



U.S. ARMY WORLD CLASS ATHLETE PROGRAM

PERFORMANCE NUTRITION PACKET

MAJ Kelly Kaim - MS, RD, CSSD, CSCS
WCAP Performance Dietitian



PERFORMANCE NUTRITION PACKET

TABLE OF CONTENTS

General Nutrition

Calorie/macro needs page 2
 Daily plate page 2-3
 Meal planning page 3
 Building Healthy Plate Page 4
 Sources Carbs, Protein, Fat Page 5

Training Nutrition

Fueling your workout page 6
 Eating after workout page 7
 Hydration page 8

Competition Nutrition

PT test fueling page 9

Healthy Changes

Sugar Goals page 10
 Serving Sizes page 10
 Healthy Eating tips page 11

Special Considerations

Sleep page 12
 Vegetarian diet page 13
 RED-S page 14
 Tips during injury page 15
 Alcohol page 16
 Weight Loss/ Gain page 17

Dietary Supplements

Regulation page 18
 Effective supplements page 19

Resources

Websites page 20
 Apps page 20

CALORIE NEEDS

- Visit a Wellness Center and get your RMR (calories burned at rest)
- Best formula to calculate RMR (Cunningham)= 500+ (22x Lean Body Mass)
 - Can get lean body mass by figuring out % BF
 - Most apps use Harris Benedict to calculate
- Never go below Resting Metabolic Rate (RMR)
- Total Calorie needs= RMR + Calories burned during daily activity
- Adjust + or -500 kcals for weight gain or loss
- Follow up with dietitian if uncertain what your needs are

DAILY PLATE

Carbohydrates: Primary fuel source for brain function and exercise.

1. Need at least 130g per day just for brain function alone
2. 40-55% of your total calories should come from this based on goals
3. Best sources include whole grains, fruits, starchy vegetables, dairy

Protein: Essential for gaining and maintaining muscle mass and for recovery

1. Most active people need close to 1g/lbs. body weight per day
2. Don't store protein in the body so important to include at all meals and snacks
3. Important to get 15-30g protein post workout to aid in recovery

Fat: Important for immune and hormone function, and reproductive health

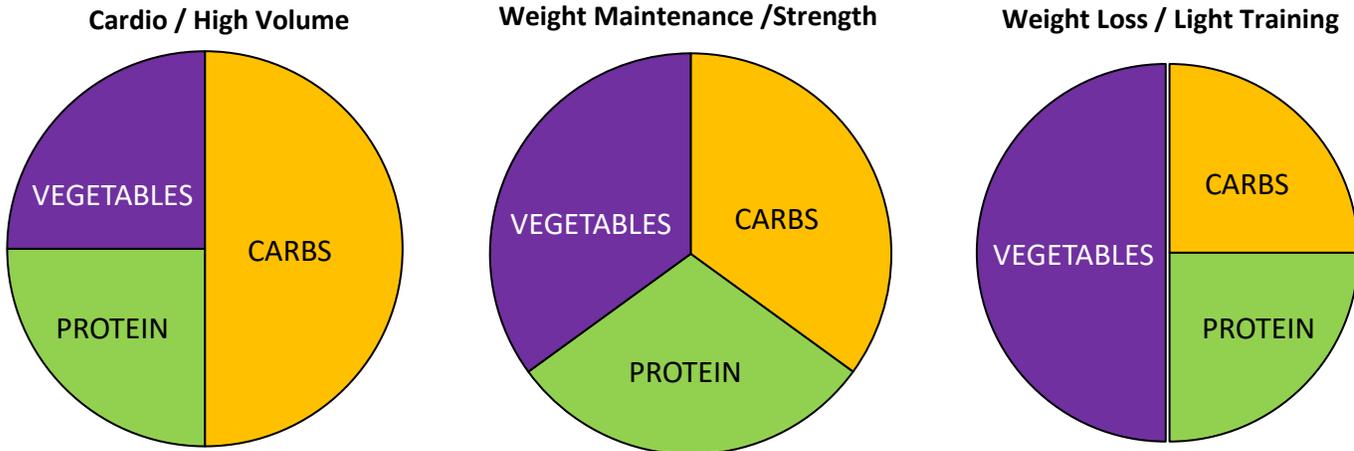
1. Inadequate fat intake can lead to frequent sickness and injury
2. Focus on healthy fats such as mono-unsaturated and omega 3's
3. Generally aim for 25-30% of your calories to come from this

