



GAME DAY NUTRITION

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DISCLOSURES

None of the faculty for this educational activity have relevant financial relationships with ineligible companies to disclose.

LEARNING OBJECTIVES

- Review substrate utilization for high intensity activity
 - Identify key nutrition targets to achieve at pre-competition meals and during competition
 - Look at game day sports nutrition in practice
 - Troubleshoot key gameday circumstances: multiple events in one day and sensitive stomachs
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FUEL SOURCES

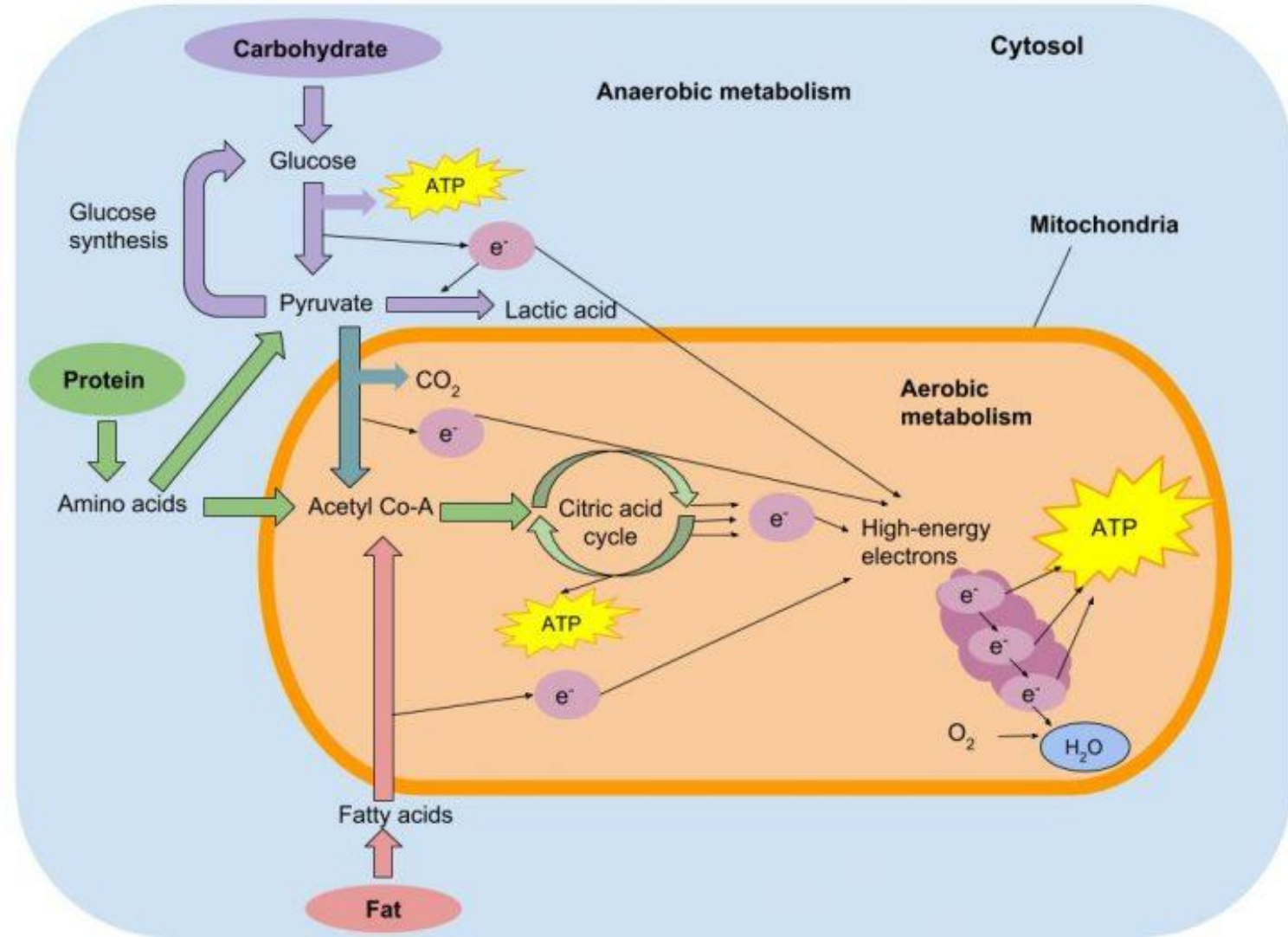
ATP = energy

Carbohydrates

Fats

Protein

- <6% total energy during exercise



FUEL SOURCES FOR EXERCISE

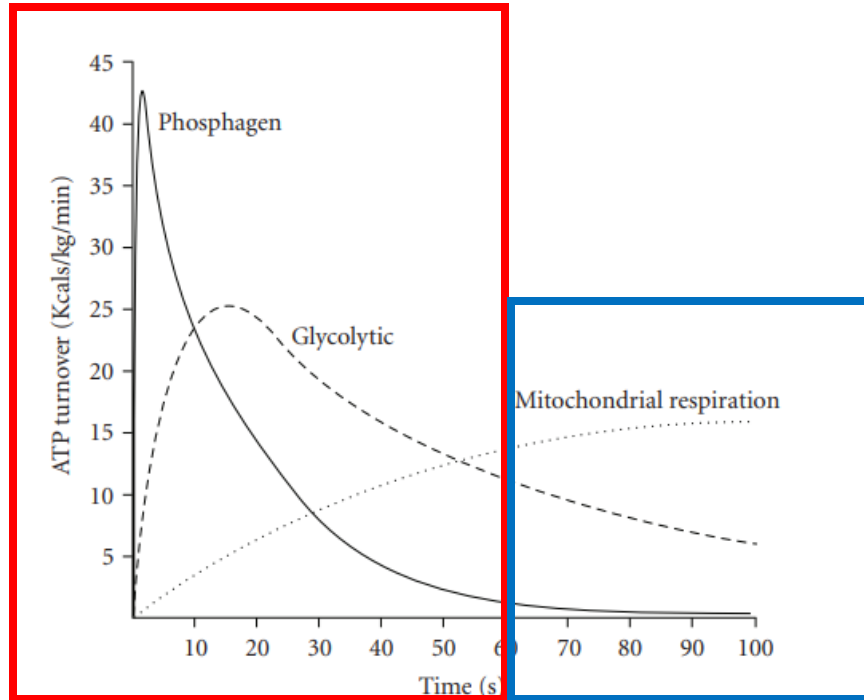


FIGURE 9: Energy system interaction and the differences in rates of ATP turnover during short term intense exercise to fatigue. The data presented is original, theoretical, and based on the authors' assessment of contemporary research evidence.

