

# Nutrients of Concern for Athletes



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Nutrition for Optimal Performance

# What we will discuss

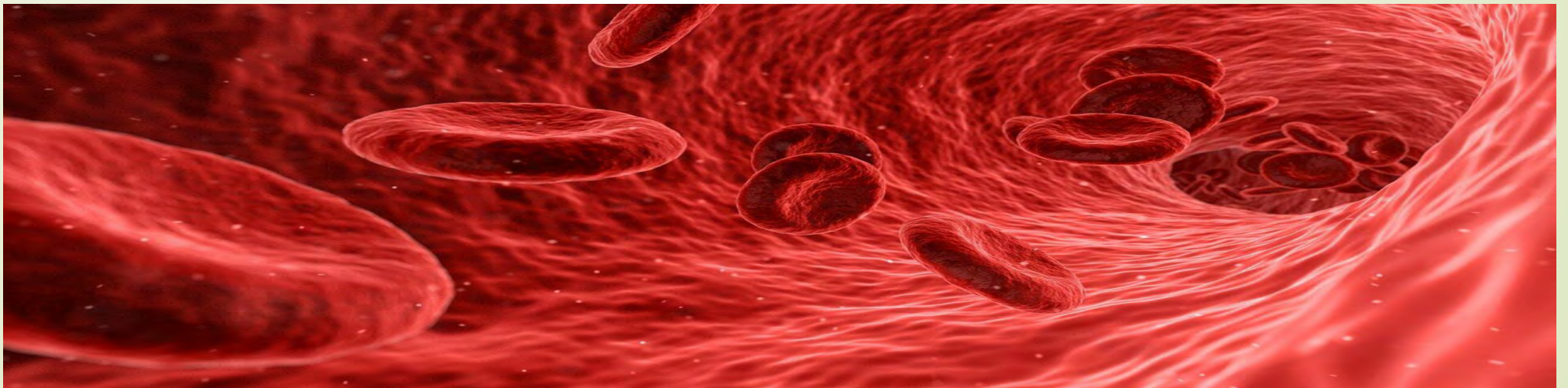
- Iron
- calcium
- Magnesium
- Vitamin D
- Relative Energy Deficiency in Sport
- Ergogenic aids
- Recovery
- Inflammation



# The Importance of Iron

Assists in the transport of oxygen from the lungs to the rest of the body

Males need 8 mg per day; females need 18 mg per day





# Why is deficiency common in athletes?

- Monthly losses in females
- High losses in sweat
- Inadequate intake
- Vegan/ vegetarian diets
- Inflammation from overtraining
- Heel strike causes break down of red blood cells
- Breakdown of the lining of the gastrointestinal tract



# Symptoms of Iron deficiency

- Fatigue
- Weakness
- amenorrhea
- Difficulty breathing
- Headache, dizziness, lightheadedness
- Cold hands and feet
- Pale skin and sclera
- Brittle nails
- Poor performance



# Sources of Iron

- Poultry
- Beef
- Fish
- Eggs
- Beans
- Nuts and seeds
- Raisins
- Beets
- **Cooked** green leafy vegetables
- Fortified grains (**not gluten free**)





# Vitamin C helps absorption of non- meat sources

- Squeeze lemon on greens
- Mix tomatoes in with beans
- Have berries with nuts and seeds
- Add peppers or jalapenos



# Other thoughts on iron

- Affected by inflammation
- Dairy decreases absorption
- Caffeine decreases absorption
- Cast iron pans provide iron





# Recipe: Fried egg sandwich with spinach and tomato

- ▶ 2 eggs
- ▶ 1 cup spinach
- ▶ 2 slices tomato
- ▶ 2 slices whole grain bread
- ▶ 1 tbsp. smart balance butter
- ▶ 1 tbsp. olive oil
- ▶ Heat ½ tbsp. olive oil in a pan and the other ½ tbsp. olive oil in another pan. Fry the eggs in one of the pans and sauté the spinach in the other. Meanwhile toast the whole grain bread. When toast is ready, spread the butter on the toast and top with spinach, tomato and egg. Can serve open-faced or as a sandwich.



More isn't better!