Macronutrient	Goal	Recommendation per day
Carbohydrate	Strength training <90 minutes	3-7 g/kg wt./day
	Daily endurance <90 minutes	5-7 g/kg wt./day
	Daily endurance >90 minutes	7-10 g/kg wt./day
	Carbo-loading	10-12 g/kg wt./day
Protein	Endurance Athlete	1.2-1.6 g/kg wt./day
	Power Athlete/ Weight loss	1.4- 2 g/kg wt./day
Fat	All Athletes	20-35% total calories

Nutrition and Athletic Performance Joint Position Stand

Note: If you have access of a dietitian best to consult with them for individual goals/ needs.

DAILY PLATE



5 STEPS TO MEAL PLANNING

1. **Identify a Protein Source** - It is important for protein to be included in all meals because we don't store it in our body.
2. **Include a Vegetable** - It provides full factor through its fiber and water content and also antioxidant and inflammation properties
3. **Choose a Carbohydrate Source** - Helps to provide energy for exercise and for brain function
4. **Add Flavor** - including a small amount of healthy fat is important for proper body function and helps make food taste good.
5. **Adjust your Plate** - Depending on goals and activity level adjust your portions. More carbohydrates when more active and more vegetables if less active or goal of weight loss.



Building your Healthy Plate

Grains/ Fruit/Starch (aim for 1-4 servings per meal)	Protein (aim for 1-3 servings per meal)	Vegetables (aim for 1-3 servings per meal)	Dairy (aim for 2-3 servings per day)	Flavor (aim for 1-2 servings/meal)
Whole Fruit (1/2 cup)	Fish (3 oz)	Spinach (1 cup)	Low Fat Greek Yogurt (6 oz)	Olive oil Salad dressing (2 TBSP)
Berries (1 cup)	Skinless Chicken (3 oz)	Summer Squash (1 cup)	Low Fat Cottage Cheese (1/2 cup)	Olive oil/ Canola oil (1 tsp)
Whole grain rice (1/2 cup)	Lean Beef (3 oz)	Broccoli (1 cup)	Low Fat Milk (1 cup)	Avocado
Whole grain pasta (1/2 cup)	Lean Pork (3 oz)	Peppers (1 cup)	Mozzarella Cheese (1 oz)	Peanut butter (2 TBSP)
Whole grain bread or tortilla (1 slice/6 in tortilla)	Tofu (3 oz)	Green beans (1 cup)	Soy milk (1 cup)	Nuts (1 oz)
Sweet potato (1/2 large)	Beans (1/2 cup)	Cooked Veggies (1/2 cup)		Ground Flax (2 TBSP)
Oatmeal(1/2 cup)	Egg (1 egg)	Raw Veggies (1 cup)		

