

Making Good Athletes Great!

Orgain® Sponsored Webinar Presented by Mindy Black, MS, RD, LDN, CSSD

Answers from Mindy to Submitted Questions

Determining Energy & Macronutrient Requirement Questions

1. Do you think Mifflin St. Jeor is an appropriate calculation for athlete needs or do you sway more towards Harris Benedict?

Some studies show Mifflin St. Jeor, some Harris Benedict, some Cunningham. In general, REE predictive equations can be considered population specific. The Cunningham equation performed better than the other generally used REE predictive equations overall (Harris-Benedict, WHO, Schofield, Mifflin and Owen) (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4183531/>) but studies comparing all in *athletes* is limited.

One study, Jagim, Andrew R., et al. "The accuracy of resting metabolic rate prediction equations in athletes." The Journal of Strength & Conditioning Research (2017), showed the *Cunningham* equation had the smallest mean difference (-165 kcals); in males, the *Harris-Benedict* equation was found to be the best prediction formula with the lowest root mean square prediction error (RMSPE) value of 284 kcals; in females, the *Cunningham* equation was found to be the best prediction equation with the lowest RMSE value of 110 kcals

2. If one was using the Mifflin St. Jeor equation, would the activity factors be the same as the ones you listed on the slide?

1.2: If you are sedentary (little or no exercise) = BMR x 1.2

1.375: If you are lightly active (light exercise/sports 1-3 days/week) = BMR x 1.375

1.55: If you are moderately active (moderate exercise/sports 3-5 days/week) = BMR x 1.55

1.725: If you are very active (hard exercise/sports 6-7 days a week) = BMR x 1.725

1.9: If you are extra active (very hard exercise/sports & physical job or 2x training) = BMR x 1.9

3. When determining carbohydrate and protein requirements, do you use current weight, adjusted weight or recommended weight if the athlete is overweight or obese?

I use goal weight.

4. Athletes who are in an obese category of BMI but physically healthy: are macronutrient needs (protein, carbohydrates and fluids) still based on actual weight? Or an estimated weight or percentage of calories?

If they are active, and you have access to their actual lean mass, you can calculate 45 kcal/kg/day. If not, I would use optimal weight for calculations.

5. Are there any personal use BMR/calorie requirement devices you recommend?

I like the ease of the MedGem handheld device.

6. Do you do actual metabolic testing on athletes?

Not all athletes, but those who are not achieving body comp goals despite following strict meal & exercise plans will be tested.

7. What app do you recommend for determining BMR?

“BMR Calculator” app by Downey

Protein Questions

8. Do you suggest for your athletes trying to lose weight that their protein intake be high during the weight loss phase?

There is no need for it to be higher than the upper recommendation of 2g/kg, but yes, it may be beneficial to be higher than the minimal requirements to help with satiety.

9. Can you explain importance of casein intake before bed for improving body composition?

Protein ingestion prior to sleep improves whole-body protein net balance and provides amino acids that are incorporated into myofibrillar protein during sleep helping to maintain/gain lean mass (<https://www.ncbi.nlm.nih.gov/pubmed/28536184>)

10. What's your approach to explain why they need to include protein after a workout, if they eat protein before the workout?

For many athletes, in order to get in the needed overall calories and macros, a meal/snack both before and after exercise is needed.

11. Is there a maximum amount of protein per meal or snack you recommend to help space out protein throughout the day and maximize the body's usage of protein?

Muscle protein synthesis is maximally stimulated, when isolated high-quality proteins are consumed, at a dose of ~0.25-0.4 g protein/kg/meal. Our bodies can absolutely eat & digest more, however this is the amount shown to be most beneficial for muscle protein synthesis.

Moore DR, Robinson MJ, Fry JL, Tang JE, Glover EI, Wilkinson SB, Prior T, Tarnopolsky MA, Phillips SM. Ingested protein dose response of muscle and albumin protein synthesis after resistance exercise in young men. American Journal of Clinical Nutrition 2009;89(1):161-8. doi: 10.3945/ajcn.2008.26401.