# The Importance of Calcium

Important for muscular contractions and bone health

Requirement is about 1500 mg per day





# Why is calcium deficiency common?

- ▶ Milk intake uncommon
- ▶ Some milk alternatives not fortified
- ▶ Caffeine intake inhibits absorption
- ▶ Carmel coloring inhibits absorption (coke, pepsi)
- ▶ Vitamin D deficiency prevalent



# Symptoms of calcium deficiency

- Difficulty swallowing
- Muscle cramps
- Lethargy
- Numbness
- Weak or brittle nails
- Stress fracture



# Sources of Calcium

- Milk
- Cheese
- Yogurt
- Cooked green leafy vegetables
- Almonds
- Beans
- Chia and hemp seeds
- Tofu
- Fortified nut milks





# Vitamin C enhances absorption of calcium



# Recipe: Greek yogurt dip for vegetables

- ▶ 16 oz. container plain Greek yogurt
- ▶ 16 oz. avocado mayonnaise
- ▶ 3 tbsp. dill powder
- ▶ 1 tbsp. garlic powder
- ▶ 1 tbsp. onion powder
- ▶ 1 tbsp. oregano
- ▶ 1 tbsp. parsley
- ▶ Juice of 1 lemon
- ▶ Salt and pepper to taste
- ▶ Mix all ingredients and refrigerate until ready to use. Serve with your favorite veggies or in a bread bowl.



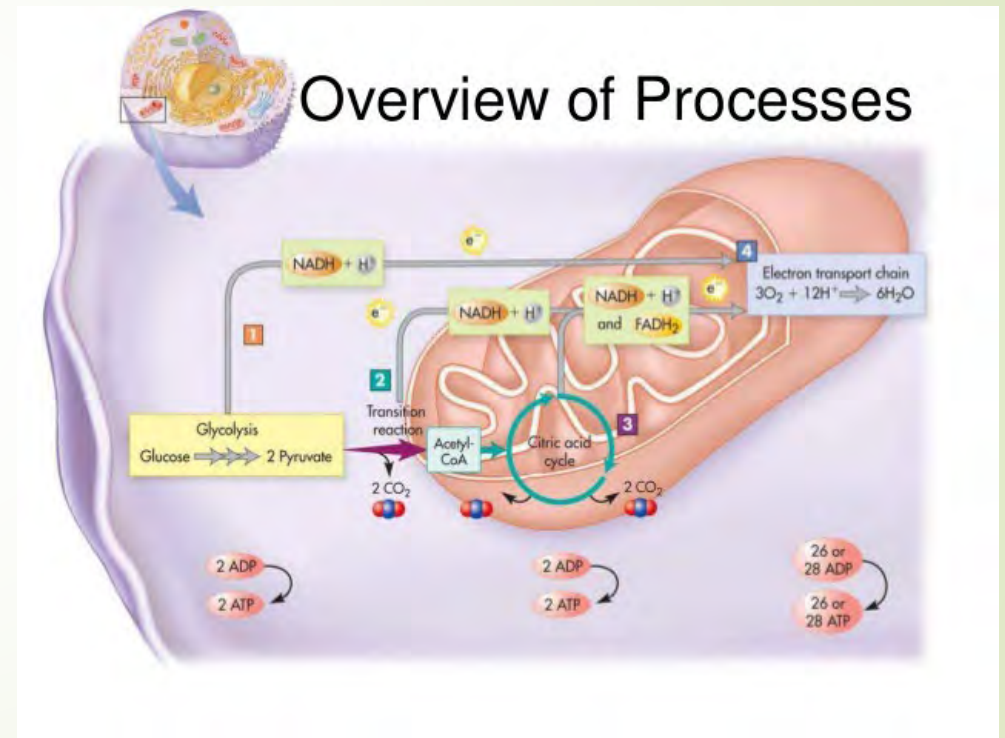
More isn't better!





