PUREPERFORMANCE TRAINING

What's Really Important?

- Nutrition
- Sleep
- Hydration

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Nutrition: The Last Frontier?

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

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Identify reliable sources

- www.johnberardi.com
- www.thomasincledon.com
- www.joseantoniophd.com
- www.nancyclardrd.com
- www.annlittrd.com
- www.collegeeatingguide.com
- http://www.precisionnutrition.com/system.html

- Peer-reviewed literature
- Scientifically based research

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- 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

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SUCCESS= ?

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

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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.*

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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

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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?

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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

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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?

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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%

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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

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Study- training cyclists

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

And only cycle 400-500 meters less.

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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

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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.

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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.

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What about before and during training

- 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, Accelerade,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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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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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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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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Knowledge in the hands of those who need it most?

- This study is more that 6 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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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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Workout Drink Prescription

- As a baseline, start by ingesting 30g carbs and 15 g protein (in 500ml of H_2O) 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

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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

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Supplement Facts
Serving Size: 1 Scoop
Servings per Container: 60

	Amount Per Serving	% Daily Value
Calories	120	*
Calories from Fat	10	*
Total Fat	1 g	1%
Saturated Fat	0 g	0%
Trans Fat	0 g	*
Cholesterol	10 mg	3%
Sodium	190 mg	8%
Potassium	65 mg	2%
Total Carbohydrate	21 g	7%
Dietary Fiber	0 g	*
Sugars	20 g	*
Protein	5 g	*
Vitamin C		100%
Vitamin E		100%
Calcium		4%
Magnesium		30%

*Daily value not established.

Other Ingredients: Sucrose, whey protein concentrate, trehalose (Ascend™), citric acid, natural flavor, fructose, lecithin, magnesium carbonate, salt, maltodextrin, monopotassium phosphate, ascorbic acid, vitamin E acetate, FD&C yellow 5, FD&C yellow 6.
Contains milk and soy.
Manufactured in a facility that processes eggs, wheat, tree nuts, fish, crustaceans, and shellfish products.

Directions

Mix 1 scoop with 12 oz of cold water in a glass or water bottle. Use before, during, and after exercise.

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Description

Scientifically to Build Muscle and Burn Fat

- **Enhance Recovery**
- **Reduce Fatigue**
- **Decrease Soreness**
- **Sugar and Stimulant Free**

Xtend™ is a precise, scientific blend of Energy Aminos™ consisting of the proven 2:1:1 ratio of Branched Chain Amino Acids (L-Leucine, L-Isoleucine and L-Valine), Glutamine, Citrulline Malate, and Vitamin B6 that will give you the energy you need to maximize your training while enhancing recovery at the same time. The advanced components in Xtend have been scientifically proven to help:

- Speed Recovery
- Enhance ATP production and promote cell volumization.
- Reduce fatigue and lactic acid level for longer, more intense training.
- Support lean body mass along with immune and digestive health.
- Promote vasodilation which can lead to better assimilation and absorption of protein.
- Support optimal growth hormone levels.

Supplement Facts

Serving Size: 2 Scoops
Servings per Container: 30

	Amount Per Serving	% Daily Value
Vitamin B6	10 mg	500%
L-Leucine	3.5 g	*
L-Glutamine	2.5 g	*
L-Isoleucine	1.75 g	*
L-Valine	1.75 g	*
Citrulline Malate	1 g	*

*Daily value not established.

Other Ingredients: L-Leucine, L-Glutamine, L-Valine, L-Isoleucine, citrulline malate, natural and artificial flavors, citric acid, acesulfame potassium, sucralose, yellow #5 and red #40.

5oz

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Supplement Facts (Original)

Serving Size: 3 Level Scoops (93 g)
Servings Per Container: approximately 16

	Amount Per Serving	%DV*
Calories	340	
Calories from Fat	25	
Total Fat	2.5 g	4%*
Saturated Fat	1.5 g	8%*
Trans Fat	0 g	
Cholesterol	75 mg	25%*
Total Carbohydrate	46 g	15%*
Sugars	42 g	†
Protein	25 g	50%*
Calcium	180 mg	18%
Phosphorous	120 mg	12%
Magnesium	20 mg	5%
Sodium	200 mg	8%
Potassium	400 mg	11%
L-Leucine	4 g	†
DL-Phenylalanine	2 g	†

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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

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*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

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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

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"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.

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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

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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])

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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

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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

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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

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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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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.

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 (achieve total 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 - Vegetables					
Tomatoes	Carb - Vegetables					
Cruciferous Vegetables (Broccoli, Cabbage, Cauliflower)	Carb - Vegetables					
Mixed Berries (strawberries, blueberries, raspberries, etc)	Carb - Fruit					
Oranges	Carb - Fruit					
Mixed Beans (kidney, navy, white, etc)	Carb - Legume					
Quinoa (Ancient grains)	Carb - Grain					
Whole Oats (large flake)	Carb - Cereal					
Fat Foods						
Mixed Nuts (a variety of different types of nuts including pecans, walnuts, cashews, brazil 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					

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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)

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Precision Nutrition Link

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

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