

What's Really Important?

- Nutrition
- Sleep
- Hydration

Nutrition: The Last Frontier?

- A real need for us to re-establish our priorities
- Must “fuel the machine”

Identify reliable sources

- www.johnberardi.com
- www.thomasincledon.com
- www.joseantonioiophd.com
- www.nancyclardrd.com
- www.annlittrd.com
- www.collegeeatingguide.com
- <http://www.precisionnutrition.com/system.html>
- Peer-reviewed literature
- Scientifically based research

- What can you do as a college athlete to positively impact your nutrition the most?
- Learn how to eat a well rounded diet in a challenging setting
- Understand the science of nutrient timing

SUCCESS= ?

- Health
- Body Composition
- Establish lifelong change and good, **lasting habits**

- Performance

Nutrient Timing

- “The future of sports nutrition”- (Ivy and Portman, 2004)
- The understanding of *when*, rather than just *what*, athletes should consume *before, during, and after a training session to optimize their performance and recovery.*

Athletes not aware of the Science

- Most athletes not doing anything regarding pre/post workout nutrition
- This includes elite athletes, Olympians, pros
- most struggle with the basics

Never ass u me!!

- Many athletes assume because they look good, they are doing well with their nutrition
- they tend to stay lean due to high volumes of work
- But what about performance, potential, and biochemical reality?

REALITY

- THEY ARE SUCCEEDING DESPITE THEIR LACK OF ADDRESSING PERFORMANCE NUTRITION
- NO TELLING TO WHAT GREATER DEGREE THEY COULD BE PERFORMING.
- ESPECIALLY CONSIDERING INCR MUSCLE RECOVERY

Post exercise nutrition

- Post exercise nutrition is the foundation for optimal muscle recovery and performance
- Needs to be taken at the very cessation of exercise
- Carbs alone for glycogen repletion? A couple Gatorades, and you are good to go?

Don't forget the Protein

- A combination of protein and carbs are critical to aid in muscle repair
- Actually increased filling of glycogen stores by 22%

Study- John Berardi

- 1 hour exercise, recovery drink, 1 hour drink again, 1 hour meal, recover 6 hours re-perform----testing muscle glycogen, hormones, and other parameters
- ...recovery is about 4x greater with carb/protein combination.
- Also incr performance along with 22% incr in glycogen stores

Study- training cyclists

- Morning bout, recovery drink with protein and carbs, train again in the evening...

And only cycle 400-500 meters less.

Study- training cyclists

- The group with same number of calories, but only carbs and no protein, cycled 1500m less
- 3 fold performance difference. In a race, huge performance difference. 1 kilometer can be the diff between 1st place and 20th place

Practical Application

- 2:1 ratio of carbs to protein, .8 grams of carbs and .4 grams of proteins/kg of body wt
- i.e., approx 2- 20 oz bottles of Gatorade and 1 ½ scoop of whey protein for 200lb athlete.

Whole food equally effective?

- Liquid form is far superior
- Whey is milk protein without the lactose, Gatorade or maltodextrin is just sugar.
- Travel time to the muscle:
 - liquid drink 15 min,
 - solid food 1 hour or more
- Most people are not likely to eat a lot after a workout, drinks much easier to get down. Also very convenient.

TRAIN BOSTON IMPROVE POWER TO WEIGHT RATIO:

- Before workout only fats and proteins (veggies ok but stay away from carbs)
- Workout at noon, recovery drink(s) immediately after, next 6 hours take in your carbs for the day,
- 7pm on, back to proteins and fats

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TRAIN BOSTON What about before and during training sessions?

- Surveyed 30 NHL draft picks
- Question: “how many of you drink a sports drink during practices, training sessions, and games?” (i.e. Gatorade, Surge, Cytofuse, Endurox, etc)
- 2 out of 30 answered yes (7%).
- Only 12 of the 30 said they consumed water (40%)!!

-J.Berardi, 2006

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TRAIN BOSTON Benefits of Drinking a Carbohydrate Drink During Training

- Improved aerobic and anaerobic endurance during training, practices, and games
- Decreased stress response to training, practices, and games
- Improved immune function post training and competition
- Decreased acute phase inflammatory damage after training, practices, and games
- Improved whole body re-hydration
- Improved muscle and liver glycogen resynthesis
- Translated: **athletes who have better staying power, better hydration, less likelihood of overtraining, fewer colds, and more overall energy**

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TRAIN BOSTON Carbs are good, Carbs and Protein are Better!!!

