

Fuel Your Fitness

A DIVE INTO SEAFOOD FOR SPORTS NUTRITION

Just like a car, the fuel you put into your body impacts the performance you get out of it. This statement is true for everyone, but especially for athletes who put added stress on their bodies and demand more fuel. All the evidence shows diet impacts training, performance, and recovery.

The International Society of Sports Nutrition lists fish as one of the best sources of high-quality protein for athletes.¹ Fish provides a host of nutrients, including lean protein, essential fats, vitamins and minerals, such as calcium, magnesium, zinc, iron, and vitamins A and D – each of which have been shown to be low in competitive athletes.^{2,3,4}

Including fish and seafood in your training regimen is a nutrient-dense, tasty, and calorie-efficient choice to fuel performance, endurance, and recovery.



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Magnesium, zinc, and omega-3s EPA and DHA play important roles in healthy nerve and muscle function, immune function, normal heart rhythm and blood pressure.^{4,5,6,7} The omega-3s found in fish perform highly unique functions in cells and cell membranes where they reside – helping to manage heart rate, circulation, metabolism, muscle contraction, nerve function, inflammation, body temperature, and more.^{8,9} Potassium is an important electrolyte that's necessary for proper muscle contraction and maintaining fluid balance in the body.

- **EPA and DHA omega-3s are beneficial for good circulation and heart rate.**¹⁰ Placebo-controlled trials have shown more efficient heart rate and utilization of oxygen among trained cyclists who consumed fish oil¹¹ and stronger cardiovascular function in professional football players.¹²
- **Improved lung function both during and after exercise** was reported in a study of young, healthy wrestlers who took 1 gram of EPA and DHA.¹³ And significant reductions in exercise-induced bronchoconstriction (EIB) have been shown in elite athletes and in those with asthma when they consumed high amounts of EPA and DHA fish oil.^{14,15}
- Studies report that 2 grams or more daily of EPA and DHA **reduce exercise-induced post-exercise muscle soreness and speed recovery.**^{7,16,17}
- **Better reaction time and decision making** was reported in female soccer players who consumed more DHA.¹⁸
- An estimated 1.6 to 3.8 million sports-related concussions occur per year in the United States.¹⁹ Evidence shows the protective benefits of DHA, which makes up about 10% to 15% of the total fat in the brain.²⁰ A study in American football players found 2 grams of **DHA protected brain health.**^{21,22}

TIPS TO UP YOUR SEAFOOD GAME

Eating protein throughout the day – not just at dinner – is the best way to help your muscles repair, recover and rebuild.

- For **breakfast**, add canned tuna, salmon or sardines to an omelet or frittata, or top eggs or toast with smoked salmon.
- Seafood has great **snacking** potential – pair fish jerky with fresh fruit, or open a single-serve container of flavored tuna.

BLACKENED WHITE FISH

Recipe by Chef Barton Seaver

Servings: 4
Prep Time: 20 minutes
Cook Time: 5 minutes
Total Time: 25 minutes

INGREDIENTS:

4-5 oz. Alaska pollock or other white fish fillets

Kosher salt

1 Tbsp. sweet or smoked sweet paprika

1 Tbsp. freshly cracked black pepper

1 tsp. onion powder

1 tsp. garlic powder or garlic salt

1 tsp. dried, crushed thyme or rosemary

Pinch of cayenne pepper

4 Tbsp. unsalted butter, melted

4 Tbsp. olive oil

1 cup loosely packed fresh herb leaves (such as parsley, mint, chervil)

Lemon wedges for serving



INSTRUCTIONS:

1. Lightly season fish with salt and let sit 20 minutes.
2. Meanwhile, mix all spices and dried herbs in a wide, flat bowl.
3. Heat a large cast iron skillet or heavy-bottomed sauté pan over high heat until it is screaming hot.
4. Combine butter and oil in a small bowl and dip each fillet so it barely glistens on all sides.
5. Dredge each fillet in the spice mix, coating them evenly.
6. Place coated fillets in the pan and drizzle about 1 teaspoon of the butter/oil mixture over each fillet. Cook fillets undisturbed for 2 minutes before turning them to cook for another 2-3 minutes. The spices will have formed a colorful crust ranging from sunset red to midnight black. The fish is done when it flakes apart under gentle pressure of your finger.
7. Transfer fillets to serving plates, scatter with fresh herbs and garnish with lemon wedges.

