



GCSTCA Track & Field Nutrition

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**MEMORIAL
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The Body Composition, Nutritional Knowledge, Attitudes, Behaviors, and Future Education Needs of Senior Schoolboy Rugby Players in Ireland

Michelle Walsh, Laura Cartwright, Clare Corish, Sheila Sugrue, and Ruth Wood-Martin

Table 3 Mean Knowledge Scores of Senior-Cup Schoolboy Rugby Players

	<i>M</i>	<i>SD</i>	Range
Overall nutritional knowledge	59.6	12.8	25–87.5
Knowledge about hydration	76.4	20.7	0–100
Knowledge about dietary supplements	69.3	28.6	0–100
Knowledge about energy and refueling	57.1	15.4	14.3–85.7
Knowledge about protein	39.2	31.4	0–100

International Journal of Sport Nutrition and Exercise Metabolism, 2011, 21, 365-376
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60% of students had sought dietary advice

- 67% asked coaches
- 36% asked teammates
- 8% asked medical professionals
- **97% reported they could benefit from nutrition education**

Too little sleep and an unhealthy diet could increase the risk of sustaining a new injury in adolescent elite athletes

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Reduction in injury risk

- **61%** with **8 hours of sleep**
- **64%** with recommended nutrition intake

*“Creating medical teams including **nutrition experts**, accessible to the schools, may be valuable in improving the diet in athletes and thereby reduce the risk of injury and other unhealthy variables”*

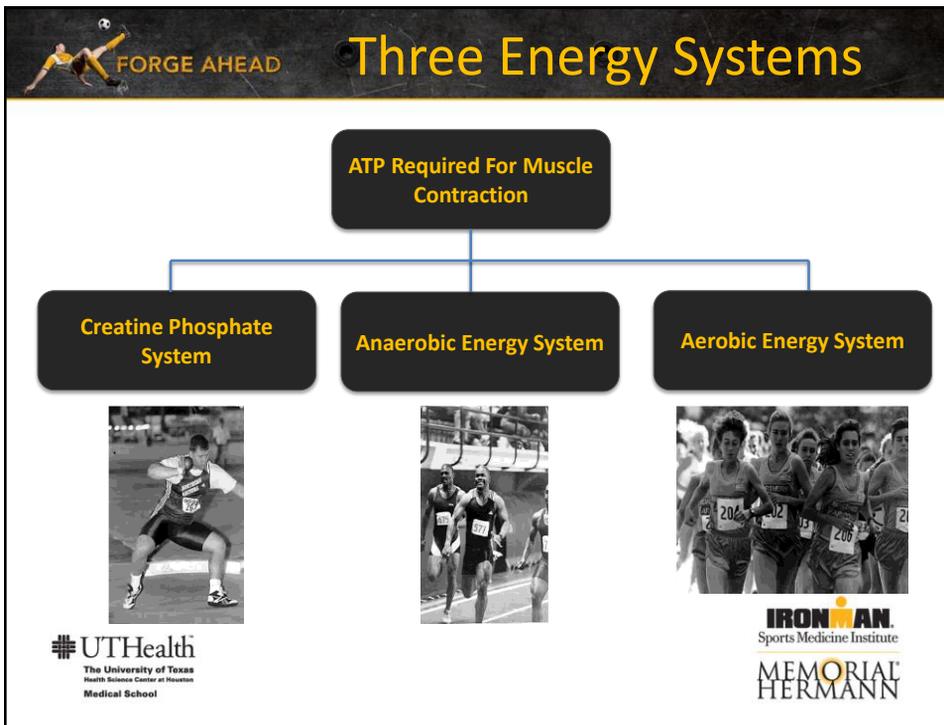


FORGE AHEAD

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ATP Required For Muscle Contraction