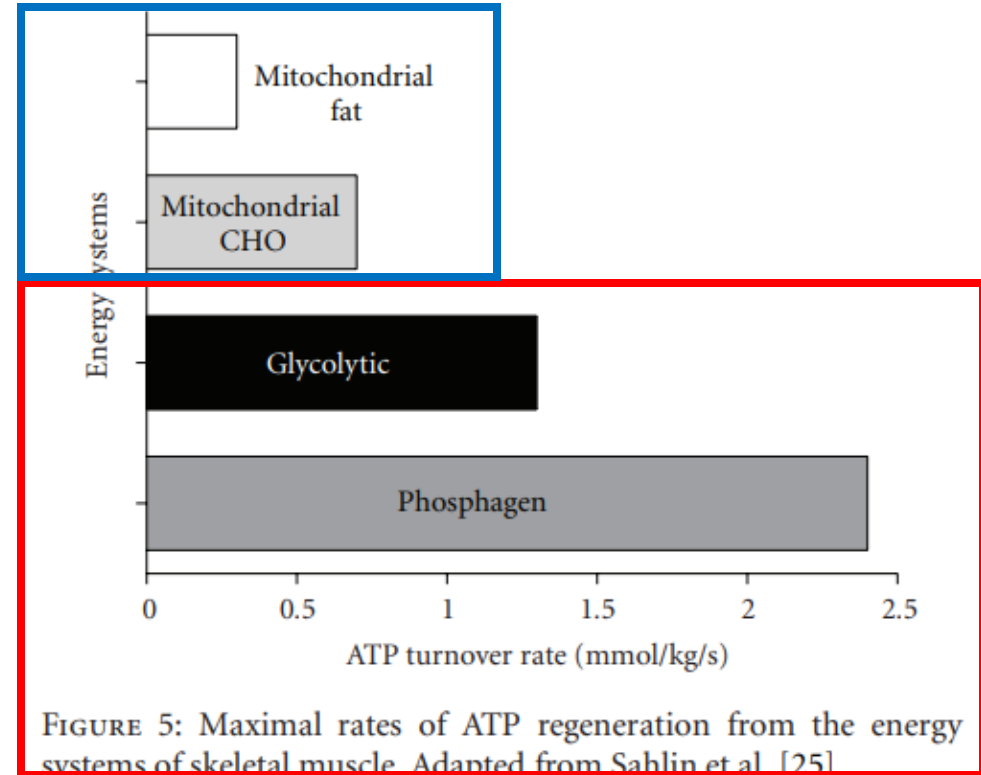


FIGURE 5: Maximal rates of ATP regeneration from the energy systems of skeletal muscle. Adapted