# The Importance of Magnesium

- Assists in the production of energy from ATP
- Enhances the availability of glucose
- Improves blood pressure, heart rate and oxygen uptake
- Assists with removal of lactic acid from muscles
- Enhances calcium absorption
- We need about 300- 400 mg per day



# Magnesium Deficiency in Athletes

- Inadequate intake of magnesium very common
- Athletes lose magnesium in sweat during workouts
- Inadequate intake leads to muscle damage and inflammation



# Symptoms of magnesium deficiency

- Muscle cramps
- Fatigue
- Numbness
- Nausea
- Irregular heartbeat
- High blood pressure
- Migraines
- Osteoporosis





# Sources of Magnesium

- Beans
- Nuts
- Seeds
- Dark chocolate
- Whole grains
- Green leafy vegetables
- Avocados
- Bananas



# Recipe: Avocado toast with hummus and hemp seeds

- ▶ Whole wheat bread
- ▶ 1 tbsp. hummus
- ▶ ¼ avocado sliced
- ▶ 1 tbsp. hemp seeds
- ▶ Toast the bread and top with hummus, avocado and hemp seeds





# Recipe: Power Toast

- ▶ Whole grain toast
- ▶ Peanut butter or almond butter
- ▶ 1 tbsp. crushed almonds
- ▶ 1 tbsp. crushed walnuts
- ▶ 1 tsp. chia seeds
- ▶ 1 tsp. hemp seeds
- ▶ 1 tsp. flax seeds
- ▶ 1 tbsp. honey
- ▶ Cinnamon to taste
- ▶ Chocolate chips?
- ▶ Toast the whole grain toast. Spread peanut butter or almond butter and add the crushed nuts and seeds. Top with honey and cinnamon. This is a great pre-workout breakfast or snack





# Magnesium rich chili

- Chick peas, kidney beans and black beans
- Tomatoes and tomato paste
- Ground turkey
- Red, yellow, orange and jalapeno peppers
- Corn
- Onions and garlic
- Chocolate!
- Oregano, chili powder, cumin, fresh cilantro
- <https://www.nutrition4op.com/soups>



More isn't better!





# The importance of Vitamin D

- ▶ Assists with calcium absorption
- ▶ Decreases inflammation in our body
- ▶ Helps prevent every disease we know about

Requirements vary on level:  
400 IU's- 4000 IU's





# Why is deficiency so common?

- ▶ Above Boston can't synthesize between October and March
- ▶ During summer months we wear sun screen- SPF 8 blocks all synthesis
- ▶ Being severely underweight and severely overweight increases risk



# Vitamin D Deficiency

- Inflammation and increased risk for injury
- Asthma
- Allergies
- Cancer
- Cardiovascular disease
- Diabetes
- Metabolic syndrome
- Multiple sclerosis



# Sources of Vitamin D

- Milk
- Some milk alternatives
- Shiitake mushrooms
- Fatty fish
- Eggs
- Yogurt
- Tofu
- Supplement???





# To Supplement or Not to Supplement

- If you have several food allergies
- If you have a known deficiency
- If you are very picky and don't eat several of the foods discussed
- B12 for vegetarians
- Vitamin D
- Caution with medications



# Recipe: Loaded Breakfast Bowl

- 1 cup plain Greek Yogurt
- ½ banana
- 1 tbsp. chia seeds
- 1 tbsp. hemp seeds
- 1 tbsp. walnuts
- 1 tbsp. honey
- Handful of blueberries
- 1 tbsp. dark chocolate chips



# Relative Energy Deficiency Syndrome

- Fatigue
- Hair loss
- Cold hands and feet
- Dry skin
- Weight loss
- Disordered eating
- Increased healing time from injuries
- Stress fractures
- Amenorrhea

