

Pro-PCA Fuel

Sports Performance ~ Training Session Formula

Protein ~ Carbohydrate ~ Antioxidants

DESCRIPTION

Pro-PCA Fuel, provided by Douglas Laboratories®, is a revolutionary new sports nutraceutical formulation created to mitigate the health and performance damaging factors that result from vigorous exercise.

Pro-PCA Fuel is unique in the sports performance market because it is the first product that provides a dosage schedule for the nutrient fueling needs of three classes of athletes based on their physical size. In addition, it also targets nutrient fueling proactively by administering the dosage during the three distinct phases of the training cycle:

1. **Pre-Exercise** (nutrient loading).
2. **The Training Session** (continued nutrient fueling).
3. **Post Exercise Recovery** (critical for every athlete).

Pro-PCA Fuel contains a performance specific blend of high quality whey protein isolates and concentrate, high glycemic index carbohydrates (maltodextrin), and a rich supply of micronutrients that focus on the antioxidant factors needed to defend the athlete from the damaging effects of exercise. The formula also contains an acid buffering system to mitigate the destructive effects of acids formed during training.

Dr. Jeffery Skee, who designed this product exclusively for Douglas Laboratories, has presented evidence of eight damaging effects of vigorous exercise which he has termed “Exercise Induced Pathology (EIP),” a new sports performance disease. EIP includes the following factors:

1. **Free radicals** (destructive to all tissues in the body).
2. **Acids** (Disrupt the energy chain and directly damage tissue).
3. **Ammonia** (Headaches, blurred vision and cellular damage).
4. **Inflammation** (CRP—one chemical marker for heart disease).
5. **Thermogenics** (Heat kills athletic performance).
6. **Direct cellular damage** (Hemolysis of muscle & blood cells).
7. **Hormonal disruption** (Catabolic hormones liquefy muscles).
8. **Chemical toxicity** (Increased free radical damage, particularly to the heart).

FUNCTIONS

Recent studies in the sports medicine literature have demonstrated the significant health and performance value of using various combinations of protein, carbohydrate and antioxidants (PCA) after exercise. These nutrient fuels work synergistically to mitigate the damaging effects of vigorous exercise while promoting improvements in exercise capacity and endurance, while limiting immune system suppression. PCA nutrient fueling also reduces the collective impact of Exercise Induced Pathology, which contributes to the expression of chronic degenerative diseases which increasingly impact athletes regardless of their size, age, gender or performance ability.

In one recent study that used PCA nutrient fueling after exercise, the athletes in the PCA group had a reduction in free radical damage of 69 percent at 24 hours post exercise. This study also showed that creatine phosphokinase (CPK), which is another important biochemical marker for exercise induced muscle damage, was reduced by 36 percent. Since serious athletes train four or more days per week, these significant reductions in free radical and CPK damage will translate into improved performance and better overall health for every athlete.

In another study measuring anabolic muscle growth, the athletes were given either a protein and carbohydrate supplement immediately after exercise or three hours after a training session. The group who received the supplement immediately after exercise had a 225 percent increase in protein synthesis, and a 375 percent increase in net protein balance. By contrast, the group who received the supplement three hours after exercise had a 20 percent loss of protein synthesis.

One critically important point regarding these studies is the fact that they focus on post exercise as the point of nutrient intervention to improve athletic performance. The protocol for **Pro-PCA Fuel** has been designed from a more medically responsible perspective by providing high level PCA nutrient fueling during the three phases of the training cycle; **(1) Pre-Exercise, (2) The Training Session, and (3) Post Exercise Recovery.**

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Using this pro-active strategy in the **Pro-PCA Fuel** protocol will maximize multi-dimensional health and performance benefits for every serious athlete, which include the following:

1. Reduces free radical damage to muscles and other tissue.
2. Dilutes acids that form during exercise.
3. Restores glycogen and electrolytes.
4. Reduces the production of ammonia.
5. Stimulates the anabolic hormone insulin.
6. Increases protein synthesis during training.
7. Limits catabolic hormone production.
8. Prevents damage to the immune system.
9. Improves hydration which helps manage thermogenics.
10. Increases antioxidant reserves which has a positive impact on both inflammation and chemical toxicity.

Professional, Olympic and collegiate athletes have been actively looking for ways to improve their sports performance for decades. **Pro-PCA Fuel** is designed to address these important issues which will allow each athlete to optimize their health and performance safely through the productive research in Clinical Nutrition that has emerged over the last 35 years.

Since every athlete is unique in terms of their training schedule and nutritional adaptation responses, it may be necessary to adjust the dosage of **Pro-PCA Fuel** to meet these individual needs (Please refer to the **Suggested Usage** panel on the next page). The following examples will help every athlete adjust the timing of **Pro-PCA Fuel**, and the focus here is on the **Pre-Exercise** drink:

Example 1: If an athlete has a training session scheduled and their exercise routine begins with abdominal and low back sets (stomach crunches and back exercises where the stomach is compressed to perform back raises), it is advisable to have the **Pre-Exercise** drink 30 minutes or more before the training session begins to prevent stomach discomfort. This will also prevent regurgitation of the **Pre-Exercise** drink that may leave an after-taste. Self experimentation is necessary to determine each athlete's unique timing of the **Pre-Exercise** drink.