- Creatine Phosphate System**

- Anaerobic Energy System**

- Aerobic Energy System**


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	Food Sources	Importance
Carbohydrates	<ul style="list-style-type: none"> Grains Fruits Starchy vegetables 	<ul style="list-style-type: none"> Primary fuel source during moderate-intense exercise Stored as glycogen in muscles
Proteins	<ul style="list-style-type: none"> Lean Meats & Poultry Seafood Dairy & Eggs Soy (V) 	<ul style="list-style-type: none"> Needed for growth and repair of muscle Most satiating nutrient
Fats	<ul style="list-style-type: none"> Nuts & Seeds Oils & Spreads Fatty fish Avocados 	<ul style="list-style-type: none"> Most energy dense nutrient Essential for health & vitamin absorption

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Protein

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Net Protein Balance

BREAKFAST: KEEP STIMULATE MUSCLE REGENERATION

Anabolism

Catabolism

Maximal Protein Synthesis Rate

25g

Sleep

10g

Temps (h)

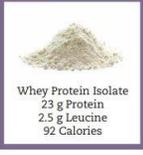
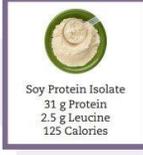
Pay attention to your breakfast the day after the match! Proteins needed!

+

Chart by Leigh Breen

@YLMSportScience

FORGE AHEAD **Protein Sources**

 <p>Whey Protein Isolate 23 g Protein 2.5 g Leucine 92 Calories</p>	 <p>Soy Protein Isolate 31 g Protein 2.5 g Leucine 125 Calories</p>	 <p>Skim Milk 3.7 Servings (874 mL) 2.5 g Leucine 333 Calories</p>
 <p>Top Round Beef 1.3 Servings (142 g) 2.5 g Leucine 391 Calories</p>	 <p>Whole Wheat Bread 12.8 Servings (641 g) 2.5 g Leucine 3462 Calories</p>	 <p>Raw Chicken Breast 1.3 Servings (142 g) 2.5 g Leucine 147 Calories</p>
 <p>Raw Peanuts 5 Servings (149 g) 2.5 g Leucine 876 Calories</p>	 <p>Greek Yogurt 1.1 Servings (250 g) 2.5 g Leucine 143 Calories</p>	 <p>Raw Eggs 4.6 eggs 2.5 g Leucine 321 Calories</p>

For more information, visit www.WheyofLife.org



FORGE AHEAD **Protein Portion Education**

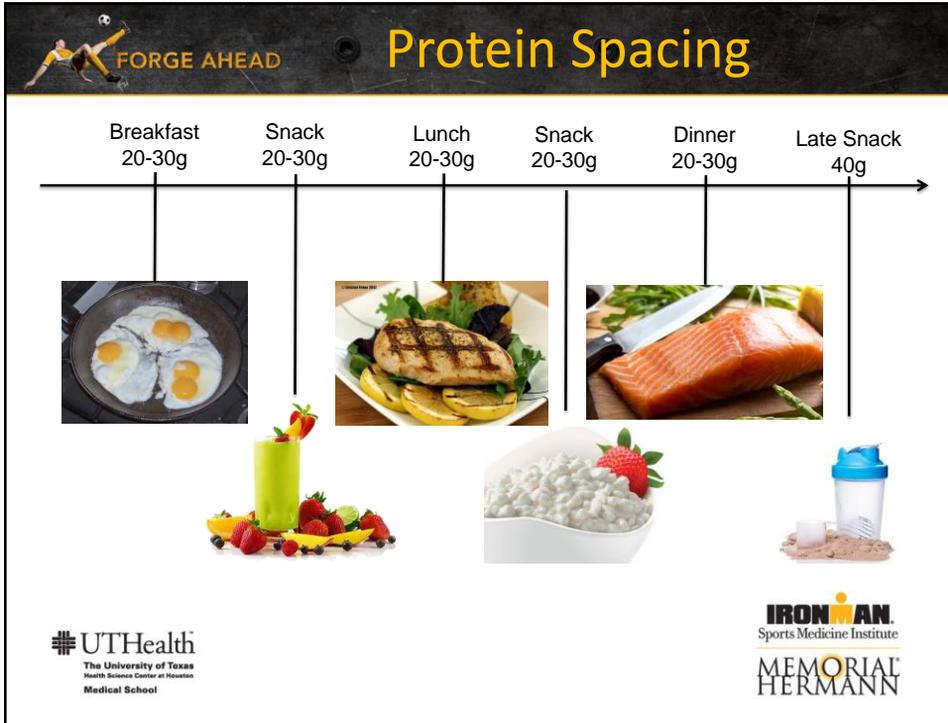
How many servings should I consume after exercise?

