

# ROW

*a nutrition guide for rowers*

*eat.  
sleep.  
repeat.*





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## FROM ONE ROWER TO ANOTHER

This nutrition book is intended for rowers at the collegiate level. While the information provided is geared towards rowers, everything regarding nutrition is relevant for all athletes alike. This book is a collaboration of information taken from: our personal experiences as collegiate rowers, Dr. Paul Arciero (Exercise Science professor at Skidmore College), textbooks used in nutrition class by the Exercise Science Department, and senior thesis research by Megan Weagley.

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# FOOD BY COLOR

Fruits and vegetables of all colors have different quantities and varieties of vitamins that are essential for simple and complex functions in the body. Color has been found to signify the presence of certain vitamins. We have highlighted vitamins for each color group of fruits and vegetables that are especially pertinent for a rower in gaining and maintaining ability, bone and muscle strength, and nerve and cognitive function.



red apples . strawberries . cranberries . pomegranate . red peppers . tomatoes .  
raspberries . cherries . red currants . watermelon . beets . rhubarb . red onions .  
red grapes . red potatoes

# red

HEART HEALTH

## NUTRIENTS

vitamin C, potassium

## WHAT THEY DO

*vitamin C* helps enhance the collagen that provides strong tissue for blood vessels.

*potassium* is essential for maintaining fluid balance, nerve impulse, muscle, and cardiac function.

## HOW IT HELPS

when you are rowing you will :

be better hydrated

have faster reaction times (*quick catches!*)

push harder for longer

have a stronger heart



oranges . nectarines . tangerines . tangelos . kumquats . apricots  
clementines . orange peppers . squash . peaches . canteloupe  
mango . papaya . carrots

# Orange

VISION + COGNITIVE  
FUNCTION

## NUTRIENTS

vitamin E, iron

## WHAT THEY DO

*vitamin E* is an anti-oxidant that protects your body against the formation of free radicals which can damage healthy cells and contribute to cardiovascular disease or the onset of cancer.

*iron* is found in hemoglobin: the protein that makes up red blood cells and carries oxygen to all parts of your body.

## HOW IT HELPS

Not only will you have quicker and more effective oxygen transport to your muscles and brain, but you will also have better immunity and the ability to fight off any sickness or infections that may inhibit your performance during the season.



pineapple . lemon . yellow pepper . corn . butternut squash . yellow summer squash

# yellow

ORGAN FUNCTION

## NUTRIENTS

vitamin C, potassium (also found in red foods)

## WHAT THEY DO

*vitamin C + potassium* promote collagen formation and healthy lubricated joints, lower blood pressure, and work with calcium to build stronger bones.

## HOW IT HELPS

With lubricated joints, it will be easier for your knees to handle the repetitive motion of going up and down the slide. With lower blood pressure, your blood is pumping through your body at optimum speed, allowing the greatest amount of blood flow to your muscles to speed up contractions.



kiwi . honeydew melon . limes . asparagus . green beans . broccoli . kale  
spinach . lettuce . zucchini . cucumber . avocado . brussel sprouts  
peas . green peppers . lima beans . okra . artichoke . green grapes

# green

BONES + TEETH

## NUTRIENTS

**calcium**, potassium, iron

## WHAT THEY DO

*calcium* aids in forming hard bone tissue, and is absorbed more effectively if consumed along side vitamin D.

## HOW IT HELPS

Consider how your bones interact with your muscles. With strengthened bone, your performance on and off the water can only be maximized. Calcium is essential for injury prevention.



plum . purple grapes . eggplant . blueberries . blackberries . raisins  
purple cabbage . purple potatoes

# purple

MOTOR  
FUNCTION

## NUTRIENTS

vitamin A, vitamin C

## WHAT THEY DO

*vitamin A* is important for improved motor function as well as improved vision, bone growth, and healthy cell division.

*vitamin C* helps enhance the collagen that provides strong tissue for blood vessels.