Top Protein Sources



1/2 cup = 14g



1 cup = 8 g



3 oz = 21 g



1 oz = 5 g



5 oz = 15 g



2 TBSP = 7 g



1/2 cup = 9 g



1 oz = 7 g



1 egg = 6 g



3 oz = 21 g

Top Carbohydrate Sources



Starchy Vegetables



Fruit/ 100% Juice



Dairy Products



Rice/ Quinoa



Whole Grain Products



Beans



Oats



Milk

Top Fat Sources



Nuts



Avocado



Salmon



Ground Flax



Seeds



Olive Oil



Canola Oil

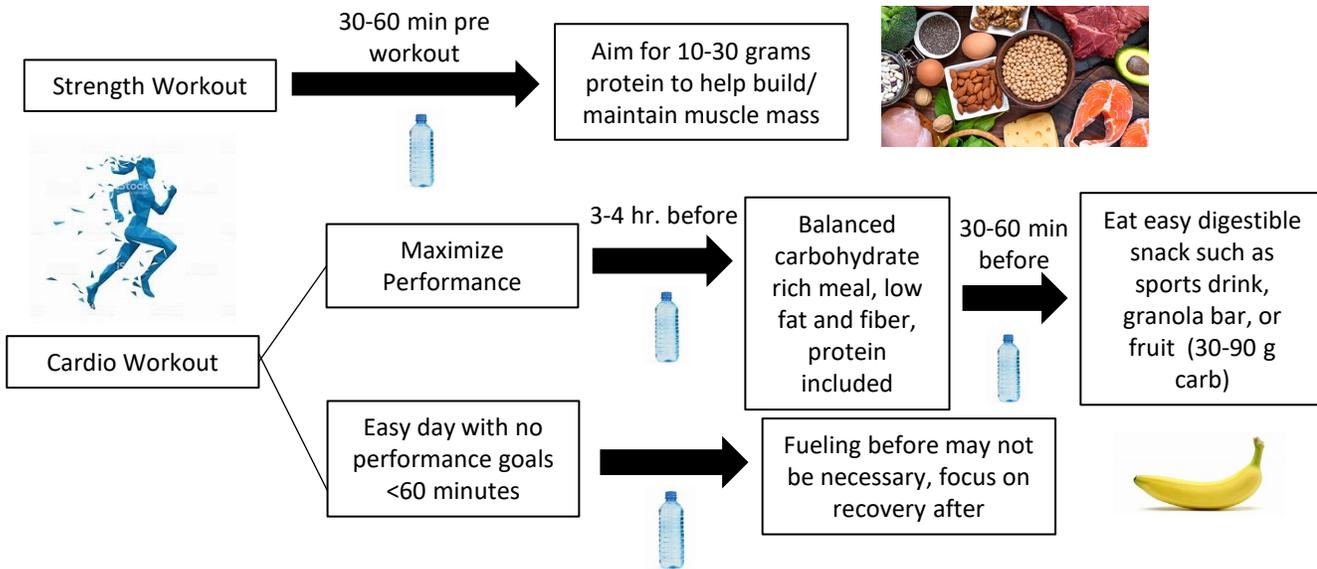


Nut Butter

EATING BEFORE EXERCISE

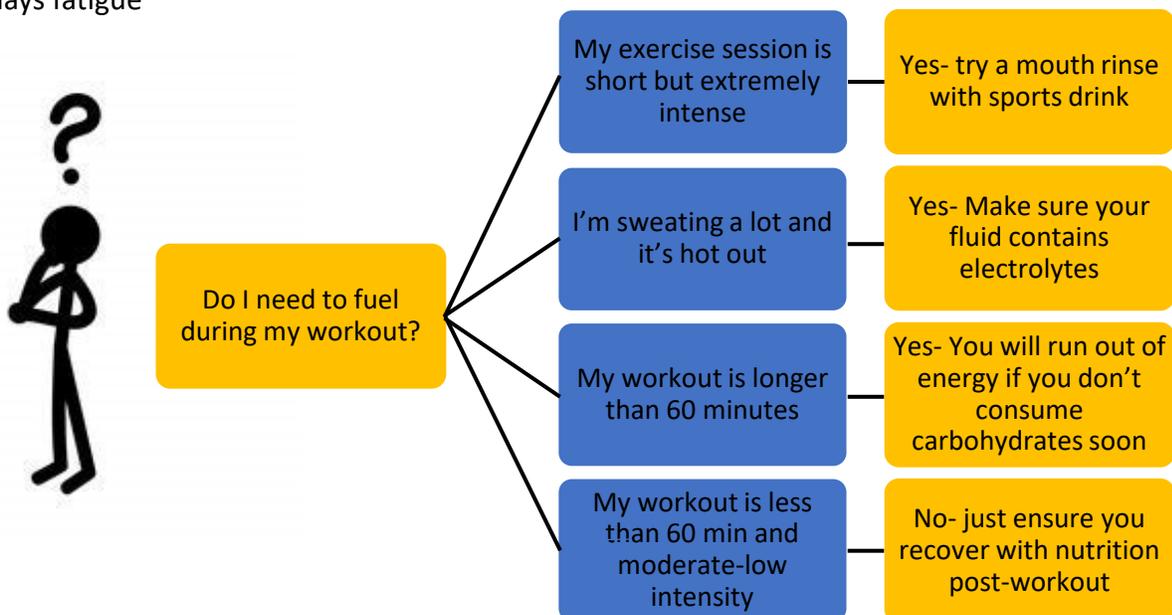
- Improves performance
- Helps build/maintain muscle
- Increases intensity of workout