Body Weight Range	Protein	Carbohydrate
<125	3	2-4
126-150	3	2-5
151-175	3	3-6
176-200	4	3-6
201-225	4	3-7
226+	5	4-8

How much is a serving?

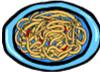
Protein (1 serving, 7 g each)

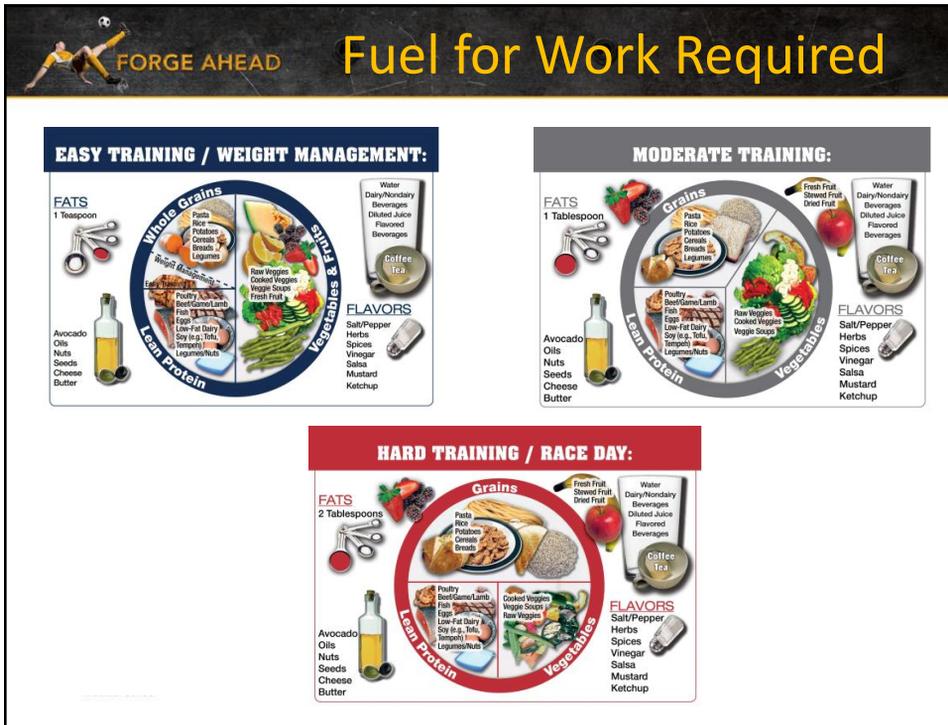
- Beans – (1/2 cup)
- Beef – select or choice grade, round or loin cut (1 oz.)
- Beef – ground 93/7 (1 oz.)
- Cheese – string, low-fat
- Chicken – white meat, skinless (1 oz.)
- Cottage cheese (1/4 cup)
- Egg (1)
- Egg whites (2)
- Fish – grilled, baked or broiled (1 oz.)
- Milk* – 1% skim (1 cup)
- Pork – loin, tenderloin or chop (1 oz.)
- Salmon (1 oz.)
- Tuna – canned (1 oz.)
- Turkey – ground 93/7 (1 oz.)
- Turkey – white meat, lean (1 oz.)
- Yogurt* – Greek, plain or flavored, non-fat or low-fat (1/3 cup)



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Daily Nutrition Goals

1. Eat 4-6 times a day 
2. Include carbohydrate with each meal according to activity level 
3. Consume 20-30g protein at each feeding 
4. Fruit and veggie at each meal 
5. Hydrate throughout the day 



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What happens during exercise?