from Sablin et al. [25]

ENERGY PRODUCTION

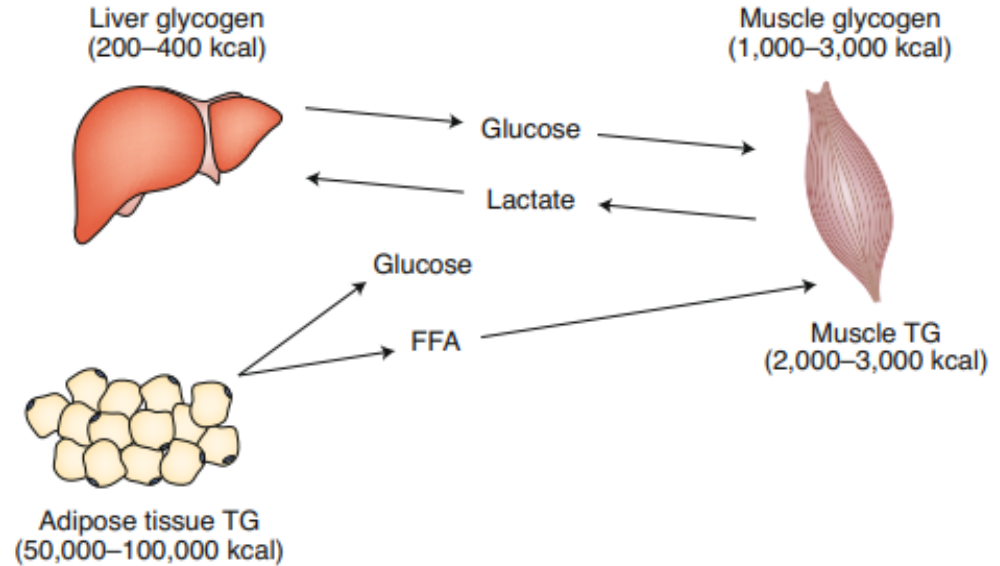
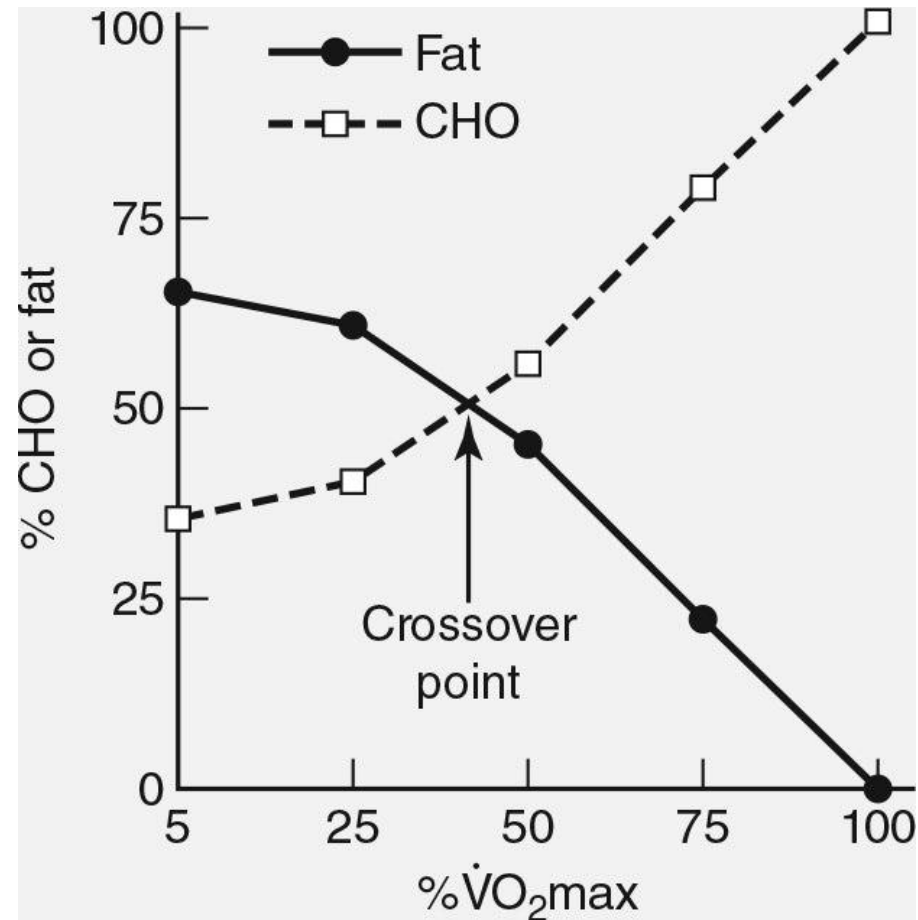