## HOW IT HELPS

Cell division strengthens your muscles during training. With vitamin A working to improve your immune system, more white blood cells are readily available to destroy harmful bacteria that could hinder a long, healthy season.



pears . bananas . onions . cauliflower . jicama . white carrots . potatoes

# white

DIGESTIVE FUNCTION

## NUTRIENTS

iron, fiber

## WHAT THEY DO

*iron* is imperative for oxygen delivery to your muscles.

*vitamin C* softens your intestinal tract, making digestion easier, and improving gastrointestinal health.

## HOW IT HELPS

White fruits and vegetables are easy to digest and therefore calm your stomach. Easy, proper digestion ensures that all of the nutrients are available for either practice or race day.



milk . cheese . yogurt . sour cream . cottage cheese . butter

# dairy

CELLULAR FUNCTION

## NUTRIENTS

calcium, often enriched with Vitamin D

## WHAT THEY DO

*dairy products* increase the amount of saturated fat you consume; however, calcium lowers the risk of colon cancer and osteoporosis. It is important to receive non-dairy sources of calcium (such as greens) to strengthen your bones.

## HOW IT HELPS

Having the strongest, most dense bones during your peak rowing years (either in college or throughout your twenties) will lower your risk for osteoporosis. Rowing places stress on your bones, and over time the cells within your bones will detect the stress and make your bones stronger with the aid of calcium.



pasta . rice . wheat . bread . grains . cereal . oats

# carbohydrates

BLOOD GLUCOSE

## NUTRIENTS

sugars: simple + complex

## WHAT THEY DO

*carbohydrates* are converted into sugar molecules to be used as glucose/ fuel for energy.

*\* varies according to the glycemic index: how the body breaks down carbohydrates, through either a fast response for immediate use for energy or slow response for later use.*

## HOW IT HELPS

Carbohydrates regulate blood glucose levels. Without sugar, your body is incapable of providing rapid energy. Too much glucose can be detrimental to your body over time, but to an active rower carbohydrates give an extra boost. These can be used either in stored form, eaten the night before a large event, or immediately before activities.



fish . poultry . red meat . seafood . beans . tofu . eggs . nuts

# protein

MUSCLE GROWTH

## NUTRIENTS

amino acids (essential + non essential)

## WHAT THEY DO

*amino acids* promote collagen formation and healthy lubricated joints, lower blood pressure, and work with calcium to build stronger bones.

## HOW IT HELPS

Not only will you have quicker and more effective oxygen transport to your muscles and brain, but you will also have better immunity and the ability to fight off any sickness or infections that may inhibit your performance during the season.



water . sports drinks . juices

# hydration

ELECTROLYTES

## NUTRIENTS

electrolytes

## WHAT THEY DO

**hydration** through electrolytes (sports drinks) or water, replenishes your system after loss due to respiration, perspiration, and urination. Metabolism and normal body functions cannot occur without proper hydration.

*\*even 10% dehydration can hinder your splits by seconds.*

## HOW IT HELPS

Extra perspiration due to exercise causes more fluid loss than normal and your body requires constant replenishment. Water and electrolytes should be consumed before, during, and after all practices and events, regardless of the outside temperature.



# ON + OFF THE WATER

*\* All practices are assumed to be in the morning. If your practice is at a later time, modify food choices accordingly.*



# PRACTICE

As a rower, what is you eat is always important, but when and how much you eat is even more critical for maintaining a high level of physical activity. When rowing long distances, you need a different balance of nutrients than you need when rowing short and more power oriented distances. In this section, we break down what foods you need, when you need them, and why.



# ENDURANCE

## WHEN

night before

## WHAT

*carbohydrates* (whole wheat pasta)  
*protein* (chicken, tofu, nuts)

## WHY

Eating carbohydrates and protein will store energy, and build muscle.

30 min. before

*fruit* (apple, banana)  
*hydrate* (at LEAST 1 glass of water)

Make sure you avoid getting too tired during a long, steady state practice. You need to replenish water loss during sleep and begin your metabolism for the day.

within 1 hour after

*carbohydrates* (whole wheat bagel, english muffin)  
*protein* (eggs, cottage cheese, meat, fish, tofu)  
*fat* (chocolate milk)

The “power hour” or hour after exercise is the most vital for optimal nutrient absorption. It is when your muscles and cells store nutrients most effectively.