- Carbs and fat are utilized for energy
- Higher intensity activities use more glycogen (carbs)
- Glycogen stores are depleted leading to fatigue
- Protein breakdown occurs in muscles
- Fluids and electrolytes are lost in sweat

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FORGE AHEAD Pre Event Fueling: Day of

Meal(s) 1-4 hours out:

1. Restore muscle & liver glycogen stores
2. Prevent hunger, yet avoid GI discomfort
3. Begin adequately hydrated
4. Include foods that are important to athletes' psychology
 - **Stick with what you know!!**

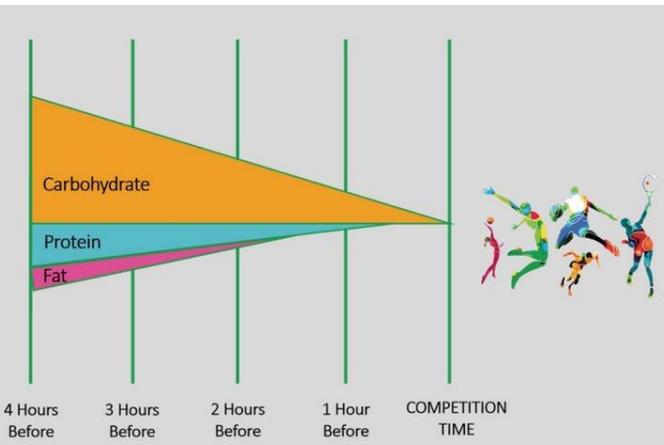
Contents:

- Carbohydrates!
- Low fat & fiber, low to moderate protein
- Fluid to maintain hydration






FORGE AHEAD Pre Competition Meal



PRE-COMPETITION FUELING

Your pre - competition meal (3-4 hours before) should be high carbohydrate, moderate protein & lower fat. As competition time gets closer, the size of meals/snacks should decrease and shift towards mostly carbs with minimal protein & fat.





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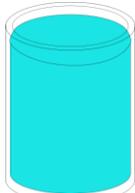
Timing	Recommendations	Examples
3 or more hours before	<ul style="list-style-type: none"> Focus on <u>carbohydrates</u> Up to <u>20-30g protein</u> Small amounts of fats and veggies are ok 	<ul style="list-style-type: none"> Six inch turkey sub w/ veggies & cheese + 1 banana + Apple sauce+ Sports Drink
1-2 hours before	<ul style="list-style-type: none"> Smaller sized meal <u>Focus on carbs</u> Small amount of protein is ok <u>Minimal fat/fiber/veggies</u> 	<ul style="list-style-type: none"> Two eggs scrambled + English muffin w/ jam + Orange Juice+ Water
Less than 1 hour before	<ul style="list-style-type: none"> 1-2 servings of carbs <u>Limited protein/fat/fiber</u> 	<ul style="list-style-type: none"> 1 banana 1 slice of white toast with jelly 12-20oz. of sports drink





FORGE AHEAD **Three R's of Recovery**

- Rehydrate: With fluid and electrolytes
 - 20-24 oz. for every lb. lost
- Replenish: Glycogen with carbohydrates
 - 1-1.2g/kg body weight ($\frac{1}{2}$ g / lb. BW)
- Repair: With protein
 - 20-30g protein











FORGE AHEAD Carbohydrates for Recovery

How many servings should I consume after exercise?

Body Weight Range	Protein	Carbohydrate
<125	3	2-4
126-150	3	2-5
151-175	3	3-6
176-200	4	3-6
201-225	4	3-7
226+	5	4-8

Carbohydrates (1 serving, 15 g each)

- 1 small fruit (1 cup or 1 tennis ball size)
- Applesauce (1/2 cup)
- Bagel - whole grain (1/4)
- Beans - (1/2 cup)
- Bread - whole grain (1 slice)
- Cereal - whole grain (1/2 cup)
- Crackers - 4-6
- English muffin - whole grain (1/2)
- Milk* - 1% skim (1 cup)
- Oatmeal - cooked (1/2 cup)
- Pasta - whole grain, cooked (1/3 cup)
- Potato - sweet (3 oz. or 1/2 cup)
- Quinoa - cooked (1/3 cup)
- Rice - whole grain, cooked (1/3 cup)
- Tortilla - whole grain (6")
- Yogurt* - Greek, plain or flavored, non-fat or low-fat (1/3 cup)

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When are sports drinks appropriate?