Example 2: If the scheduled exercise is a distance run where the athlete will not have the **Training Session** drink available to them, it is advisable to increase the **Pre-Exercise** dosage of **Pro-PCA Fuel** by 50 percent and drink it 30 minutes before exercise. This strategy will maximize nutrient loading for the run while providing higher levels of PCA reserves. Nutrient fueling during the three phases of training is one of the most powerful strategies science has proven over the last decade. **This is real winning edge technology; use it every time you engage in strength training, aerobic exercise or skills training!**

FORMULA

#57179P (Natural Chocolate Flavor),

#57180P (Natural Raspberry Flavor)

Serving Size: 1 scoop (33.3 grams)

Servings Per Container: 30

Amount Per Serving	
Calories	115
Total Carbohydrates	21 g
Sugars	5 g
Protein	8 g
Each Serving also provides approximately:	
Vitamin A (from beta-carotene [1,200 IU] and vitamin A palmitate)	1,825 IU
Vitamin C	170 mg
Vitamin D	50 IU
Vitamin E	50 IU
Vitamin B-1 (Thiamine HCL)	12 mg
Vitamin B-2 (Riboflavin)	6 mg
Niacin/Niacinamide	23 mg
Vitamin B-6 (Pyridoxine HCL/Pyridoxal-5-Phosphate)	12 mg
Folic Acid	100 mcg
Vitamin B-12 (cyanocobalamin/methylcobalamin)	30 mcg
Biotin	37 mcg
Pantothenic Acid (from Calcium Pantothenate)	60 mg
Calcium (from Citrate/Carbonate)	60 mg
Iodine (Kelp)	25 mcg
Magnesium (from Aspartate complex)	60 mg
Zinc (Amino Acid Chelate)	3 mg
Selenium (Krebs)	25 mcg
Copper (Amino Acid Chelate)	250 mcg
Manganese (Sulfate)	1.25 mg
Chromium GTF	25 mcg
Molybdenum (Kerbs)	12.5 mcg
Potassium (from potassium phosphate)	95 mg
Vanadium (Krebs)	6.25 mcg
Choline (Choline bitartate/citrate)	18 mg
Inositol	12 mg
PABA	6 mg
Boron (Citrate)	190 mcg
Betain HCl	18 mg
Typical Amino Acid Profile:	
Glutamic Acid	3,565 mg
Aspartic acid	2,215 mg
Arginine	1,620 mg
Lysine	1,480 mg
Leucine	1,440 mg
Phenylalanine	990 mg
Serine	970 mg
Valine	940 mg
Alanine	850 mg
Glycine	830 mg
Isoleucine	830 mg
Proline	810 mg
Threonine	740 mg
Tyrosine	740 mg
Histidine	500 mg
Cysteine	220 mg
Methionine	200 mg
Tryptophan (naturally occurring)	180 mg
Other ingredients: Maltodextrin, whey (milk protein concentrate), fructose, whey (milk) protein isolate, natural flavor.	

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SUGGESTED USAGE

Pro-PCA Fuel is designed to be used during the **Three Phases of the Training Cycle** as indicated in the dosage table below.

Athlete Classification and Three Phase Plan

Class 1 Athletes: (Who weigh less than 170 pounds)

Phase 1: Pre Exercise

Mix 1 scoop in 8 to 10 ounces of filtered water.
Drink Pre-Exercise formula 15 to 30 minutes before exercise.

Phase 2: Training Session

Mix 1 scoop in 12 to 20 ounces of filtered water. Drink lightly during your training session. Fluids should equal your normal intake during training.

Phase 3: Post Exercise Recovery

Mix 1 scoop in 12 to 16 ounces of filtered water. Drink this immediately after training to maximize recovery benefits.

Class 2 Athletes: (Who weigh 170 to 240 pounds)

Phase 1: Pre Exercise

Mix 1.5 scoops in 8 to 10 ounces of filtered water.
Drink Pre-Exercise formula 15 to 30 minutes before exercise.

Phase 2: Training Session

Mix 1.5 scoops in 12 to 20 ounces of filtered water. Drink lightly during your training session. Fluids should equal your normal intake during training.

Phase 3: Post Exercise Recovery

Mix 1.5 scoops in 12 to 16 ounces of filtered water. Drink this immediately after training to maximize recovery benefits.

Class 3 Athletes: (Who weigh more than 240 pounds)

Phase 1: Pre Exercise

Mix 2 scoops in 8 to 10 ounces of filtered water.
Drink Pre-Exercise formula 15 to 30 minutes before exercise.

Phase 2: Training Session

Mix 2 scoops in 12 to 20 ounces of filtered water. Drink lightly during your training session. Fluids should equal your normal intake during training.