Witard OC, Jackman SR, Breen L, Smith K, Selby A, Tipton KD. Myofibrillar muscle protein synthesis rates subsequent to a meal in response to increasing doses of whey protein at rest and after resistance exercise. American Journal of Clinical Nutrition 2014;99(1):86-95.

12. Are you aware of any evidence related to the body can only absorb ~30 g protein at one sitting?

See above

13. What are your thoughts on collagen use in athletes?

There is recent research showing improved collagen synthesis (major ramifications for athletes)
<https://www.ncbi.nlm.nih.gov/pubmed/27852613>

Maybe some benefit on joint pain
<https://www.ncbi.nlm.nih.gov/pubmed/18416885>

A possibility/likelihood that most people's diets don't contain enough
<https://www.ncbi.nlm.nih.gov/pubmed/20093739>

Carbohydrate Questions

14. Do you adjust the total carbohydrate intake for athletes with diabetes, especially for those on insulin?

Athletes with diabetes, or an insulin dependent athlete, will require an individualistic approach to carbohydrate needs based on their activity and past history of blood sugars while active.

15. Have you worked with pre diabetic athletes? if so, can their elevated blood sugars be exacerbated by carbohydrate loading?

Yes and yes, as well as stress, dehydration, change in schedule, etc.

16. What would you recommend in general, for pre and post carbohydrate intake for diabetic athletes?

This will be individualistic depending on the athletes' size and blood sugar control. I recommend a meal 2 hours before practice, then checking blood sugars before, during and immediately after practice. Before and during chews/honey work great, after, a normal snack/shake/meal.

17. In determining if an athlete is burning fat for fuel on low carbohydrate diets, do you test for ketones or are you looking at weight loss?

Since we would not recommend a high fat diet for improved performance, the main reason for one may be for weight loss. In that case, I would look for weight loss, and not worry with ketones.

Meal Timing Questions

18. If an athlete is consuming adequate carbohydrate ~4 hours prior to event, do they still need to consume a smaller amount of carbohydrates directly prior to the event? For example, if a well-balanced lunch is consumed and then the person is working out 4 hours later, should they eat a piece of fruit leading into the workout?

It depends on the workout intensity, time, and the athletes' goals. It may be beneficial to "top of the tank", unless they are working out for less than 45 minutes, or it is very low intensity.

19. How immediate is immediately after training/workout that is recommended to eat protein and carbohydrates?

Within the first 30 minutes.

20. What is your stance on having fat post-workout, in relation to slowing digestion and absorption overall, should there be a preference for mainly protein and carbohydrate intake after meals only?

I believe a balance of protein, carbs, fat and fluids is beneficial post-workout.

Inflammation Questions

21. Does tart cherry extract work well as an anti-inflammatory supplement?

Consumption of cherries decreased markers for oxidative stress in 8/10 studies; inflammation in 11/16; exercise-induced muscle soreness and loss of strength in 8/9; blood pressure in 5/7; arthritis in 5/5, and improved sleep in 4/4. Cherries also decreased hemoglobin A1C (HbA1C), Very-low-density lipoprotein (VLDL) and triglycerides/high-density lipoprotein (TG/HDL) in diabetic women, and VLDL and TG/HDL in obese participants. These results suggest that consumption of sweet or tart cherries can promote health by preventing or decreasing oxidative stress and inflammation. (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5872786/>)

22. Can taking in too much anti-inflammatory foods or supplements interact with muscle recovery?

Yes. Inflammation is necessary. There must be a balance between recovery from inflammation and being ready for the next workout/competition.

Sport Specific Nutrition Questions

23. Would the recommendations you discussed be useful for those who may not be "athletes" but do multiple high-intensity or interval work outs?

Yes, if several times a week for 60-120 min bouts.

24. What do you recommend nutritionally in general (before, during and after) for teen golfers who walk & carry clubs and play 18 holes?