- Contain fluids, electrolytes and carbohydrates
- When training/competing at high intensity for more than 1 hour
- When training/competing in high temperatures
- Pre-fueling prior to training/competition



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Fluid Options

Category	Water	Low/No Calorie Sports Drink	Sports Drink
Contains	Fluid	Fluid, Electrolytes	Fluid, Electrolytes, Carbohydrates
Best For	<ul style="list-style-type: none"> • Daily Hydration • Light Intensity • Short Duration 	<ul style="list-style-type: none"> • Heavy Sweating • Light Intensity • Short Duration 	<ul style="list-style-type: none"> • High intensity efforts • Long duration activity • When peak performance is needed






History of RED-S

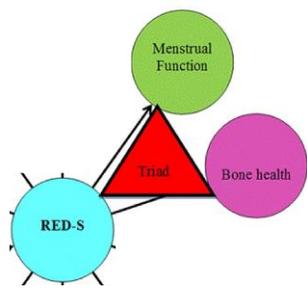
- **2005**- IOC Census Statement defines Female Athlete Triad- combination of disordered eating, irregular menstrual cycles & low bone mineral density
- **2007**- ACSM redefines the triad- the relationship between energy availability, menstrual function & bone health
- **2014**- Relative Energy Deficiency in Sport (RED-S)- *impaired physiological function including, but not limited to, metabolic rate, menstrual function, bone health, immunity, protein synthesis, cardiovascular health caused by relative energy deficiency.*






RED-S

- **Energy Availability** is the key etiological factor
- Energy Availability= dietary energy intake – energy expenditure from activities of daily living & health + growth + sporting activities
- Triad contains only 3 components
- RED-s is more comprehensive
- Includes Male Athletes





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SYMPTOM WATCH: ENERGY METER

The signs and symptoms listed below might be your body's way of telling you to look closer at how you are managing your energy. Nutrition might be a key factor!

<ul style="list-style-type: none"> • Chronic fatigue • Anemia • Recurring infections and illnesses • Depression • Disordered-eating thoughts • Inability to gain or build muscle or strength • Poor performance • Absent or irregular menstrual cycles 	<ul style="list-style-type: none"> • Stress fractures or repeated bone injuries • Decreased muscle strength • Irritability • Always being hurt or injured • Training hard, but not improving performance • Gastrointestinal problems • Weight loss
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FORGE AHEAD **Menstrual Function**

- **Eumenorrhea**- regular cycles occurring every 21-35 days
- **Primary amenorrhea**- no menarche by 15 years
- **Secondary amenorrhea**- absence of 3 consecutive cycles post menarche
 - 2-5% of college athletes
 - 69% in dancers & 65% in long distance runners
- **Oligomenorrhea**- cycle lengths greater than 45 days
- **Functional Hypothalamic Amenorrhea**- low EA leads to hormonal disruptions that disturb period cycles