Fig. 2 | Intramuscular and extramuscular fuel sources for exercise metabolism. Major sources of carbohydrate in the muscle and liver and of fat in the muscle and adipose tissue during exercise. The estimated potential energy available from each fuel source is also provided. TG, triglyceride; FFA, free fatty acids.

PREGAME MEAL BASICS

- Fueling for **high performance**
- Serve a balanced meal that includes appetizing foods from multiple food groups
 - High carbohydrate
 - Moderate fat/protein
 - Fluid
- 1-4 hours prior to competition
- Carbohydrate Targets
 - Consider overall energy demands by sport and by athlete

Timing Before Exercise	Carbohydrate
1 hour	1 g/kg
2 hour	2 g/kg
3 hour	3 g/kg
4 hour	4 g/kg



HYDRATION TARGETS

Before Exercise	During Exercise	After Exercise	Electrolyte Replacement
Achieve euhydration by drinking 5-10 mL/kg body weight 2-4 hours before exercise	Fluid intake depends on sweat rate, but general guideline is about 0.4-0.8 L/hour	Drink 1.25-1.5 L fluid for every 1 kg body weight lost	Ingest sodium during exercise when large sweat sodium losses occur

- Includes all fluids, not just water
- Milk, juice, smoothies, Gatorade can help achieve hydration and carbohydrate goals

FUELING DURING EXERCISE

Situation	Carbohydrate Targets	Benefit
Brief exercise <30 minutes	Not needed	
Sustained high intensity exercise 30-75 minutes	Small amounts or mouth rinse	Carbohydrates receptors in the oral cavity signal the CNS to positively modify motor output and improve performance
Endurance exercise – including “stop and start” sports lasting 1-2.5 hours	30-60 g/hour	Maintain high levels of carbohydrate oxidation and ATP production
Ultra-endurance exercise >2.5-3 hours	Up to 90 g/hour – multiple types of CHO	Prevention of hypoglycemia, maintain high rates of CHO oxidation and improves endurance

PRACTICE MAKES PERFECT

Trial out game day nutrition strategies at training that mimic the intensity and duration of competition