- Increased muscle protein synthesis
- Better and faster recovery from endurance, strength, & interval training
- Reduced muscle soreness and perception of fatigue
- Decreased muscle protein breakdown
- Further enhanced glycogen re-synthesis vs. carbs alone
- Increased use of fat for energy at rest as well as during training and competition
- Translated: **athletes with more muscle strength, less body fat, an even stronger immune system, and the ability to train at higher intensities, more frequently**

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TRAIN BOSTON Hockey Specific Study- ACSM conference
2004

- Demonstrated that liquid protein/carb drinks taken during practice can acutely produce the following results:
- **Decreased reaction time for goal tenders**
- **Increased skating speed during timed shift-simulation exercises**
- **Increased shot and scoring accuracy**

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TRAIN BOSTON Knowledge in the hands of those who need it most?

- This study is more than 2 yrs old and yet it has not been successfully communicated to the population that can directly benefit from it the most!!
- Similar studies have shown measurable benefits for: Endurance cyclists, endurance runners, tri-athletes, weight lifters, alpine skiers, and Marine recruits during basic training

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TRAIN BOSTON Obvious question...

- Athletes: What are you drinking during and after training?
- Coaches: What are your athletes drinking during and after training?
- If the answer is either water only,
or
water plus carbs only,
- how long is it going to take you before you realize the addition of protein to your traditional carb drink can absolutely supercharge performance while improving recovery and training adaptation curves? -Berardi

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TRAIN BOSTON Workout Drink Prescription

- As a baseline, start by ingesting 30g carbs and 15 g protein (in 500ml of H2O) per hour of training
- Then once the workout is done, you will have a whole food meal within an hour or two of training. -Berardi

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Workout Drink Prescription Customization

- If you are an ectomorph, following the workout add another drink of 30g/15g with a whole food meal to follow an hour or two later.
- If you need still more recovery power and total dietary energy, add an additional 15g of carbs per training hour (45g/15g). -Berardi

Workout Drink Prescription Customization

- If you are an endomorph, halve the above prescription. So you will ingest 30g/15g for 2 hours of training, or 15g/7.5g per hour.
- You would also add branch chain amino acids (BCAAs) into your workout drink at the rate of 5g per hour of training. Result: 15g carb/7.5g protein/5g BCAAs for every hour of training -Berardi

*Cytofuse (Blackstar Labs)

- Serving Size: 2 Scoops
Servings Per Container: 12

Amount Per Serving:

Calories 297
Calories from Fat 5
Total Fat 0.5g
Saturated Fat 0g
Cholesterol 0mg
Total Carbohydrate 52g
Dietary Fiber 0g
Sugars 20g
Protein 21g

To meet Dr. Berardi's Prescription (30g carbs 15g protein per 1 hour) 1 1/3 scoops/.5 liters per hour, OR 2 2/3 scoops/liter for 2 hour practice

*Product is NCAA compliant

Surge (Biotest)

Serving size: 3 level scoops (93g)
Servings per Container: 1.488kg tub (16 x 93g servings)

Ingredients	Amount per serving (93g)	% Daily Values*
Calories	430 kcal	
Calories from Fat	25 kcal	
Total Fat	2.5 g	4%*
of which saturated fat	1.5 g	8%*
of which trans fat	0 g	
Cholesterol	75 mg	25%*
Total Carbohydrates	46 g	15%*
of which sugars	42 g	†
Protein	25 g	50%*

To meet Dr. Berardi's Prescription (30g carbs 15g protein per 1 hour) 2 scoops/.5 liters per hour, OR 4 scoops/liter For 2 hour practice

Homemade drink

- 1- 20oz bottle of Gatorade
- 35g carbs
- 0 protein

- Whey Protein Powder
- 1 scoop approx
- 22g of protein

To meet Dr. Berardi's Prescription (30g carbs 15g protein per 1 hour) 2/3 scoops/bottle/hour, OR 1 1/3 scoops/2 bottles for 2 hour practice

"Feeding the Machine"

- Of course, all of these strategies work best as part of an all-around good nutritional plan. So don't take these suggestions in isolation and think they are going to revolutionize your recovery. Sure, they will improve upon the existing situation, but you need to make sure you are feeding well during the 20+ hours of the day.