FUELING YOUR WORKOUT



FUELING YOUR WORKOUT

- Increases performance
- Delays fatigue



EATING AFTER EXERCISE: 3R's to Post Workout Recovery

Choose one from each category to aid in recovery

REHYDRATE

Its important to replace your fluids after a workout. (Drink 3 cups for every 1 lb. lost during a workout.)

- Water
- Flavored Water
- G2 or Propel (replaces electrolytes without carbohydrates)
- Chocolate or Reg Milk (Counts as carbohydrate and fluid)
- Gatorade/Powerade (Counts as carbohydrate and fluid)
- Juice (counts as carbohydrate and fluid)
- Unsweetened Tea

REPAIR

Getting at least 10-30 g protein will help your muscles start the repair process. (Each serving is 15 g- smaller athletes aim for 1 and larger 2.)

- Greek yogurt- $\frac{3}{4}$ cup
- Cottage Cheese-1/2 cup
- Eggs- 2 eggs
- Protein powder -1 scoop
- Lean Meat- 2 oz
- Protein bar-1 bar
- Ultra filtrated milk- 1 cup

REFUEL

Aiming for around 1 g/kg bodyweight of Carbohydrates within an hour will help you refuel your glycogen stores. (Depending on when your next meal is and body size aim for 1-3 servings.)

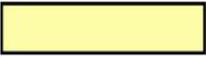
- 1 cup oatmeal
- Large piece fruit
- 16 oz sports drink
- 1 cup pasta
- $\frac{3}{4}$ cup rice
- 1 cup starchy vegetables
- $\frac{1}{2}$ bagel

HYDRATION

- Helps with recovery
- Assists in body temperature regulation
- Maintains metabolism
- Aids in physical and mental performance

Higher fluid needs during

- Heat/Humidity
- Hard Training
- Sickness
- Altitude

	1	<1.009	Well-hydrated
	2	1.009-1.020	Hydrated
	3	1.021-1.025	Minimal dehydration
	4	1.026-1.030	Significant dehydration
	5	≥1.031	Severe dehydration

KEY POINTS

- Urine Color should be a 1 or 2 on the hydration scale.
- Thirst is not always best indicator
- Weigh yourself before and after hard workouts to figure out sweat rate
- Consuming only water can lead to hyponatremia so include electrolytes during day

When	How much
Before training	2-3 hours before: >16 oz. 15 minutes before: 8 oz.
During training	Enough to limit dehydration to <2% body weight loss
After training	16-24 oz. for every pound lost

HOW TO STAY HYDRATED

- Drinking at least 2-3 cups of water with all meals
- Setting a timer to remind yourself to drink
- Including fruits and veggies with high water content in diet
- Replace 150% of what was lost during practice
- Including other beverages such as tea, coffee, 100% juice
- Add in a smoothie for recovery snack or meal



PT TEST FUELING

- Never try something new on testing day
- Practice ahead of time during training
- Plan for what may be available for you
- Eat a higher carbohydrate meal the night before following high training plate

- **Carbohydrate Loading:** used for longer events to top off stored carbohydrates in the body used during the event. This also helps your body store more fluids to be used during competition.
- Not necessary for events under ½ marathon or for PT test, just focus on higher carb pre competition meal
- Start 2 days prior to competition adding in more simple carbohydrates to your meals/snacks
 - Dried fruit, sports drink, white grains, granola, etc.