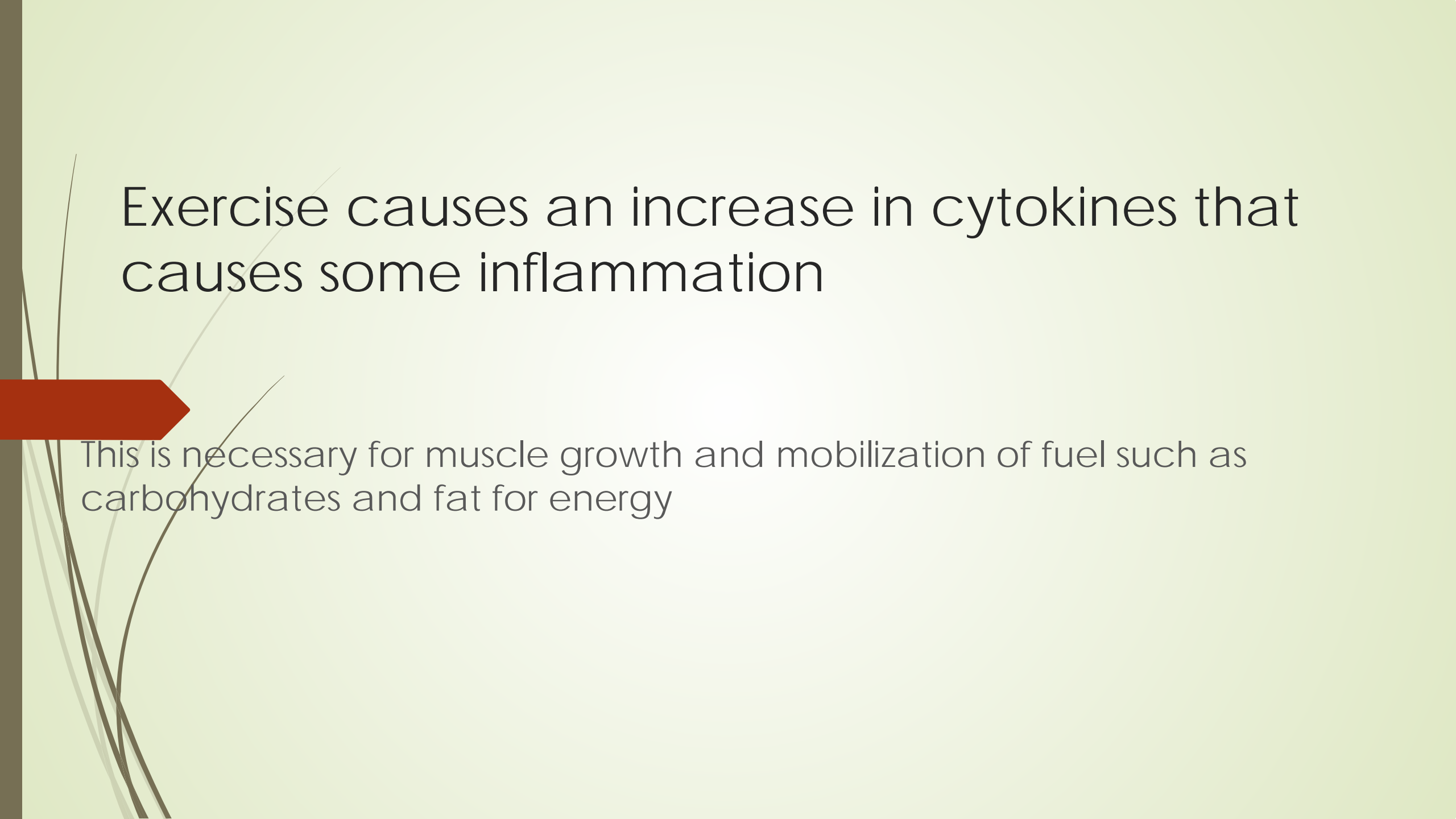




# What is the Cause?

Inadequate energy intake and inadequate carbohydrates





Exercise causes an increase in cytokines that causes some inflammation

This is necessary for muscle growth and mobilization of fuel such as carbohydrates and fat for energy



Overtraining leads to a chronic state of inflammation that is no longer beneficial

Chronic inflammation weakens the immune system and leads to illness and risk for injury



More isn't better!



# Ergogenic aids

Substances that can positively influence your performance



# Carbohydrates

- ▶ Power athletes need 5-7 grams per kg per day
- ▶ Endurance athletes need 7-10 grams per kg prior to long events and competition
- ▶ Also need 45 grams per hour during event
- ▶ Provide muscles ability to create ATP during workouts
- ▶ Much more efficient fuel source than fat
- ▶ Carb loading should begin 4-7 days prior to big event
- ▶ Lower glycemic sources to avoid filling up





# Caffeine

- ▶ May improve endurance in all sports
- ▶ stimulates release of free fatty acids (decreases carbohydrate burn-off)
- ▶ Increases calcium content in muscle (strengthens muscle contractions)
- ▶ Decrease 3-4 days before an event to lower tolerance and maximize benefit
- ▶ excess may cause diuresis, GI upset, and increased heart rate