Encourage athletes to develop **INDIVIDUALIZED** and **specific** fueling plans

Texas A&M Fueling Plan

ATHLETE 1

PRE-TRAINING FUEL

2-4 Hours Before Game				Actual Consumption	
Carbohydrate Needs:	290 g	A balanced meal that is high in carbohydrates, moderate in fat and protein	Carbohydrates		
Fluid Needs:	19 oz		Protein/Fat		
Examples	2 Cups Rice or Potatoes, 1 Breadstick, 1 Small Chicken Breast, Side Salad, 1 Cup Juice, Fruit Smoothie		Color		
	1 Pancake with Syrup, 2.5 Cups Potatoes, 2 Fried Eggs, 1 Sausage Patty, 1 Banana, 1 Cup Fresh Fruit, Fruit Smoothie		Hydration		
	Grilled Chicken Burrito, Light Cheese/Avocado, 1.5 Cups Mexican Rice and Fajita Vegetables, Fruit Smoothie , Water				
0-2 Hours Before Game				Actual Consumption	
Carbohydrate Needs:	58 g	A carbohydrate rich snack, can use carbohydrate beverages (smoothies, juices, sports drinks) or simple carbohydrates (fruit snacks, applesauce) to meet needs and prevent GI distress	Carbohydrates		
Fluid Needs:	19 oz		Hydration		
Examples	2 Bottles Gatorade				
	1 Bottle Gatorade and Fruit Chews				

FUELING DURING THE GAME

Carbohydrate Needs:		Hydration Plan:	Actual Consumption
Examples	40 g Carbohydrates	1 Cup Gatorade between quarters and 1 at halftime	
	2 Cups Gatorade + 1/2 Pack Fruit Snacks		
	3 Cups Gatorade		

POST-GAME FUEL

Hydration		Consume a balanced meal that is roughly: Half starchy carbohydrates -REFUEL One quarter protein - REPAIR AND BUILD One quarter color - RECOVER	Actual Consumption	
Carbohydrates	24 oz per lb lost within 3 hours		Meal	
Protein	60 g		Hydration	
	25 g			

FUELING FEEDBACK

ENERGY LEVEL							GI COMFORT						
Lousy	1	2	3	4	5	Great	Lousy	1	2	3	4	5	Great
Other Comment (optional)													

PRE-TRAINING FUEL					
2-4 Hours Before Game					
Carbohydrate Needs:		290 g	A balanced meal that is high in carbohydrates, moderate in fat and protein	Carbohydrates	
Fluid Needs:		19 oz			
Examples	2 Cups Rice or Potatoes, 1 Breadstick, 1 Small Chicken Breast, Side Salad, 1 Cup Juice, Fruit Smoothie			Protein/Fat	
	1 Pancake with Syrup, 2.5 Cups Potatoes, 2 Fried Eggs, 1 Sausage Patty, 1 Banana, 1 Cup Fresh Fruit, Fruit Smoothie			Color	
	Grilled Chicken Burrito, Light Cheese/Avocado, 1.5 Cups Mexican Rice and Fajita Vegetables, Fruit Smoothie, Water			Hydration	

0-2 Hours Before Game						
Carbohydrate Needs:		58 g	A carbohydrate rich snack, can use carbohydrate beverages (smoothies, juices, sports drinks) or simple carbohydrates (fruit snacks, applesauce) to meet needs and prevent GI distress	Carbohydrates		
Fluid Needs:		19 oz				
Examples	2 Bottles Gatorade				Hydration	
	1 Bottle Gatorade and Fruit Chews					

FUELING DURING THE GAME

Carbohydrate Needs:

40 g Carbohydrates

Examples

2 Cups Gatorade + 1/2 Pack

Fruit Snacks

3 Cups Gatorade

Hydration Plan:

1 Cup Gatorade between quarters and 1
at halftime

Texas A&M Fueling Plan

ATHLETE 1

PRE-TRAINING FUEL

2-4 Hours Before Game				Actual Consumption	
Carbohydrate Needs:	290 g	A balanced meal that is high in carbohydrates, moderate in fat and protein	Carbohydrates		
Fluid Needs:	19 oz		Protein/Fat		
Examples	2 Cups Rice or Potatoes, 1 Breadstick, 1 Small Chicken Breast, Side Salad, 1 Cup Juice, Fruit Smoothie		Color		
	1 Pancake with Syrup, 2.5 Cups Potatoes, 2 Fried Eggs, 1 Sausage Patty, 1 Banana, 1 Cup Fresh Fruit, Fruit Smoothie		Hydration		
	Grilled Chicken Burrito, Light Cheese/Avocado, 1.5 Cups Mexican Rice and Fajita Vegetables, Fruit Smoothie , Water				
0-2 Hours Before Game				Actual Consumption	
Carbohydrate Needs:	58 g	A carbohydrate rich snack, can use carbohydrate beverages (smoothies, juices, sports drinks) or simple carbohydrates (fruit snacks, applesauce) to meet needs and prevent GI distress	Carbohydrates		
Fluid Needs:	19 oz		Hydration		
Examples	2 Bottles Gatorade				
	1 Bottle Gatorade and Fruit Chews				