Clinical evidence as well as Scientific Studies

- Canadian National Cross Country Ski Team (Cross Country Canada)
- Canadian National Alpine Ski Team (Alpine Canada)
- Canadian National Canoe/Kayak Team (Canoe/Kayak Canada)
- Canadian National Bobsled/Skeleton Team (Bobsled Canada Skeleton)
- Spike Professional Racing Team (USA Track Cycling)
- Toronto Maple Leafs
- University of Texas
- Canadian National Speed Skating Team (Speed Skating Canada)
- As well as a host of individual high performance athletes in the NHL, NFL, CFL, and more.

Dr John Berardi

Dr. John Berardi's Ten Habits of Ultimate Nutrition

1. feed every 2-3 hours- body expects feeding, increases metabolism
2. Ingest complete lean protein with each feeding
3. Ingest vegetables with each feeding
4. Eat veggies and fruits at any meal and "other" carbs mostly after exercise
5. Eat healthy fats daily. Monounsaturated-olive oil/mixed nuts and Polyunsaturated- fish oil and flax seed, OMEGA 3'S
6. Most calorie containing drinks (aside from workout nutrition) should be eliminated. Ideally, water and green tea only.
7. Eat whole foods instead of supplements whenever possible. Whole and unprocessed. Phytonutrients
8. Plan ahead and prepare meals in advance
9. Eat as wide a variety of foods as possible
10. Plan to break the rules 10% of the time

Emphasize Food not Calories: Proteins

- Lean complete proteins
- Eaten with each feeding opportunity
- Lean meats (ground beef, chicken, turkey, etc), Fish (Salmon, Tuna, etc), Eggs (egg whites), Low Fat Dairy (cottage cheese, yogurt), Milk Protein Supplements (Whey, Casein, Milk Protein Blends [Biotest Grow, Cytosport Muscle Milk, Met-rx Protein Plus])

Emphasize Food not Calories: Carbs

- SIMPLE SUGARS: only during and after exercise, if at all
 - Soda, fruit juice, table sugar, sports drinks, breakfast cereal, etc
- STARCHY CARBS: mostly after exercise
 - Bread, pasta, rice, potatoes, oats, cereal grains (wheat, rye, etc)
- FRUITS AND VEGETABLES: with each meal
 - Spinach, carrots, tomatoes, broccoli, cauliflower, apples, oranges, avocados, berries, etc

Emphasize Food not Calories: Fats

- SATURATED FATS: about 30% of fat intake
 - Animal fat (fat in eggs, dairy, meats, butter, etc), coconut oil, palm oil, etc
- MONOUNSATURATED FATS: about 30% of fat intake
 - Olive oil, nuts, avocado, etc
- POLYUNSATURATED FATS: about 30% of fat intake
 - Vegetable fats, flax seeds/oil, fish oil, etc

Protein Ideas

- | | |
|---|---|
| <ul style="list-style-type: none"> • <u>SEEK</u> • Fish: Salmon, Tuna, Cod • Eggs • Chicken breasts • Cottage cheese • Milk protein isolates • Whey-casein blends • Lean Red Meat | <ul style="list-style-type: none"> • <u>AVOID</u> • Fatty dairy • Most lunch meat • Large amounts of milk • Large amounts of soy |
|---|---|

Carb Ideas

- SEEK
- Vegetables
- Mixed beans
- Low-GI fruits
- Oatmeal/Oat bran
- Mixed-grain bread
- Small amounts of protein-enriched pasta
- AVOID
- Regular bread
- Added sugar
- Most cereals
- Soda
- Fruit juice
- Bagels
- Fruit bars
- Candy

Fat Ideas

- SEEK
- Flax oil
- EPA/DHA
- Olive oil
- Mixed nuts (no peanuts)
- Fish oil
- AVOID
- Margarine
- Vegetable oil
- Corn oil
- Heated/fried oil

SUPER SHAKE: woman, small male

- Water/green tea, 1 cup
- Protein, 1scoop
- Greens plus, ½ serving. Has been shown to increase blood levels of antioxidants, to improve acid base status, and to improve other markers of health.
- Berries, ¼ - ½ cup
- Flax seeds, meal, 1-2 tblsp
- Mixed nuts, blended, 1-2 tblsp
- On the side, fish oil caps, 2
 - Double or triple above for larger person