# Carnitine

- Metabolite of leucine
- Increases blood flow by improving fatty acid oxidation
- Detoxifies ammonia, reducing perception of fatigue
- Found in meat and dairy
- Beneficial for high intensity exercise



# Creatine

- Serves as storage for ATP
- Thought to delay the perception of fatigue
- Richest sources are red meat and fish; can be obtained from eggs, nuts and beans
- Beneficial for high intensity exercise





# Beta- alanine

- Amino acid found in poultry and meat
- Buffers pH of lactic acid in muscle
- Delays fatigue
- Improves muscle firing rates
- Helpful in swimming, running, team sports and powerlifting



# leucine

- Branched chain amino acid
- Found in eggs, chicken, beef, beans, broccoli and spinach, peanuts, milk, mushrooms
- Meal prep a stir fry in for competition week
- Stimulates protein synthesis in muscle
- Prevents depletion of glycogen stores
- Improves endurance, strength and speed





# Nitric Oxide

- Found in beets, spinach and watermelon
- Boosts endurance
- Dilates blood vessels
- Decreases oxygen consumption
- Useful in all sports





# Beet Salad

- Pickled Beets
- Avocado
- Feta cheese
- Walnuts
- Pumpkin seeds



# Watermelon Salsa

- Watermelon
- Cucumber
- Red onion
- Mint
- Cilantro
- Jalapeno
- Lime
- Salt and pepper





# Citrulline

- ▶ Assists with the production of nitric oxide
- ▶ Improves blood flow
- ▶ Obtained from cucumbers, celery, garlic, radishes, nuts, beans
- ▶ Improves oxygen utilization
- ▶ Useful in all sports





# Quercetin

- ▶ Anti-inflammatory, antioxidant
- ▶ Increases mitochondrial activity in cells
- ▶ Counteracts dehydration by increasing blood flow to muscle and sweat glands
- ▶ Helpful during intense exercise (swimming, running)



# Importance of Sleep for performance





# Sleep is extremely important for athletes

- ▶ 10 hours per night ideal during peak training
- ▶ Inadequate sleep increases cortisol
- ▶ Injury more likely
- ▶ Poor performance more likely
- ▶ Taking in proper nutrition more difficult
- ▶ Go to bed around the same hour each night and get up at around the same time each morning
- ▶ Avoid caffeine several hours before bed
- ▶ Screen time disrupts sleep- TV off when you are sleeping

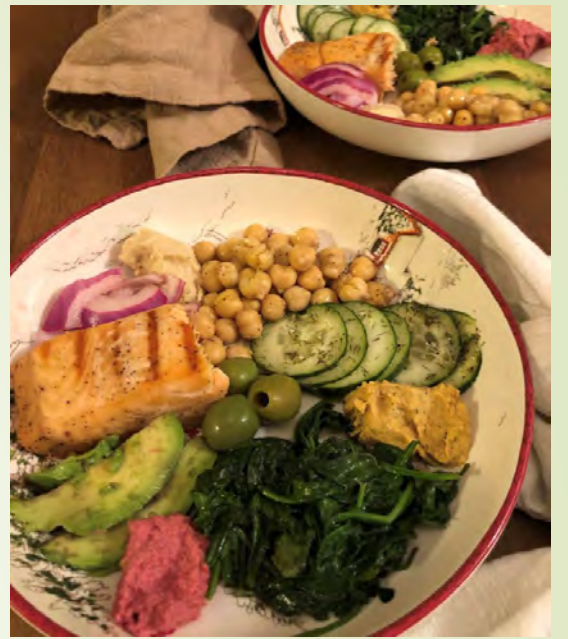


# Recovery

- Replenish your glycogen stores
- Eat within 30 minutes of a workout
- Balance of carbs and protein and healthy fat
- Cortisol needed during to mobilize nutrient stores
- MORE ISN't BETTER!
- Cortisol leads to inflammation, fat storage, fatigue, injury