The "4 hours prior" would still hold true. Having a snack an hour before to "top of the tank", then packing snacks in their bag like dried fruit, bananas, to-go peanut butter or jerky for the turn are all helpful. Also, a sports drink that contains carbs and electrolytes can be beneficial. Taking advantage of a post-practice/competition snack or meal within 30 minutes of concluding would also apply.

25. I am working with an athlete who is training for an Iron Man. After long workouts, she sometimes struggles to eat or drink anything for recovery and said the only thing she craves is coke (Gatorade makes her sick to her stomach). What are your thoughts on this and is this better than nothing?

Much of making athletes successful is blending scientific needs with real world situations. If she can only stomach Coke, it has sugar (carbs) and some electrolytes. It is a start. I would encourage more nutritious choices as a follow up as soon as her mind/stomach allow.

26. Do you have experience working with specialty military groups (for ex: Navy Seals, Ranger regiments, Special Forces)? And how would you suggest improving their performance through diet, considering their schedules can often be sporadic, often switching back and forth from ultra-endurance to strength/power?

I do not, however in the past few years these groups have hired sports dietitians to work for them, and it is an excellent source to take advantage of.

27. Under what category in your slides would boxing fall? Same as soccer or more strength/power?

It would depend on their "season" of training, but mostly strength & power with 5-7 g/kg CHO, 1.2-1.7g/kg PRO. (Karpinski, Christine. Sports Nutrition, A handbook for professionals, 6th ed. Chicago, IL: Academy of Nutrition and Dietetics; 2017.)

28. Can you comment on the macronutrient requirements for exercise for someone who has had bariatric surgery?

I am not an expert in bariatric, but with their limited amount allowed per sitting, I would use the same guidelines (using goal weight not current weight) and break them up more often. Runners that do more than 5K or more or 45 minutes to 1 hour of spin classes? They would fit the higher end of carb needs (close to 10g/kg- 60 kg/hour while working out) if going longer than 1 hour.

29. What are your thoughts about running marathons and hypoglycemia?

Use the recommended guidelines for carbohydrate intake during exercise to help prevent hypoglycemia.

30. Any tips on weight loss for athletes, especially making weight (safely!) for wrestlers?

This is not an instantaneous process, and major losses should be spread out overtime. Small losses to “make weight” can be done with carbohydrate manipulation and then re-introduced immediately after weigh ins.

31. What are your thoughts on increased needs for cold weather sport athletes?

Physical activity in cold environments causes respiratory water loss to increase due to the low humidity and increased ventilation rate. Sweat rates may also increase due to the warm/humid environment created by clothing. (Karpinski, Christine. Sports Nutrition, A handbook for professionals, 6th ed. Chicago, IL: Academy of Nutrition and Dietetics; 2017.) Heat production increases, and fat is the primary fuel for shivering, leading to possible increased calorie needs.

32. With your football players and their weight, I'd imagine some of your athletes take 200 gm protein/day. Would you recommend they continue this during their football season?

Yes.

Diet Related Questions

33. What's your opinion of ketogenic diet and fat utilization for endurance athletes, i.e. marathoners/triathletes?

The animal research data is promising, but not enough human data is available at this time. It seems that there will be responders and non-responders for this diet. Current research shows no benefit in performance.

34. What are your thoughts on intermittent fasting for athletes?

With the increased overall calorie needs of most elite athletes, it is hard to get in overall energy balance on an intermittent schedule. Some athletes may benefit from this if they struggle with late night (over) eating.

35. Do you change/overhaul your athletes diet day one or get them to make gradual changes?

I am fortunate enough to be working with athletes (many times) over a several year span, so we generally will work toward gradual changes in order to have higher compliance.