Dr. John Berardi's Ten Habits Cheat Sheet

1. **When did you eat last?** Longer than 2 hrs? Feed immediately.
2. **Where is the complete protein?** Are you about to eat 1 serving of complete protein? If not, find some. (one serving is 20-30g for women, 40-60 for men).
3. **Where are the veggies?** Are you about to eat 1-2 servings of vegetables? Prep any way you like but eat them with every feeding opportunity. (One serving is approx ½ cup of veggies).
4. **Where are the carbs?** If you haven't just worked out, put down the pasta, bread, rice, and other starchy carbs in favor of a double serving of fruits and veggies. If you have just worked out, a mix of carb sources is fine.
5. **Where are your fats coming from?** Today you need fats from animal foods, from olive oil, from mixed nuts, and from flaxseeds/flaxseed oil. Spread them throughout the day.
6. **Did you take your fish oil yet?** Make sure you don't miss taking a capsule or two with each feeding opportunity.
7. **Are you drinking water or green tea?** Avoid calorie-containing drinks except for training nutrition and super shakes.
8. **Are you breaking the 10% rule?** Are you breaking any of the rules above? If so, count this feeding as one of your 10% and get back on track with your next meal.

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21 Super Foods

- Lean red meat (93% lean, top round, sirloin)
- Salmon
- Omega 3 eggs
- Low fat, plain yogurt (lactose free if you can find it)
- Protein supplements (milk protein isolates, whey protein, or rice protein isolates)
- Spinach
- Tomatoes
- Cruciferous veggies (broccoli, cabbage, cauliflower)
- Mixed berries
- Oranges
- Mixed beans
- Quinoa
- Whole Oats
- Mixed Nuts
- Avocados
- Extra Virgin Olive Oil
- Fish Oil
- Flax Seeds (ground)
- Green Tea
- Liquid Exercise Drinks (quickly digested carb and protein)
- Greens+ (vegetable concentrate supplement)

Berardi, 2005

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14 Diet Guide

Meal	Foods Habitually Eaten	10 Habit Compatibility?
Breakfast	Bowl of cereal (with milk) Orange Juice Coffee, cream and sugar	Very low 10 Habit compatibility. Why? 1 - Too low in protein 2 - No vegetables 3 - Other carbs ingested without prior workout 4 - No good fats added 5 - No fish oil 6 - 2 calorie containing drinks
Snack	Bagel with cream cheese Coffee, cream and sugar	Very low 10 Habit compatibility. Why? 1 - Too low in protein 2 - No vegetables 3 - Other carbs ingested without prior workout 4 - No good fats added 5 - No fish oil 6 - 1 Calorie containing drink
Lunch	Sandwich with 2 slices wheat bread and tuna salad. Cup of soup. Diet Soda.	Moderate/poor 10 Habit compatibility. Why? 1 - Vegetable intake too low 2 - Other carbs ingested without prior workout 3 - No good fats added 4 - No fish oil
Snack	Handful of mixed nuts or candy at the office. Pepsi.	Very low 10 Habit compatibility. Why? 1 - Too low in protein 2 - No vegetables 3 - Other carbs ingested without prior workout 4 - No fish oil 5 - 1 Calorie containing drink
Exercise		
Dinner	Steak, mashed potatoes, asparagus. Glass of wine.	Good 10 Habit compatibility. Yet... 1 - No good fats added 2 - No fish oil 3 - 1 Calorie containing drink
Snack	Small bowl of ice cream. Hot tea.	Very low 10 Habit compatibility. Why? 1 - Too low in protein 2 - No vegetables 3 - Other carbs ingested without prior workout 4 - No good fats added 5 - No fish oil

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TRAIN BOSTON

16 Diet Guide

Meal	Foods Habitually Eaten	Alternative Meal Based on 10 Habits
Breakfast	Bowl of cereal (with milk) Orange Juice Coffee, cream and sugar	4 egg whites, 1 omega 3 egg omelet with 1/2 slice cheese, green peppers, onions, tomatoes, and avocado 1 fruit (e.g. one apple, orange, banana, etc.) Green tea and fish oil capsules (see Gourmet Nutrition)
Snack	Bagel with cream cheese Coffee, cream and sugar	Berry Super Shake (see Super Shake Guide)
Lunch	Sandwich with 2 slices wheat bread and tuna salad. Cup of soup. Diet Soda.	Tenaki Lettuce Wraps (see Gourmet Nutrition) Fruit salad Green tea and fish oil capsules
Snack	Handful of mixed nuts or candy at the office. Pepsi.	1 Mixed Nut Bar (see Gourmet Nutrition)
Exercise - Ingest Recovery Drink (see Gourmet Nutrition)		
Dinner	Steak, mashed potatoes, asparagus. Glass of wine.	Lean red meat, mashed garlic cauliflower, large spinach salad with olive oil dressing (see Gourmet Nutrition). Glass of water with lemon.
Snack	Small bowl of ice cream. Hot tea.	Apricot Yogurt Shake (see Gourmet Nutrition) Fish oil capsules