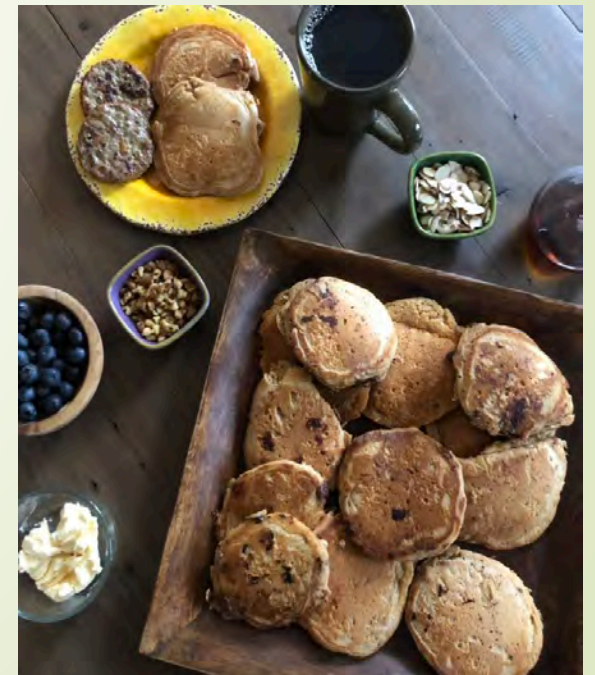
What is the best recovery meal?







What your body is craving!





Cravings are an indication of what our body is depleted of





# Find the Balance





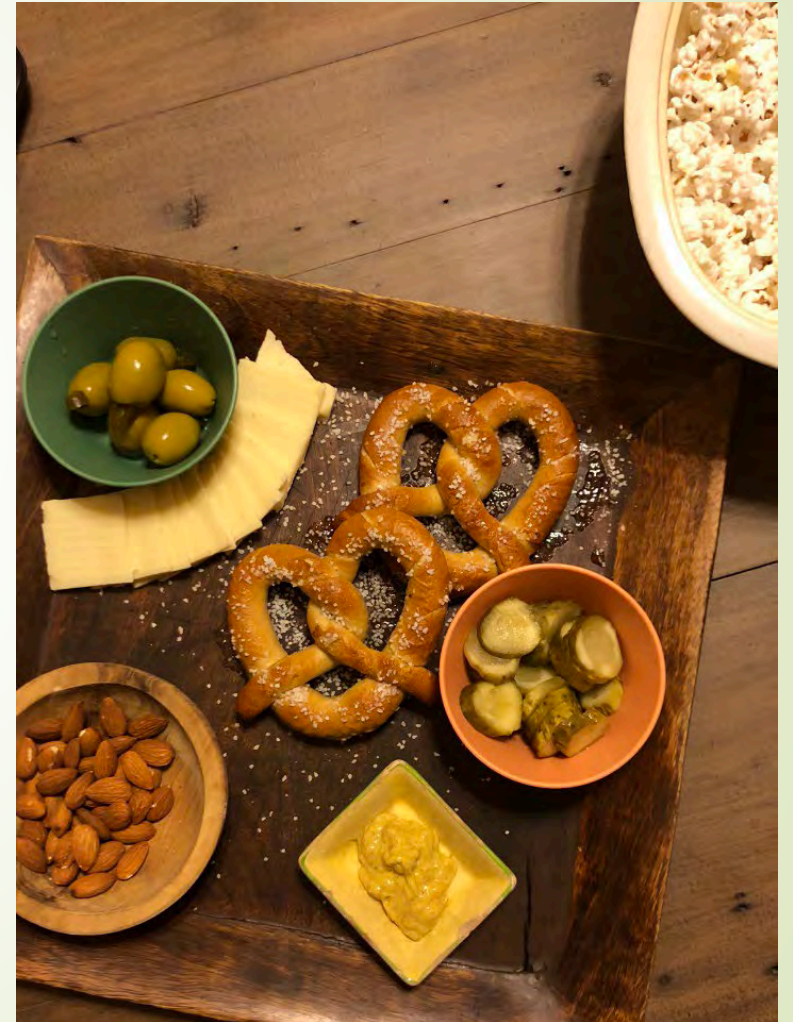
What happens when you ignore your cravings?