Pre-Competition meal Or Pre- PT test	3-5 hours before (follow the high training plate)	50-200 g carbohydrate based on goals and body size	10-20 grams Protein	Cardio: <ul style="list-style-type: none"> • English muffin, peanut butter, banana • Oatmeal made with milk, fruit, nuts • Sandwich, fruit • Omelet, toast, fruit • Chicken, rice, cooked veggies
Pre-Competition Snack (Eat this if don't have time for meal)	30-60 minutes before practice, workout, competition	30-50 g carb	10 g- 20g Protein (optional)	Cardio: <ul style="list-style-type: none"> • Smoothie • Banana and peanut butter • Sports drink or gel product
Fuel During	<45 min 1-2 hrs. 2-3 hrs. >2 hrs. (high intensity)	None 30 g/hr. carb 60 g/hr. carb Up to 90 g/hr. (glucose + fructose) carb	Protein only needed during prolonged exercise > 2hrs	<ul style="list-style-type: none"> • sport drink* • water and gels • food as tolerated
Recovery Snack	Within 60 minutes (esp. if multiple events in 1 day)	30-70 g carb	15-30 g protein	<ul style="list-style-type: none"> • Sports drink+ protein food • Chocolate milk • Protein drink • Protein bar • Fruit and Greek yogurt

Nutrition and Athletic Performance Joint Position Stand

6 Easy Tips to Avoid Overeating



Drink water or calorie free beverages with your meals



Use smaller plates and utensils to help control portion sizes



Measure your cups and bowls so you know how much you are eating



Turn off electronics and sit down at a table



Set a 15 minute timer when you eat to get yourself to slow down and feel when you are full



Fill half your plate with nutrient dense foods such as fruits and vegetables

Serving Size Guidelines



½ Cup Grain/ Starch/Fruit
= 1 Serving



1 Cup Vegetable/ Milk
= 1 Serving



3 oz Meat
= 1 Serving



1 Tsp Oil/ Butter
= 1 Serving



1 oz Cheese
= 1 Serving



1 TBSP Nut Butter/
Salad dressing
= 1 Serving

How Much Sugar Do You Consume?

The average American consumes 19.5 teaspoons of sugar per day

American Heart Association recommends no more than 6 tsp added sugar for women and 9 for men daily



Lemonade
20 oz= 16 tsp sugar



Soda
20 oz= 16 tsp sugar



Energy drink
16 oz= 14 tsp sugar



Vitamin Water
20 oz= 8 tsp sugar



Sweet Tea
24 oz= 18 tsp sugar

What Does 100 Calories Look Like?

Eat more by choosing healthy

Healthier Food Options	Portion Size
Blueberries	1 ¼ cup
Watermelon	2 cups diced
Broccoli	5 cups
Carrots	28 baby carrots
Turkey Lunch Meat	3.4 oz (4 slices)
Popcorn- Air Popped	3 cups
Non-fat Greek yogurt	4 oz
Higher Calorie Food Options	Portion Size
M & Ms	23 pieces
Soda	8 oz
Donut	1/3 of donut
Oreo Cookie	2 cookies
Ice cream	3 TBSP
Potato Chips	9 chips
Granola Bar	2/3 bar



SLEEP NUTRITION

- Avoid eating a large meal late at night
- Combine tart cherry juice and greek yogurt for an evening snack.
- Try sipping on some chamomile or sleepy time tea
- Avoid caffeine late in the day
- Snack on a handful of walnuts which contain melatonin
- Avoid large amounts of alcohol which prevent deep restorative sleep
- Taper off fluids later in the day to prevent having to use the restroom frequently at night
- Include salmon and eggs regularly in evening meals to get omega-3s and melatonin
- Eat dark leafy vegetables to get magnesium which can aid in sleep