Do you see how easy it is to create your own meal plan? As long as you build each of your meals and snacks with the following, you're on the right track:

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The Superfood Weekly Checklist

Superfood	Sub-Category	1	2	3	4	5
Protein Foods						
Lean Red Meat (93% lean, top round, sirloin)	Protein - Lean Meat					
Salmon	Protein - Fish					
Omega 3 Eggs	Protein - Dairy					
Low Fat, Plain Yogurt (lactose free if you can find it)	Protein - Dairy					
Supplemental Protein (milk protein isolates, whey protein isolates, or rice protein isolates)	Protein - Powder					
Carbohydrate Foods						
Spinach	Carb - Vegetable					
Tomatoes	Carb - Vegetable					
Cruciferous Vegetables (broccoli, cauliflower, cauliflower)	Carb - Vegetable					
Mixed Berries (strawberries, blueberries, raspberries, etc)	Carb - Fruit					
Oranges	Carb - Fruit					
Mixed Beans (kidney, navy, etc)	Carb - Legume					
Quinoa (not grain)	Carb - Grain					
Whole Oats (large flake)	Carb - Cereal					
Fat Foods						
Mixed Nuts (a variety of different types of nuts including pecans, walnuts, almonds, seed nuts, etc)	Fat - Seeds and Nuts					
Avocados	Fat - Fruit					
Olive Oil (extra virgin)	Fat - Oils					
Fish Oil (salmon, anchovy, mackerel)	Fat - Oils					
Flax Seeds (ground)	Fat - Seeds and Nuts					
Liquid Drinks						
Green Tea	Teas					
Liquid Exercise Drinks (quickly digested carbohydrate and protein)	Recovery Drinks					

If your goal is to lose fat, eat around 3-4 servings of eat food every week. If your goal is to increase muscle mass or fuel high intensity training, eat 4-5 servings of each food every week.

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Progression of Nutrition Priorities

1. **Eat smaller meals more frequently. Every 2-3 hours.** Portions tend to self regulate. Week 1
2. **Make better food choices.** Now that you are eating regularly, concentrate on your selections. Week 2
3. **Pay attention to portion size and regulate based on weekly goals.** Week 3 → (individualization section in Precision Nutrition)

Precision Nutrition Link

- <http://www.precisionnutrition.com/system.html>
- www.johnberardi.com

Cafeterias- Take home snacks

- Proteins: hard boiled eggs (eat only half the yolks), skim milk, scrambled eggs (careful, the fat adds up fast), hamburgers (pat off the grease), baked fish (again, watch the grease, chances are it wasn't really baked), chicken breasts (rare in this pre-processed, cheese covered world), sliced turkey breast, tuna (preferably without the mayo), American cheese, yogurt...peanut butter, mozzarella or string cheese, tuna, beef jerky, and good quality soup. There are new hummus packs from a company called wild garden...excellent also.
- Carbs: rye bread, rice, baked potatoes, yams, carrots, fruit, beans, and pasta
- Fats: Mixed nuts (if no options, peanuts are ok), sunflower seeds, olive oil, natural peanut butter...go easy on fats. Chances are you will be exposed to an inordinate amount of fat already in your cafeteria diet.

Sleep

- Of course your schedule may not allow for an uninterrupted 8 hours of sleep every night, but the bare minimum should be 6 hours.
- If you find you can only manage 6 hours per night, build a short nap into your schedule mid-day.
- The body does the bulk of its repair at night.
- Human growth hormones are effected by poor sleep patterns.
- Sleep deprivation takes its toll on mental function. After pulling one all-nighter, your motor skills and memory are just as impaired as if you have had a few drinks.

- Impact health, body comp, and performance by establishing positive life long habits
- Nutrient timing: before, during, after
 - Minimum: water
 - Water and carbs, better
 - Water, carbs, protein, best
- Food selection: it's all about the food, not the calories
- 10 good habits of eating
- Know the Superfoods and expand on them

- www.johnberardi.com and www.precisionnutrition.com
- www.thomasincledon.com
- www.joseantoniophd.com
- www.nancyclardrd.com
- www.annlittrd.com
- www.collegeeatingguide.com

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