



Q&A Almonds

Food for Fitness: A Look at How Almonds Fuel Sports and Performance Nutrition Products

When seeking out performance nutrition products, consumers have a healthy selection to choose from depending on their priorities. Now, there's even more of a reason to consider almonds when determining formulations in sports nutrition products given new landmark research conducted by a respected researcher in the exercise field. Because of their nutrient profile, almonds are the "food for fitness" that can meet consumer desires in sports nutrition products.

We spoke with Christine Farkas, CRC, R&D, culinary consultant, about all things sports and performance nutrition and consumer preferences to understand how formulating with almonds in their various forms can meet those needs. "Almonds and the variety of almond formats deliver clean labels, nutritious and appealing sensory experiences," says Farkas. "I'm happy to have almonds in my ingredient library and development toolkit!"



with
CHRISTINE FARKAS
CRC, R&D, culinary consultant

ABC: What benefits or key qualities are consumers looking for from sports nutrition/performance nutrition products?

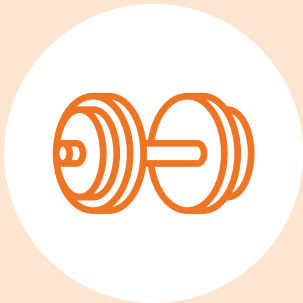


FARKAS: Individual preferences and needs vary when it comes to sports and performance nutrition products. Consumers are all unique and have different goals, engage in various sports and activities, and have life circumstances that influence their nutrition priorities. However, there are some common themes that we're seeing emerging among consumers in terms of their sports and athletic nutrition product preferences, including:

- **Protein amount and quality** are a vital focus for many as it's necessary to support recovery, reduce muscle breakdown, and stimulate muscle protein synthesis.
- Consumers are also increasingly seeking products that have **cross-functionality, supporting the body and mind**, providing energy, focus, and mental clarity to help them perform at their best, both physically and mentally.
- **Clean-label** products are an expanding area of interest, for recognition of the ingredients listed on the product label. Reducing fillers or non-essential ingredients and using whole food ingredients is desirable whenever possible, as they are seen as natural and minimally processed, providing a sense of transparency and trust in the product and the brand.

At the end of the day, products must also be delicious to achieve repeat purchases. Almond ingredients provide positive sensory experiences that satisfy needs through their nutritional value and easy recognition on the label, bringing consumers back again and again.

ABC: What are the application opportunities for almonds/almond ingredient forms in these products? What benefits do they bring?



ABC: A new study led by Dr. David C. Nieman at Appalachian State University explored if an almond snack compared to a high-carbohydrate cereal bar snack would improve inflammation and recovery in adults engaging in 90-minute exercise sessions. What is your reaction to the findings, and what impact does nutrition research like this study have on how you choose ingredients?

FARKAS: For pre- and post-exercise food products, almonds and almond ingredient forms offer exciting application opportunities in sports nutrition products due to their nutritional profile and versatile nature, providing sustained energy and promoting satiety— added benefits that enhance product functionality, value and storytelling.

Almonds in each serving provide a good balance of healthy unsaturated fats (13g) with only one gram of saturated fat, carbohydrates, fiber (4g), antioxidants (50% DV of vitamin E), and restorative protein (6g). They offer sustained energy due to their low glycemic index, providing a slow and steady release of energy. In terms of promoting satiety, a [recent study](#) of 42 young female participants, researchers found that those who snacked on almonds compared to crackers with equivalent calories as a mid-morning snack reported a lower overall hunger drive (study results may not be representative of other populations).¹ Almonds are also functional from a culinary and product design perspective, contributing to flavor development, texture, and an all-around positive consumer-eating experience.

Whole, sliced, and almond pieces can be enjoyed as-is, seasoned, or used in energy bars, protein-rich granolas, and energy bites/balls as convenient and nutrient-dense ingredient options for pre, during, and post-workout snacking. Whole almonds and pieces give a crunchy texture with a slightly sweet, appealing, and nutty profile.

Almond butter can be used as a nutrient-rich spread, incorporated into protein bars and energy balls, piped into whole pitted dates, added to plant-based yogurts and popsicles, or included in smoothies, prepared beverages, or salad dressings for power bowls. Almond butter provides a rich texture and mouthfeel, and roasted almond butter enhances the flavor profile in product applications.

Almond protein powder is quite versatile as an alternative to dairy-based proteins like whey or casein. It can be added to protein powder blends, smoothies, bars and spreads to support muscle recovery and growth alongside other plant-based complementary proteins.

Almond milk is a popular and recognizable dairy-free milk alternative for a base in protein shakes, smoothies, or recovery drinks. It offers a creamy texture, and a subtle nutty flavor, and can provide a source of hydration for endurance sessions, as well as vitamins, and minerals.

Almond flour is a functional and delicious gluten-free alternative to other flours, and can be used to create baked goods, such as protein bars, chips, crackers, cookies, or pancakes, providing a nutrient-dense and lower-carbohydrate option.

Overall, almonds continue to provide nutritional benefits to the traditional and growing segments as almond ingredients are clean-label, recognizable, desired, and acceptable from a sensory perspective.