36. Are the recommended ranges (carbohydrates and protein) similar for kids around 10 years old as you suggested?

Research is limited in children. Current recommendations are 1.3-1.6g/kg PRO, and similar CHO recommendations as adults, with teens being higher than younger children. (Karpinski,

Christine. Sports Nutrition, A handbook for professionals, 6th ed. Chicago, IL: Academy of Nutrition and Dietetics; 2017.)

37. Do your recommendations change for patients with dysautonomia?

I am not an expert in this area.

Hydration & Electrolyte Questions

38. How much water does 1 gram of carbohydrate hold?

3-4 grams

39. Why are milk, coffee and Juice not considered hydrating?

Although they do contain water (and other great nutrients), it is difficult to teach an athlete how to equate the water content of these fluids to the fluid needs of their day. They can absolutely drink these fluids but using "hydrating" fluids list generally leads to better compliance.

40. How do you know if someone is a "salty sweater"?

Gritty feeling skin after a workout, salty marks on the skin/clothing, sweat tastes salty or stings eyes & cuts.

41. Does excess "salt" on skin after exercise indicate too much sodium in diet?

Not necessarily, there could be many reasons for this- genetics, heat acclimation, etc.

42. What would be signs of problems with hydration if they are drinking the amount recommended for hydration?

Rapid heartrate, feeling dizzy, dry mouth, low urine output, fatigue.

43. When figuring out weight lost at practice, do you consider the volume of water they consumed during that practice?

That would be optimal, but not always realistic in sports.

44. When calculating hydration needs, are you using actual, ideal, adjusted weight? What if an athlete is under or over weight?

Actual weight.

45. Is broth okay to replete sodium levels?

Yes, broth is great!

46. Is calculation for fluids for athletes the same for non-athletes?

Yes.

47. What about athletes that have cardiac issues, do you restrict sodium intake?

Depends on the cardiac issue and the doctor's orders, medications, etc.

Cramping Questions

48. Any nutrition interventions to address muscle cramping?

Make sure they have enough fluids. Evaluate electrolyte needs. Evaluate carbohydrate needs. Evaluate if possibly nerve related – Hot Shot type supplement if so.

49. What are your thoughts on magnesium supplementation for muscle cramping?

While there are large Na & K losses with sweat, Magnesium loss is minimal (0-36mg/L). When dietary energy intake is adequate, this mineral is usually in excess of needs. We recommend by concentrating on supplementation through Magnesium foods. (Karpinski, Christine. Sports Nutrition, A handbook for professionals, 6th ed. Chicago, IL: Academy of Nutrition and Dietetics; 2017.)

50. Any nutritional approach for athletes who complain of constant sore muscles, especially in legs?

Make sure they are getting enough overall calories & hydration for their activity level and taking advantage of the recovery window. Take advantage of anti-inflammatory foods/liquids like tart cherry juice.

Fiber Questions

51. Any best practices on providing fiber guidelines?

Fiber guidelines are similar to the rest of the population. Educate on soluble vs. insoluble fibers so that the athlete can plan accordingly with practice/competition and GI comfort.

Resources Questions

52. Are there resources you recommend that can help keep us current with recent research or trends on sports nutrition?

CPSDA website (www.sportsrd.org), Gatorade Sport Science Website (www.gssiweb.org), Book: Karpinski, Christine. Sports Nutrition, A handbook for professionals, 6th ed. Chicago, IL: Academy of Nutrition and Dietetics; 2017.

Supplement Questions

53. What are some common supplements that you recommend for your athletes?

This would depend on what sport, what type of training they are currently under, as well as their bloodwork. Popular supplements with athletes continue to be pre-workouts, protein powder, BCAA's, BeetRoot, Caffeine, and Omega 3s.

54. I usually recommend fish oil and D3 for most of my athletes/patients — do you have any thoughts on these two supplements?

These are beneficial for many athletes. A large percentage of athletes are deficient in Vitamin D, as well as have high Omega 6 intake and low Omega 3 intake. I always advise having bloodwork to check Vitamin D status before recommending blindly.

55. What about NSF certified for Sport products from companies like Thorne? Thorne has an electrolyte product that I have used with professional athletes. Thoughts?