FUELING DURING THE GAME

Carbohydrate Needs:		Hydration Plan:	Actual Consumption
Examples	40 g Carbohydrates	1 Cup Gatorade between quarters and 1 at halftime	
	2 Cups Gatorade + 1/2 Pack Fruit Snacks		
	3 Cups Gatorade		

POST-GAME FUEL

Hydration		Consume a balanced meal that is roughly: Half starchy carbohydrates -REFUEL One quarter protein - REPAIR AND BUILD One quarter color - RECOVER	Actual Consumption	
Carbohydrates	24 oz per lb lost within 3 hours		Meal	
Protein	60 g		Hydration	
	25 g			

FUELING FEEDBACK

ENERGY LEVEL							GI COMFORT						
Lousy	1	2	3	4	5	Great	Lousy	1	2	3	4	5	Great
Other Comment (optional)													

Texas A&M Fueling Plan

ATHLETE 2

PRE-TRAINING FUEL

2-4 Hours Before Game				Actual Consumption	
Carbohydrate Needs:	70 g	A balanced meal that is high in carbohydrates, moderate in fat and protein		Carbohydrates	
Fluid Needs:	16 oz				
Examples	1 Cup Spaghetti, 1 Breadsticks, 1 Small Chicken Breast, Side Salad, 1/2 Cup Fresh Fruit			Protein/Fat	
	3 Pancakes with Syrup, 2 Scrambled Eggs, 1 Sausage Patty, Banana			Color	
	Grilled Chicken Burrito, Light Cheese/Avocado, Fajita Vegetables, 1/2 Cup Corn, Water			Hydration	
0-2 Hours Before Game				Actual Consumption	
Carbohydrate Needs:	18 g	A carbohydrate rich snack, can use carbohydrate beverages (smoothies, juices, sports drinks) or simple carbohydrates (fruit snacks, applesauce) to meet needs and prevent GI distress		Carbohydrates	
Fluid Needs:	16 oz				
Examples	1 Chewy Bar, Water			Hydration	
	1 Applesauce, Water				