FARKAS: By leveraging nutrition research, developers, brands, and manufacturers can make informed decisions about ingredient selection, ensuring that performance food products are formulated with mindful and scientifically supported ingredients and nutrients. [Dr. Nieman's new exercise study](#)² found that 64 healthy occasional exercisers who ate two ounces of almonds daily for four weeks experienced reduced feelings of fatigue and tension, increased leg and lower back strength during recovery, and decreased muscle damage during the first day of recovery. This research is interesting as it does support the use of ingredient choices like almonds in the development of sports nutrition-based products. The study's findings demonstrate that almond consumption can aid in exercise recovery, so these benefits do make almonds a compelling ingredient in product design for promoting post-workout recovery and enhancing athletic performance.



ABC: Based on your experience developing performance nutrition products, are there complementary ingredients almonds pair well with?

ABC: Is taste and texture still a challenge when developing performance nutrition products? How do you find workarounds that deliver on enjoyment?

ABC: What categories or product formats does sports nutrition/performance nutrition lend itself to or typically appear in? Who is the target audience of these products and how has the audience evolved?



FARKAS: In my experience, almonds are a flavorful and nutrient-dense companion to various complementary ingredients. For example, both almond milk and almond butter have a delightful flavor profile and serve as exceptional carriers for incorporating functional ingredients. Almond milk, with its creamy texture and subtle nuttiness, blends with a wide range of additions. It can be seamlessly combined with ingredients such as plant protein powders, superfood and greens powders, adaptogenic blends, as well as spices. This allows for the creation of flavorful and nutrient-rich beverages, shots, and bowls with a nutritional highlight. Similarly, almond butter's rich and distinct taste makes it an ideal partner for enhancing the nutritional value of snacks or meals. It pairs well with cacao, bananas, apples, dates, chilies, greens and other protein blends (to name a few) adding a luscious nutty element. Almond butter can also be a vehicle for incorporating other nutrient-dense ingredients like chia seeds, flaxseeds, or even adaptogens such as reishi or maca.

FARKAS: Taste and texture can be a challenge when creating clean-label nutrient-specific formulations. For example, we love the idea of reaching high amounts of protein in a product but need to understand what that increase in protein will do to the consumer's taste, texture, and overall eating experience, as well as the appropriateness of the format of the product and eating occasion.

Suppose we're designing an energy bar to be consumed during an endurance race. In that case, we need to ensure the ingredients in the product are balanced so that the athlete can consume the product easily and enjoyably. In this development process, we have to ask ourselves (and trial) which ingredients will deliver on the nutrition and flavor callouts, texture, and overall product interest and appeal. If we're designing a product for daily use, we need to be conscious of the level of perceived flavors/sweetness so as not to prevent sensory fatigue.

FARKAS: It's an exciting time for performance products - globally, the sports nutrition market size is expected to grow at a CAGR of 7.84% between 2022 and 2027³. We're seeing various categories and product formats like energy bars/bites, chips, granolas, performance powders/supplements, prepared beverages, ice creams/popsicles, gels/blocks, and elevated convenient meal options that continue to expand as we listen to consumer desires. As we're experiencing through product design requests, the emerging target audience for sports and performance-based nutrition products appears to be moving beyond traditional athletes and fitness enthusiasts, to include a broader range of health-conscious individuals and those looking for products that support healthy aging.

Health-conscious individuals seek nutritional solutions that align with their overall well-being and fitness goals, even if they are not regularly engaged in intense physical activities. They want products that offer convenience, targeted nutrition, and added functional benefits to complement their healthy lifestyles. There is also an increasing demand for performance nutrition products that cater to the unique nutritional needs of older adults. This segment may seek more plant-based options and higher protein products that support longevity, gut health, bone density, muscle maintenance/recovery, and body and mind vitality, all while maintaining an active lifestyle as they age.

Market research suggests that resilient consumption is driving growth in nutrition, health and overall wellness, and that consumers around the globe are prioritizing their health while seeking new products that support physical and mental health.⁴ The sky is the limit when it comes to new products and categories that deliver intentional nutrition to target consumers and their expanding needs.

1 Hollingworth S Dalton M, Blundell JE and Finlayson G. Evaluation of the Influence of Raw Almonds on Appetite Control: Satiation, Satiety, Hedonics and Consumer Perceptions. *Nutrients* 2019, 11(9), 2030; <https://doi.org/10.3390/nu11092030>

2 Nieman, D. C., Omar, A. M., Kay, C. D., Kasote, D. M., Sakaguchi, C. A., Lkhagva, A., Weldemariam, M. M., & Zhang, Q. (2023). Almond intake alters the acute plasma dihydroxy-octadecenoic acid (DihOME) response to eccentric exercise. *Frontiers in Nutrition*. DOI: 10.3389/fnut.2022.1042719

3 Technavio (2023, January 1). Sports Nutrition Market by Distribution Channel, Product, and Geography - Forecast and Analysis 2023-2027. www.technavio.com. Retrieved July 5, 2023, from https://www.technavio.com/report/sports-nutrition-market-size-industry-analysis?utm_source=prnewswire&utm_medium=pressrelease&utm_campaign=t51_wk25_2023_019_rep&utm_content=IRTNTR45362

4 "Resilient Consumption Fuels Breakthroughs in Healthy Ageing, Nutrition and Agriculture | Mintel." www.mintel.com, 28 June 2023, www.mintel.com/food-and-drink-market-news/resilient-consumption-fuels-breakthroughs-in-healthy-ageing-nutrition-and-agriculture/. Accessed 5 July 2023.