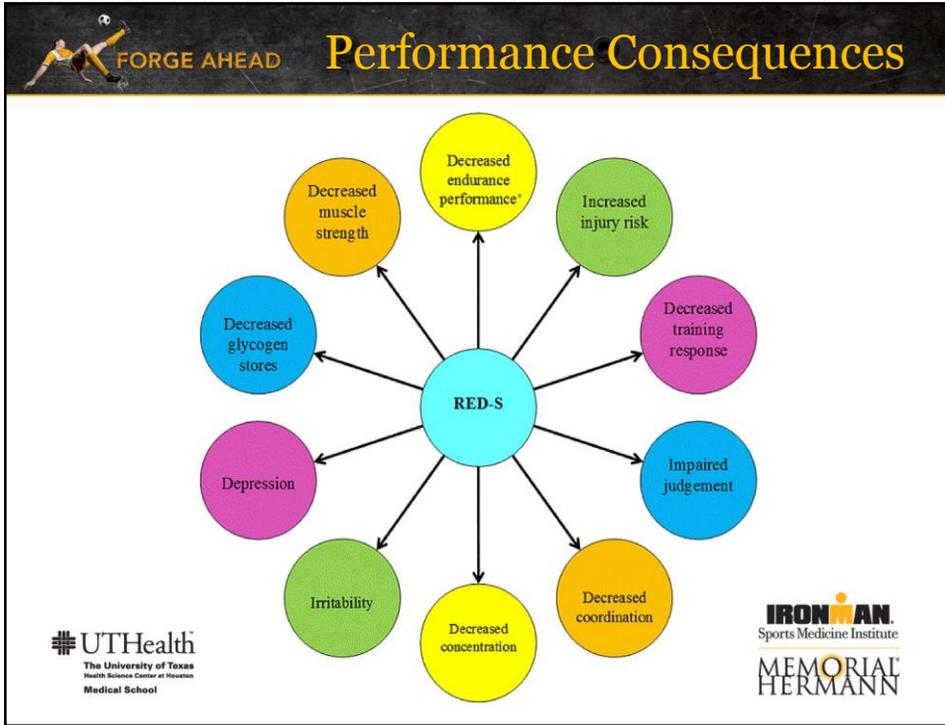
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FORGE AHEAD **Bone Health**

Peak bone mass occurs ~19 years in females & ~20.5 years in males

Effects of Low EA on Bone:

- Altered bone architecture & bone turnover markers
 - Independent of hormonal disturbances
- Decreased estimates of bone strength
- Increased risk for bone stress injuries in both sexes
 - Athletes with low EA are **4.5x more likely** to have bone injuries (Heikura et al. 2018)
- Even short term low EA can have negative impacts on bone
 - Low energy intake before or after training (Sale et al. 2015, 2017)
- Sites with less bone loading (spine) are more susceptible to reduced bone mineral density with low EA



FORGE AHEAD Prevention

- Increasing Awareness!
- Normalizing the menstrual cycle
 - It is **NOT** normal/favorable to miss periods
- Low EA is detrimental to athletes performance
- Target athletes, their support systems & coaching staff
- @Train_Brave #TrainBrave

Lets Talk...

Periods are the cornerstone of the menstrual cycle. If you are a female athlete, it works with you, you need to monitor, discuss and understand all aspects of menstrual health, especially periods.

Use the acronyms below to guide you with this process.

P Physical
Physical changes might occur during your cycle, especially prior to or during your period (eg. bloating, headaches or cramps). Swelling and discomfort changes (eg. 1" in weight or frequency) with your support staff or doctor.

E Emotional
Emotional changes might occur during your cycle, especially prior to or during your period (eg. mood swings and changes in emotions). Swelling and discomfort changes (eg. 1" in weight or frequency) with your support staff or doctor.

R Regularity
The "normal" time between your periods should be between 21 and 35 days (less than 21 periods a year). Periods of your cycle length and if any changes occur (eg. on 1" or 2" deviation between periods), have your support discuss this with your doctor.

I Imposter
Your cycle is affected by hormone based contraceptives. Depending on the type of contraceptive you might have a withdrawal bleed (period) or you have a withdrawal bleed with your period. Discuss contraceptive options with your doctor.

O Openness
You should feel comfortable talking about your period and menstrual cycle with your coach and support staff. They are a valuable source of physicians that can affect your health and performance as there is no need to be embarrassed.

D Dysfunction
Your period bleeding should last between 3 and 7 days. Discuss with your doctor any irregular bleeding, heavy or light periods, cycle of duration be especially aware of any spotting between periods.

S Strategy
Listen to your body and work with your support staff to develop a strategy that helps you deal with the effects of the menstrual cycle.

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FemaleAthlete Northwestern University LetsTalk/Periods

Dr. KMilicks, Mr. PAmadi, Prof. @Howston, Dr. R. Thomas, Dr. K.J. Elliott-Sale, Dr. Scoville



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Sports Nutrition Resources

- CPSDA- Sportsrd.org
- Gatorade Sports Science Institute-
GSSIweb.org
- Gatorade Performance Partner-
performancepartner.gatorade.com
- US Olympic Committee-
teamusa.org/nutrition