Thorne has NSF products. I recommend any supplements taken be 3rd party tested.

56. What's your general opinion on "pre workout" supplements -is there a specific one you like to recommend over others?

Pre-workouts are all over the board as far as ingredients but can be beneficial if the correct ingredients are included at the right amounts. I look for pre-workouts that are 3rd party tested, contain creatine monohydrate, beet root extract, caffeine, sodium bicarbonate, HMB. Products that do not make the cut contain generic ingredients (proprietary blends), and stimulants.

57. What is your opinion on beet root juice supplements?

Given that there are few side effects of taking beet root juice (red urine/bowels) this may be a useful nutrition strategy. Shorter, high intensity sports may benefit more than others. If using powder supplementation, you must make sure the dosage is right for the size of the athlete.

58. How much pure tart cherry juice do you recommend pre and post workout?

Timing and dosage vary widely, but most studies use 8-12 oz. (1 oz. concentrated form) twice a day. Vitale KC, Hueglin S, Broad E. *Tart Cherry Juice in Athletes: A Literature Review and Commentary*. Curr Sports Med Rep. 2017 Jul/Aug;16(4):230-239

59. What are your thoughts on turmeric, fish oil and bio flex?

All have potential to be great additions to an athlete's diet if they are suffering from inflammation, high triglycerides, and cartilage damage respectively.

60. I get a lot of questions about supplements for anti-inflammatory and real food spices etc., such as turmeric. Is there a good resource for finding these recommendations for athletes and/or the general population?

I am unaware of one specific resource.

Mindy's Career Questions

61. How did you get into sports nutrition?

I started out as a volunteer for a University, then became an intern, then a few years later I was able to get a full-time job in sports.

62. How have your experiences with an NFL team been, being a woman in a male dominated sport?

I don't like to look at my role as the "only female" or "first female", but instead as an integral part of the sports medicine team. If you present as a professional (over presenting as a woman) from the start, there are very few issues being a female in a male-dominated work force. My biggest issues are more with logistics than with "fitting in" (Bathrooms and female attire are sometimes limited!)

63. As an aspiring RD, CSSD, and current student, what are some things that I could get involved in to gain experience working with athletes or in the realm of sports nutrition? Any sort of organizations to get a hold of would be great! I am in the Detroit, MI area currently.

Look to volunteer at your local university if there is a sports nutrition program. Volunteer with any sports dietitians in the area- they always need help!

64. What is the most common misconception about nutrition you come across?

That dietitians are the food police and we don't allow for "fun" foods like sweets, and indulgent meals. Meal plans should not be all or nothing mentality.

Caffeine & Alcohol Questions

65. What is the recommended upper intake of caffeine for athletes?

http://www.sportsrd.org/wp-content/uploads/2018/11/Caffeine_and_Athletic_Performance_WEB.pdf

66. Does caffeine increase glucose uptake post work out?

http://www.sportsrd.org/wp-content/uploads/2018/11/Caffeine_and_Athletic_Performance_WEB.pdf

67. Would caffeinated tea and coffee also be included in non-hydrating fluids?

http://www.sportsrd.org/wp-content/uploads/2018/11/Caffeine_and_Athletic_Performance_WEB.pdf

68. What is your stance on alcohol intake after workouts?

One beer would contain necessary carbs and electrolytes for repletion from the exercise, however, excessive drinking can lead to decreased testosterone levels, shorter memory span, lower quality sleep (affecting glucose metabolism), weight gain, and hydration levels.

Weight Loss Questions

69. When a person loses one pound is there a % that is lost in fat and muscle?

This varies with weight loss practices.

70. If someone is going for weight loss, in general what should the daily protein recommendations be?

The higher end of the strength training, gains.

71. What has been your experience with the fad diets like keto and fasting with athletes?

Fasting is hard for most elite athletes to adhere to due to increased needs in a limited time frame. Keto is discussed above.