FUELING DURING THE GAME

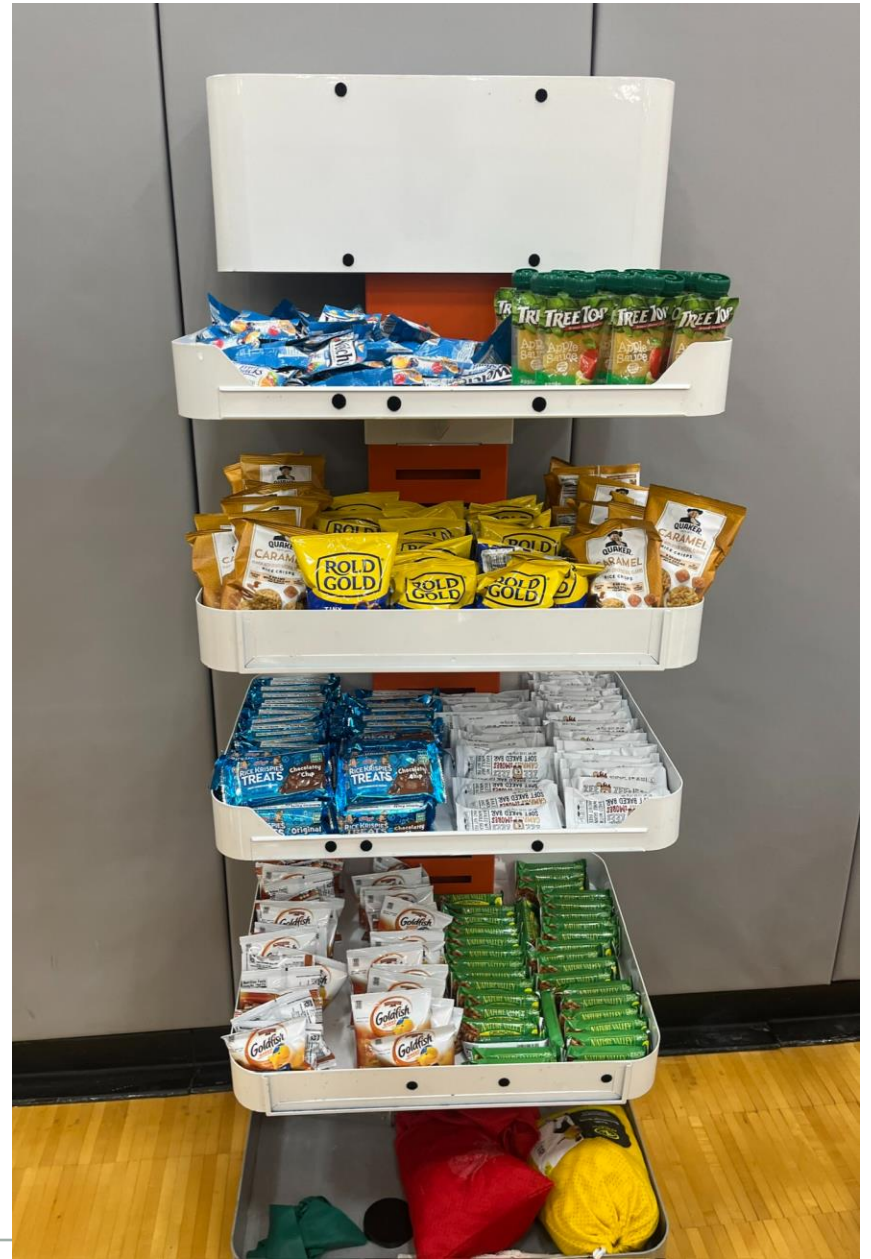
Carbohydrate Needs:		Hydration Plan:	Actual Consumption
Examples	10 g 1 Cup Gatorade 1 Chewy Bar	1 Full Cup Water Between Quarters, 1 Full Cup Gatorade at Halftime	

POST-GAME FUEL

Hydration		Consume a balanced meal that is roughly: Half starchy carbohydrates - REFUEL One quarter protein - REPAIR AND BUILD One quarter color - RECOVER	Actual Consumption	
Carbohydrates	24 oz per lb lost within 3 hours		Meal	
Protein	60 g 25 g		Hydration	

FUELING FEEDBACK

ENERGY LEVEL							GI COMFORT						
Lousy	1	2	3	4	5	Great	Lousy	1	2	3	4	5	Great
Other Comment (optional)													



SPEEDY REFUELING

- <8 hours separating exercise bouts
 - Tournament play
 - 2x/day training
 - Evening session followed by morning session
- 1-1.2 g/kg/hour for the first four hours then resume daily needs
 - Ex. 155 lb athlete finishes morning tennis match at 10 AM and plays again at 1:30 PM
 - 10-11 AM: 90 g CHO (bagel (60 g), 2 TBSP jelly (30 g))
 - 11 AM – 12 PM: 20 oz Gatorade (36 g), 1 Clif Bar (45 g)
 - 12-1 PM: 10 oz Gatorade (18 g), 1 packet of fruit chews (38 g), 1 Banana (30 g)
 - 1-1:30 PM: 8 oz Gatorade (14 g)

