, we need to squash the stigma that salt is bad and will cause everyone to have high BP and weak bones. It's harmful info for our highly active individuals and athletes who are trying to follow a healthful eating pattern. For those with heart problems, we also need to focus more on adding potassium, magnesium, and calcium vs. just hoaning in on sodium restriction all of the time. Not to mention stress management!

- For a pre meal snack, what is your definition of intense workout?, ex. would 30 min on the elliptical require a pre meal workout? Or do you just suggest a pre meal snack for all workouts?

The intensity of 30 minutes on an elliptical will vary based on the person and their overall level of fitness, how often they do that movement, and the type of elliptical and settings they exercise on. Generally speaking, I would say that is a moderate workout for most people. Need for a pre-workout snack will most depend on time of last meal and when they'll be able to have a full meal after exercise, as well as if they tend to get hungry during exercise and have the intensity of their session dip before the end.

- Does exercise affect digestion?

Yes! Acutely, low-moderate exercise may benefit digestion while for some people intense and long duration exercise may seem to cause distress. Microbiome benefits are seen in most regardless of intensity however. Read more on [exercise induced GI distress vs. IBS](#).

- What company (vegan, clean) should we lean towards for protein powders and supplement companies?

Orgain? :)

- For someone who is trying to gain muscle mass, would the recommendation be using their CBW and adjust as the weight increases?

You can provide them a range of their current to their ideal, as well as considering a range of maybe 1.8-2.2 g/kg. The biggest factor is going to be them increasing their calorie intake appropriately. Can't gain muscle with just protein!

- What are your thoughts about pre-workout powders?

There are a lot of unknowns and dangers associated with popular ones on the market due to not just high caffeine content, but more so the potential for [undeclared substances](#) including anabolic steroids and prescription drugs. People tend to think they need these and rely on the combo of caffeine and other stimulants to feel energized rather than get actual energy from food and support use of that energy with food hydration. You can look for some NSF Certified for Sport alternatives, such as Klean Athlete's, but I help my clients work on eating enough, timing their preworkout snack well and using coffee for the caffeine.

- There was a recent article suggesting Milk should be a primary hydration consideration vs water; What is your opinion?

I have not seen this, but I do not agree. Milk is certainly fine for those who tolerate it and can provide quality protein and many other nutrients. It can be a good option post-workout for recovery with a pinch of salt, too.

But, it's one of the 8 major allergens and 1/2 - 2/3 of the population experiences some degree of lactose intolerance. Those people aren't going to see benefits of consuming something that their body doesn't react well to. Even in those who can and do consume milk, doing so frequently vs. consuming water can lead to constipation and excess intake of certain minerals. I would be concerned about the amount of calcium and it inhibiting iron absorption in particular.

- Is there an effect on the kidney or liver with too much creatine intake?

I used to believe this myth while I was a college athlete. Wish I didn't and had taken it instead! Great paper on [creatine myths here](#).

- What higher quality protein would you suggest in a female vegetarian athlete who is avoiding soy for fear of breast cancer risk?

While I would debate her fear of soy causing cancer (see another RDs [wonderful summary here](#)), I would emphasize pairing of legumes with higher protein grains and emphasizing inclusion of higher protein nuts and seeds such as peanuts, pistachios, pumpkin seeds and hemp hearts. This fear of soy would also lead me to probe on their reasoning for their vegetarian diet - if its fear based and not for ethical reasons, they need some interventions on their relationship with food. I would also emphasize whatever animal products they're willing to eat if they are a vegetarian vs. vegan. Finally, if they are a competitive vegan athlete unwilling to eat soy, and not 100% doing it for ethical purposes, I would see what they'd be most willing to add between eggs, dairy, and fish.

- Could you apply these principles to less active clients? What would you alter?

Yes, that is my hope with this presentation, that anyone who exercises is thinking about fueling to make that time spent exercising more efficient for them. The differences would be in volume of food consumed and maybe eating frequency. Someone doing moderate exercise for 30 min 5x/week on average may just need to focus on a small pre-workout snack in addition to better balancing and timing 3 meals the rest of the day.

- Can you please share the reference(s) on the emerging research on collagen and joint health?

<https://link.springer.com/article/10.1007/s00264-018-4211-5>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9910607/>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9232232/>

- I wanted to get your feedback on cutting to lean out. Oftentimes, people will decrease their intake and/or increase their cardio. What are your thoughts on this?

While I realize some people participate in physique competitions, that is an aesthetic competition vs. performance nutrition, and the science of sports nutrition to enhance physical performance would not apply. I see a lot of poor body image, disordered eating, and rebound weight gain that maybe never comes back off in those types of sports, on top of the RED-S risks, and do not work with clients who are focused on aesthetics over health and performance. Cutting is not a practice I encourage. Myself and my RDs promote sustainable habits that can be maintained year round as we believe a healthful weight for an individual is one that can be maintained without restriction or excessive exercise, and while enjoying a flexible lifestyle. We do work with

athletes who are making weight for their sport, but do not encourage additional training and focus on appropriate weight classes for one's body as well as building daily habits and then using trial and error leading up to weigh ins.

- To address survey comments it being inaccurate to say we can allow up to 2.5g/kg of protein per day, this was not recommended for anyone *with* kidney disease, but rather used as an example of an amount that will not *cause* kidney disease. Protein at that level is not needed or recommended for most individuals, but is considered to be safe for those without any form of renal disease and might be recommended in those who are working to build muscle, have intense training schedules, or are losing fat while gaining muscle, too. Even women who are exclusively nursing may require 1.8 g/kg just to support lactation, not accounting for exercise!
 - See “protein safety” section in [this position stand](#)
 - [protein needs for lactation](#)