VEGETARIAN DIET

- High Risk for Nutrition Deficiency
- Kcals and fat
- Iron
- B12
- Calcium and vitamin D
- Zinc
- Higher Protein needs since plant protein not absorbed as well
- Suggest consult with dietitian to ensure adequate intake

Top Non-Meat Protein Sources

If getting protein from plant sources aim for at least 1 g/ kg body weight protein per day



Greek Yogurt
1 cup = 20 g



Tofu
4 oz = 12 g



Egg
1 whole = 6g



Cottage Cheese
1/2 cup = 14 g



Steel Cut Oats
1/2 cup = 10 g



Seeds
2 TBSP = 7 g



Beans/ Lentils
1/2 cup = 8 g



Green Peas
1 cup = 8 g



Nuts
1 oz = 6 g



Peanut Butter
2 TBSP = 8 g



Tempeh
4 oz = 21 g

RED-S: RELATIVE ENERGY DEFICIENCY

HIGHER RISK INDIVIDUALS INCLUDE:

- History of eating disorders
- Low bone density
- History of stress fractures
- Restrictive eating/ dietary patterns
- Low energy availability
- Abnormal menstrual cycle
- Low body fat (<6 % for Male, <14% for Female)

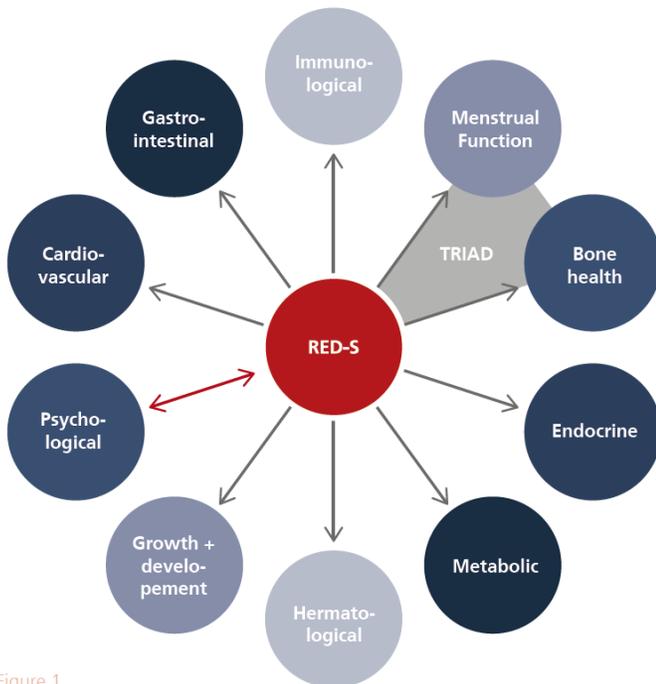


Figure 1

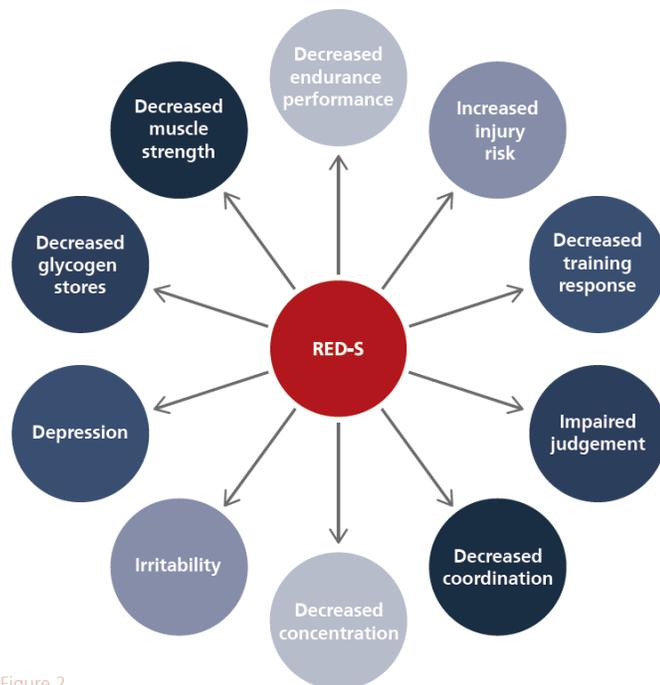


Figure 2

<https://bjsm.bmj.com/content/bjsports/49/7/421.full.pdf>



NUTRITION TIPS DURING INJURY

1. **Modify Calories-** If you are less active then likely you will need to decrease total calories but still ensure adequate amount for injury repair.
2. **Increase Protein-** Ensure all your meals and snacks have protein and in particular **Leucine** to aid in injury rebuilding.
3. **Drink the Right Fluids-** Hydration with water is very important for body repair, while alcohol inhibits that process.
4. **Add in Antioxidants-** Make sure you are getting plenty of fruits and vegetables in your diet daily and maybe even add in some tart cherry juice at night which acts to decrease inflammation and can help with sleep.
5. **Consider Collagen-** If injury is muscle or tissue related collagen can aid in the repair process. You can get this from bone broth or a 3rd party tested supplement.
6. **Include Healthy Fats-** Adding in Omega-3s from salmon or flax seed can help protect muscle loss during an injury.

Alcohol: Poor Fuel for Energy

- Drinking before/after exercise
 - Decreases power, speed, endurance
 - Can lead to increased risk of dehydration
 - Cancels out gains with diet
- Prevents Muscle Recover
 - Decreases muscle growth and repair
 - Decreases testosterone and HGH levels