Phase 3: Post Exercise Recovery

Mix 2 scoops in 12 to 16 ounces of filtered water. Drink this immediately after training to maximize recovery benefits.

Pro-PCA Fuel is scientifically designed to be used during the training cycle, but is **Not Recommended** as a meal replacement formula because of its content of high glycemic carbohydrates which are required to achieve the performance objectives discussed in this **Product Data Sheet**.

REFERENCES

- Alessio HM, et al. Exercise-induced oxidative stress before and after vitamin C supplementation. *International Journal of Sports Nutrition*, 7: 1-9, 1997.
- Biolo G, Tipton KD, Klein S, et al. An abundant supply of amino acids enhances the metabolic effect of exercise on muscle protein. *American Journal of Physiology*, 273: E119-E122, 1997.
- Chandler RM, Byrne HK, Patterson JG, and Ivy JL. Dietary supplements affect the anabolic hormones after high resistance exercise. *Journal of Applied Physiology*, 75: 839-845, 1994.
- Colgan M, Fiedler S, Colgan L. Micronutrient status of endurance athletes affects hematology and performance. *Journal of Applied Nutrition*. 43: 16-30, 1991.
- Consolazio GF, et al. Protein metabolism during intensive physical training in the young adult. *American Journal of Clinical Nutrition*, 28: 29-35, 1975.
- Costill DL. Carbohydrate nutrition before, during and after exercise. *Federal Proceedings*; 44: 364-368, 1985.
- Dekkers JC, et al. The role of antioxidant vitamins and enzymes in the prevention of exercise-induced muscle damage. *Sports Medicine*, 21: 213-238, 1996.
- Esmarck B, Andersen JL, Olsen S, et al. Timing of post exercise protein intake is important for muscle hypertrophy with resistance training in elderly humans. *Journal of Physiology*, 535: 301-311, 2001.
- Evans WJ, et al. Protein metabolism during exercise. *Physician and Sports Medicine*, 11: 63, 1983.
- Felig P, Wahren J. Amino acid metabolism in exercising man. *Journal of Clinical Investigation*, 50: 2703, 1971.
- Friedman JE, Lemon PWR. Effect of chronic endurance exercise on retention of dietary protein. *International Journal of Sports Medicine*, 10: 1180-1183, 1989. *Journal of Applied Sports Science Research*, 6: 66-76, 2002.
- Gater DR, Gater DA, Uribe JM, et al. Impact of nutritional supplements and resistance training on body composition, strength and insulin-like growth factor-1. *Journal of Applied Sports Science Research*, 6: 66-76, 1992.
- Gleeson M, Blanning AK, Walsh NP, et al. Effect of low and high carbohydrate diets on the plasma glutamine and circulating leukocyte responses to exercise. *International Journal of Sports Medicine*, 22: 226-231, 2001.
- Gleeson M, Lancaster GI, Bishop NC. Nutritional strategies to minimize exercise-induced immunosuppression in athletes. *Canadian Journal of Applied Physiology*, 26 (suppl): S23-S35, 2001.
- Ivy J, Portman R. *Nutrient Timing: The Future of Sports Nutrition*. Basic Health Publications, Inc., North Bergen, NJ, 2004.
- Hurst TL, Bailey DM, Powell JR, et al. Immune function changes in downhill running subjects following ascorbic acid supplementation. *Medicine and Science in Sport and Exercise*, 33 (Suppl 5): S35, 2001.
- Lemon PW, Dolny DG, Yarasheski KE. Moderate physical activity can increase dietary protein needs. *Canadian Journal of Applied Physiology*, 22: 494-503, 1997.
- Levenhagen DK, Gresham JD, Carlson MG, et al. Post exercise nutrient intake timing in humans is critical to recovery of leg glucose and protein homeostasis. *American Journal of Endocrinology and Metabolism*, 280: E982-E993, 2001.
- Nissen SL, Sharp RL. Effect of dietary supplements on lean mass and strength gains with resistance exercise: a meta-analysis. *Journal of Applied Physiology*, 94: 651-659, 2003.
- Rasmussen BB, Tipton KD, Miller SL, et al. An oral essential amino acid-carbohydrate supplement enhances muscle protein anabolism after resistance exercise. *Journal of Applied Physiology*, 88: 396-392, 2000.
- Roy BD, Fowles JR, Hill R, et al. Macronutrient intake and whole body protein metabolism following resistance exercise. *Medicine and Science in Sports and Exercise*, 32: 1412-1418, 2000.
- Tarnopolsky MA, Bosman M, MacDonald JR, et al. Post exercise protein-carbohydrate and carbohydrate supplements increase muscle glycogen in men and women. *Journal of Applied Physiology*, 83: 1877-1883, 1997.

**These statements have not been evaluated by the Food and Drug Administration.
This product is not intended to diagnose, treat, cure, or prevent any disease.**

**Manufactured by
Douglas Laboratories**