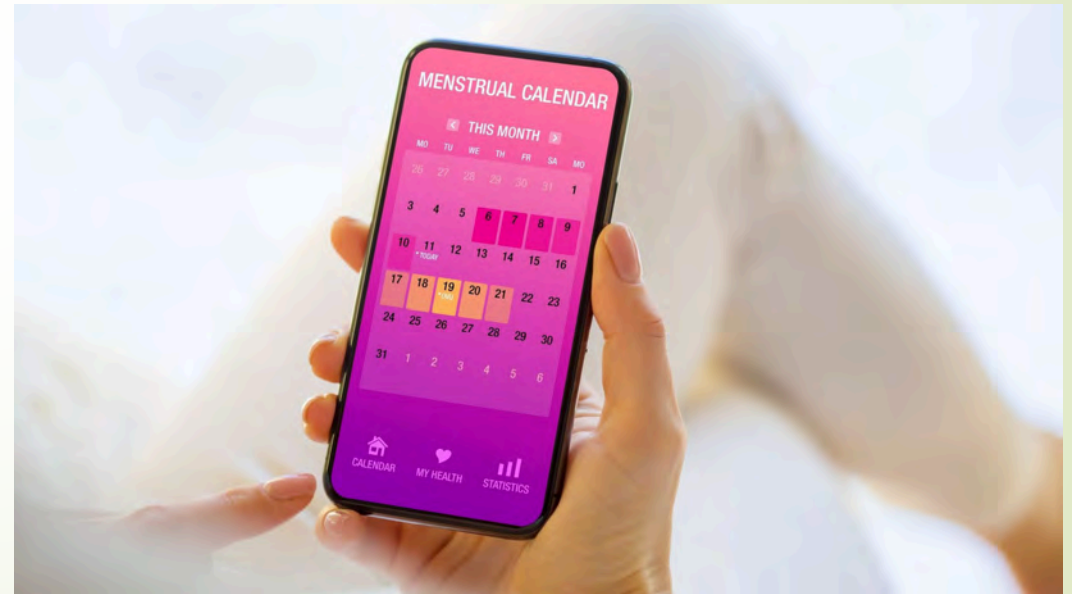
# Cravings and PMS

- ▶ PMS, or the luteal phase results in inefficient utilization of carbohydrates
- ▶ The hormones secreted during PMS also cause sodium wasting
- ▶ There is an increase in fluid retention
- ▶ All of this causes cravings for sodium and carbohydrates as well as calcium and magnesium to decrease the swelling
- ▶ The cravings serve a purpose
- ▶ 500 calories more burned per day
- ▶ The bloating causes increase in body image dysmorphia
- ▶ Athletic performance also impaired



# Track cycle and be prepared

- Honor the cravings
- Give yourself permission to eat more
- know that the bloating is fluid
- Recognize why you are feeling the way you are
- It will pass
- Know that performance is best when menstruation starts





# How can we decrease inflammation?

- Recover appropriately
- Listen to your body
- Eat within 30 minutes of exercising
- Sleep enough
- Follow an anti-inflammatory diet





Toast with Nuts  
or Nut Butters  
with chia and  
flax seeds



# Smoothies with yogurt and flax, hemp and chia seeds





Add nuts and  
seeds to yogurt  
or oatmeal







Add mushrooms to foods





# Avocado Boats





# Avocado Toast



Use avocado  
oil mayonnaise  
in salads,  
sandwiches  
and dips







Try tofu salad  
vs. egg, tuna or  
chicken salad



Use Omega- 3 enhanced Eggs





Add turmeric to foods

# Probiotics help decrease inflammation...



- ▶ Eat yogurt
- ▶ Eat dark chocolate
- ▶ Use sour dough bread
- ▶ Add green olives to salads
- ▶ Incorporate soy milk
- ▶ Add pickles to sandwiches
- ▶ Use kefir in place of milk








Use  
shredded  
tempeh in  
nachos  
and tacos





Use nutritional yeast instead of parmesan cheese

- Pasta
- Popcorn
- Eggs
- Polenta







Make a dip with Greek yogurt

# Summary

- Obtain calcium, magnesium and iron for optimal health and performance
- Take in enough calories to meet the demands of exercise
- Supplement only when necessary
- Eat soon after exercise for proper recovery
- Honor your cravings
- Reduce inflammation with an anti-inflammatory diet
- MORE ISN'T BETTER





Questions????



Looking for individual nutrition help?  
Reach out for a consult

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<https://www.nutrition4op.com/>