 - Replaces quality nutrition
- Impacts Sleep
 - Prevents REM sleep important for recovery
- Inhibits absorption of key nutrients
 - Thiamin, vitamin b12, folic acid, zinc



Healthy Weight Loss Tips

- Decrease meal size as day goes on
- Modify Carbohydrate intake later in the day
- Drink water with meals and aim for at least 64 oz/day
- Pack a lunch
- Eat Breakfast-even if something small
- Eat smaller meals more frequently throughout the day
- Limit calorie beverages
- Follow the healthy plate approach

Healthy Weight Gain Tips

- Add liquids like milk or 100% juice to meals
- Eat every 2-3 hours
- Decrease foods with fiber
- Add in healthy fats
- Don't skip meals
- Have a snack before bed

DIETARY SUPPLEMENTS

SUPPLEMENTS: ALWAYS TAKE FOOD FIRST APPROACH

- Do you need a supplement?
- Have you be diagnosed with a deficiency?
- Is your diet well rounded and balanced?
- Is your supplement 3rd party tested to ensure what is in it?
- Why are you taking it?
- What does the research say?
- What is 3rd Party testing?



Supplement companies pay a 3rd party to test products and ensure free of contamination and banned substances

Most popular 3rd party testing agencies are NSF and Informed Sport

Look for Logos on side of supplement or go to their websites to find 3rd party tested products

Suggest only taking 3rd party tested supplements

Note: You are responsible for what you put in your body, never 100% Guarantee supplements are safe.



CHAMP

Consortium for Health and Military Performance

Screen your supplement for safety. Read the label on your supplement and mark 1 for “yes” and 0 for “no.”

Key questions you can answer:	Yes=1	No=0
Is any one of these third-party certification seals on the product label?		
Are there less than six ingredients on the Supplement Facts label?		
Is the label free of the words proprietary, blend, matrix, or complex ?		
Can you easily pronounce the name of each ingredient on the Supplement Facts label?		
Is the amount of caffeine listed on the label 200 mg or less per serving? (If caffeine is not listed, mark “1.”)		
Is the label free of questionable claims or statements ?		
Are all the % Daily Values (% DV) on the Supplement Facts label less than 200% ? (If % DV is not listed, mark “0.”)		
Total: Add up the “1s.” 4 or more is okay. Less than 4 is a “no-go.”		