# STRENGTH

## WHEN

night before

30 min. before

within 1 hour after

## WHAT

similar to the endurance plan, but consume less if the strength training involves high power (pressure) / low volume (# of pieces)

*carbohydrates* (fruit or a granola bar)

*carbohydrates* (whole wheat bagel, english muffin)  
*protein* (eggs, cottage cheese, meat, fish, tofu)  
*fat* (chocolate milk)

## WHY

Protein storage is vital for pieces because it improves muscle strength.

During power pieces you need quick, expendable energy.

Muscles tear and breakdown during strength pieces, similar to lifting weights, and require protein to rebuild stronger fibers.



# OFF DAY

An off day is a day you look forward to, to relax those muscles and relax your mind. Eating properly, sleeping well, and hydrating on an off day is equally as important as on a practice or race day. Make an effort to keep your habits consistent, to maintain those protein and carbohydrate stores. Remember, you did not work out this day, and therefore should reduce calorie intake. Don't let your 'after practice' eyes lead your 'off day' stomach.



# RACE DAY

You've worked all week for this race. Your coach and your teammates are all counting on you. You want to do everything in your control to have maximum power output and to have a technically perfect race. Eating, sleeping and hydrating are key ingredients in making or breaking your performance on race day. Eating effectively, getting another hour of sleep, and drinking one more glass of water could be the difference between your bow ball or the other team's at the finish line.

Here we provide two different race day strategies for what you should do before, between, and after races. The first is for one race, and the second is for two or more races.



# ONE RACE

## WHEN

afternoon before  
(if practicing)

night before

1 hour before race

within 1 hour after

## WHAT

trail mix (nuts, dried fruit) before practice,  
and a power bar after practice

a salad with chicken, whole wheat pasta

yogurt, whole wheat bread, oatmeal, cottage  
cheese, fruit, hydrate

whole wheat bread, peanut butter, fruit,  
sandwich (turkey + cheese)

## WHY

To refuel after practice, eat within the “power hour”.

If racing early in the morning, eat a light dinner that still replenishes energy stores for the next day.

Eating a solid breakfast provides energy for the entire race.

Similar to practice, the hour after any physical activity is the best time to fuel the body with essential nutrients.



# TWO RACES

## WHEN

night before

1 hour before race

within 1 hour after

before second race

## WHAT

a salad, whole wheat pasta, whole wheat bread, meat or tofu, vegetables

consider eating the same breakfast as if you had one race, hydrate

whole wheat bread, peanut butter, energy bar, nuts, sports drink (electrolytes), water

avoid excess sugar.  
consider fruit, trail mix, peanut butter on whole wheat bread, and hydrate

## WHY

It is important to have a dinner with carbohydrates, protein, and fat, for all types of energy throughout the following day.

Eating a solid breakfast provides energy for the entire race day.

You need recovery foods to ensure that energy is restored for the next race.

You need to maintain your metabolism to ensure the presence of fuel for the next race.



# TIPS

- \* If you are thirsty, you have been dehydrated for two hours. HYDRATE!
- \* Like missing water, 10% dehydration can make a difference of added *seconds* to your split.
- \* The rest you get two nights before an event is what will effect your performance in the long run.
- \* Mental health is just as important as physical health. Take a few minutes out of your day to do positive mental imagery and relax. You will become more centered, in-the-zone, and calm while rowing.
- \* Eating frequent, smaller meals maintains a better metabolism than fewer, larger meals. Snack throughout the day. Bring a piece of fruit, granola bar, or some mixed nuts and raisins with you to class. Not only will it help your metabolism, but it will keep you more alert all day.
- \* Chocolate milk is one of the best recovery drinks for after exercise. Not only does it contain proteins and calcium to rebuild muscles, but it has sugars that give your body a quick boost of energy.



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