SENSITIVE GUTS

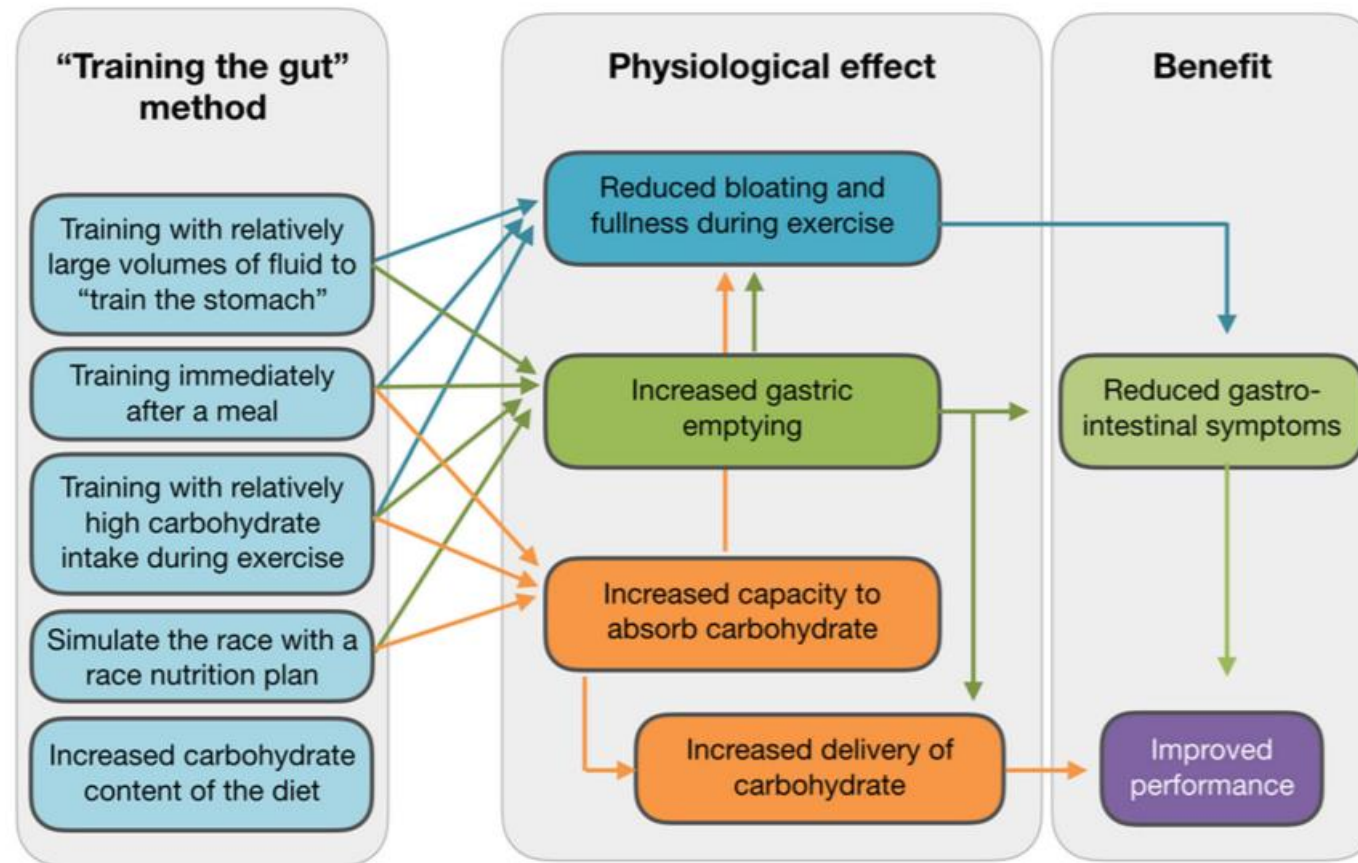


Fig. 4 A summary of methods to "train the gut", the adaptations that may occur in the gut, and implications for performance

SENSITIVE GUTS – LOW HANGING FRUIT

- **Lactose/Fructose**
 - Limiting on game day may reduce sensitivity
- **<10 g fiber within an hour or so of exercise**
 - Fiber containing whole foods at pre-game meal appear to be well tolerated
- **Limiting fat intake**
 - Associated with upper GI symptoms (nausea, reflux, fullness)
 - Chronic high fat intake paired with low fiber can adversely affect microbiome
- **Fluid intake**
 - Try drinking to thirst
 - Warmer fluids may be better tolerated than very cold
- Consider **sports psychology** too as a contributing factor

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QUESTIONS?

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