Questions about dietary supplements?

Ask the OPSS experts at OPSS.org/ask-the-expert

OPERATION SUPPLEMENT SAFETY (OPSS)

COMMON SUPPLEMENT	FOOD SOURCES	POSSIBLE BENEFIT /RISK
Iron	Liver, eggs, meat, fish, beans, cereal, oatmeal	May be useful for endurance athletes, esp. females. Important to have levels drawn and have iron prescribed accordingly / Can get toxicity from too much
VITAMIN D	Sun, mushrooms, milk, fish, eggs	Important for bone health etc. Recommend 2000-5000 IU/day D3 if haven't had labs tested. / Minimal risk
OMEGA 3	Fatty fish (salmon, mackerel, sardines, tuna, trout), flaxseed, walnuts, canola oil	Decrease inflammation and oxidative stress. Protective effect on brain. Recommended dose is 2 g per day / Acts as a blood thinner
PROTEIN	Meat, eggs, dairy, beans, grains, quinoa, tofu	Aid in meeting protein needs. Whey best absorbed. Casein –slow release, best before bed. No more than 20-30 g per serving / Contains calories so needs to fit into diet plan
CAFFEINE	Coffee, tea, sports gels/blocks	Increase alertness. Improve exercise time to fatigue. 2-4 mg/kg 45 min prior to exercise/ can impact sleep or cause jitters
COLLAGEN	Gelatin, bone broth	Thickens cartilage and decreases joint pain. Aid in injury recovery. 5-15 g/day pair with vitamin C for absorption / can cause GI issues
BETA- ALANINE	Meat, poultry, fish	Buffer lactic acid during high intensity exercise to slow fatigue. 3-6 g/day/ Causes tingling in the skin and some see little benefit
NITRATES	Beet juice, garlic, leafy greens	Increase blood flow to the working muscle, most effective for longer duration aerobic endurance. 3-6 oz 45 min prior to exercise/ red urine color and stomach upset
CREATINE	Wild game, red meat, poultry, fish	Increase strength and power during high intensity training, aid in injury recovery/ causes fluid retention and increase hydration needs
TART CHERRY JUICE	Tart cherry	Acts to decrease inflammation and as antioxidant. 8 oz cherries for recovery after workout. Can aid in sleep by activating natural melatonin on body/ Blunt training adaptations so use during intense periods or leading up to competitions.
PROBIOTIC	Yogurt, kefir, miso, tempeh, sauerkraut	Increase good bacteria in the gut and improve immune function. Good to use when traveling
CURCUMIN	Turmeric	Decreases muscle damage and inflammation. Found in food in smaller amounts. 500 mg bioavailable form/ Can blunt training response to exercise
BCAA	Meat, fish, milk, tofu, cheese, eggs	Prevent muscle breakdown and possibly decrease muscle soreness after workout. Leucine is most important essential amino acid. 5 g per day

WEBSITES

- www.scandpg.org
- www.sportsrd.org
- www.gssiweb.org
- www.supplement411.org
- www.informedsport.com
- www.nsfspport.com
- www.consumerlab.com

APPS

- Eat2Win- meal plan
- MyFitnessPal- calorie tracker
- Fooducate- food grader

SCHOLARLY PAPERS

- Position of the American Dietetic Association, Dietitians of Canada, and the American College of Sports Medicine: nutrition and athletic performance. *Medicine & Science in Sports & Exercise* 2009; 709-731.
- IOC Consensus Statement-Dietary Supplements and High Performance Athletes. *Br J Sports Med* 2018; 52:439–455.
- Relative Energy Deficiency in Sport (RED-s). *Br J Sports Med* 2017; 51:1509.