TIP Any white-flesh fish with relatively thin fillets like Acadia redfish, barramundi, catfish, perch, snapper, or tilapia would be perfect partners to the bold flavors of this blackened spice blend.

¹ Kerkick CM, et al. ISSN exercise & sports nutrition review update: research & recommendations. *J Int Soc Sports Nutr* 2018;15(1):38.

² Felder JM, et al. Nutritional practices of elite female surfers during training and competition. *Int J Sport Nutr* 1998;8(1):36-48.

³ Martin L, Lambeth A, Scott D. Nutritional practices of national female soccer players: analysis and recommendations. *J Sports Sci Med* 2006; 5(1):130-137.

⁴ Burkhart SJ, Pelly FE. Dietary Intake of Athletes Seeking Nutrition Advice at a Major International Competition. *Nutrients* 2016;8(10): E638.

⁵ Volpe SL. Magnesium and the Athlete. *Curr Sports Med Rep* 2015;14(4):279-283.

⁶ Ochi E, Tsuchiya Y. Eicosapentaenoic Acid (EPA) and Docosahexaenoic Acid (DHA) in Muscle Damage and Function. *Nutrients* 2018;10(5):pii:E552.

⁷ Sikora-Klak J, et al. The Effect of Abnormal Vitamin D Levels in Athletes. *Perm J* 2018;22:17-216.

⁸ Gammone MA, et al. Omega-3 Polyunsaturated Fatty Acids: Benefits and Endpoints in Sport. *Nutrients* 2018;11: doi: 10.3390/nu11010046.

⁹ Simopoulos AP. Omega-3 fatty acids and athletes. *Current Sports Medicine Reports* 2007;6:230-236.

¹⁰ Mozaffarian D, et al. Effect of fish oil on heart rate in humans. *Circulation* 2005;112:1945-1952.

¹¹ Peoples GE, et al. Fish oil reduces heart rate and oxygen consumption during exercise. *J Cardiovasc Pharmacol* 2008;52(6):540-547.

¹² Buckley JD, et al. Effects of omega-3 polyunsaturated fatty acids on cardiovascular risk, exercise performance and recovery in Australian Football League players. *Asia Pac J Clin Nutr* 2005;14:S57.

¹³ Tartibian B, Maleki BH, Abbasi A. The effects of omega-3 supplementation on pulmonary function of young wrestlers during intensive training. *J Science and Medicine in Sport* 2010;13:281-286.

¹⁴ Mickleborough TD, et al. Protective effect of fish oil supplementation on exercise-induced bronchoconstriction in asthma. *Chest* 2006;129(1):39-49.

¹⁵ Mickleborough TD, et al. Fish oil supplementation reduces severity of exercise-induced bronchoconstriction in elite athletes. *Am J Resp Clin Care Med* 2003;168:1181-1189.

¹⁶ Black KE, et al. Adding omega-3 fatty acids to a protein-based supplement during pre-season training results in reduced muscle soreness and the better maintenance of explosive power in professional Rugby Union players. *Eur J Sport Sci* 2018;9:1-11.

¹⁷ Corder KE, et al. Effects of Short-Term Docosahexaenoic Acid Supplementation on Markers of Inflammation after Eccentric Strength Exercise in Women. *J Sports Sci Med* 2016;15(1):176-183.

¹⁸ Guzman JF, Esteve H, et al. DHA-Rich Fish Oil Improves Complex Reaction Time in Female Elite Soccer Players. *J Sports Sci Med* 2011;10(2):301-305.

¹⁹ Hobbs JG, Young JS, Bailes JE. Sports-related concussions: diagnosis, complications, and current management strategies. *Neurosurg Focus* 2016;40(4):E5.

²⁰ Carver JD, Benford VJ, Han B, Cantor AB. The relationship between age and the fatty acid composition of cerebral cortex and erythrocytes in human subjects. *Brain Res Bull* 2001;56(2):79-85.

²¹ Oliver JM, et al. Effect of Docosahexaenoic Acid on a Biomarker of Head Trauma in American Football. *Med Sci Sports Exerc* 2016;48(6):974-982.

²² Oliver JM, et al. Serum Neurofilament Light in American Football Athletes over the Course of a Season. *J Neurotrauma* 2016;33(19):1784-1789.