

# Natural Products Insider.®

July 2023

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**Denis Faye** recognizes that “bro science” followers still scoop protein powder aplenty, but now fitness seekers of all stripes are looking to safe supplementation to build muscle, improve athletic performance, and stave off muscle wasting.

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The sports sector has been a natural market for hydration supplements, as intense workouts often lead to electrolyte imbalances, writes SPINS' **Scott Dicker**. But the current growth burst in the category is being driven by young sports enthusiasts and the hangover remedy crowd.

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New ingredients that help athletes tackle the gastrointestinal issues associated with heavy training are starting to shape the industry, contends **Sophie Zillinger**.

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Nearly two-thirds of sports nutrition users said they take supplement products to improve their general health, according to **Nutrition Business Journal**. It's just one of numerous findings summarized here after a recent survey of active lifestyle consumers.

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Today's athletes are reaching for promising supplement ingredients like tart cherry, ATP and type II collagen when they want to feel better—and get back to action sooner—**Nick Collias** relates.

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### The evolution of esports—and what it means for supplements

The '90s gamer stereotype is a far cry from today's esports gamer taking the competitive sports arena by storm. Today's competitor is often a finely tuned athlete, and supplement ingredient companies are targeting this bunch directly, explains **Rachel Adams**.

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# Innovation runs up the score

I've been in the supplement industry for 25 years, which in some ways feels as long as an MLB game before this season (when they mercifully instituted a shot clock on pitchers). One absolute truism is this is an innovative industry—never a dull moment! And leading the charge in innovation, as ever, is the sports nutrition segment.

I'm happy to report that sports nutrition is still racing along, innovating at every step on the base paths. This issue gives a peek into some of those runs and hits.

It bears mentioning that what used to be the sports category, largely defined as products for muscle-building gym aficionados (read: whey protein powders), has expanded mightily, so much so that the category is more accurately defined today as active lifestyle nutrition. SPINS reports 8% growth in wellness bars and gels, 10% growth in protein supplements and meal replacements, 37% growth in pre-workouts, and a whopping 39% spike in performance nutrition.

It sounds to me like after a couple years of sitting around during the pandemic, people are intent on getting off the couch and doing something about those spare tires. The biggest growth, SPINS reports, is in the 45- to 54-year-old set.

Only they're not thinking about it in quite that way: Weight management is actually down 7%.

Next at bat: What happened to supercharge electrolytes? We all remember Gatorade buckets being splashed on football head coaches upon winning championship games, and the colorful, salty drinks have chugged along for decades.

But suddenly, in the last year, sales of electrolyte products have doubled. A two-bagger! Our friend Scott Dicker at SPINS unspools the category and reveals some provocative insights to this booming category on page 12.

Continuing around the horn, sales of old standby creatine, used for decades

to increase [muscle size and strength](#), have more than doubled between 2020 and 2022, thanks to its efficacy in particular for [female athletes](#), new research showing use for cognitive health, and [TikTok influencers](#). We also reported a couple months ago that creatine works better with [complementary ingredients](#).

[Precision fermentation](#) is a new twist on protein, especially whey protein. While it boasts environmental bona fides by producing whey without cows—goodbye, water use and methane emissions—it remains a GMO ingredient. We devoted much of our last [December digital magazine](#) to precision fermentation. If only GMOs were introduced to the market this way, with a consumer and environmental benefit, and not just as a means of improving chemical company profits, GMOs perhaps might not be looked upon with such jaundiced eyes today.

Another raging subcategory is gamers, who would prefer you refer to them as esports athletes. Ingredients at play here center on focus, concentration and stimulation ... only without the caffeine-style jitters. Gotta have steady hands on that joystick! The number of functional ingredients targeting esports athletes is growing, and what's really impressive is suppliers like Nutrition 21 and PLT Health Solutions have clinical results to validate their ingredients specifically for the esports crowd.

Maybe sitting around during the pandemic had some upsides for our sporting lives after all.



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## Active nutrition overtakes sports enthusiasts

**I**n order to get a deeper handle on current consumer sentiment during these whiplash times, Nutrition Business Journal conducted a consumer survey that targeted generally active, average U.S. consumers between the ages of 18 and 65. The survey was launched Feb. 2, 2023, via the Suzy online platform.

In this NBJ consumer research, 64% of sports nutrition users said they take these products to improve their general health—substantially more than the 39% who do so to improve their sports performance or active lifestyle. It may not be a surprising finding, but it's still an important idea to keep in mind for marketers, product developers and anybody trying to predict the evolution of sports nutrition as a category.

Among people who said they were not using sports nutrition products, 78% said they would consider doing so in the next 12 months. Across the survey, consumers looked at taste and price as primary factors, which is no great surprise; however, this population also said it would respond to such **claims as less fatigue during training, joint support, faster recovery, building muscle and improved stamina.**

One specific question asked was, “When you think of your everyday active lifestyle, outdoor/indoor activities or athletic performance, which of the following claims would make you most likely to purchase a product for support? Please select up to three answers.” A total of 560 people responded here. The question was put to “generally active consumers,” which was those selecting 3 or higher on a 7-point scale of how active they consider themselves.



Of keen interest to supplement companies always on the lookout for a new consumer, the question targeted respondents who stated they “sometimes” or “rarely” take a product in the sports nutrition category. The results were a bit different from the same question posed to “regular” users. Let's focus on the occasional user here because a lot more potential upside exists when brands are looking at developing new products.

Perhaps most surprising of this list is the No. 2 reason—at least for the “occasional” user—which is joint support. This category has seemed to just muddle along despite the temblors taking place in ingredient selection. At the turn of the century, glucosamine had become a household word—yet it required a dedicated consumer because it would not take effect until six to eight weeks, according to some research, meaning a shopper would have to get through the second supplement bottle before feeling any positive effects.

Yet in the last decade, **a new generation of fast-acting joint-health ingredients has risen**, which take perhaps five to seven days to work. Eggshell membrane, frankincense (the brand name is 5-Loxin) and Tamiflex all assert that only a week is required before consumers feel effects. That's saying something.

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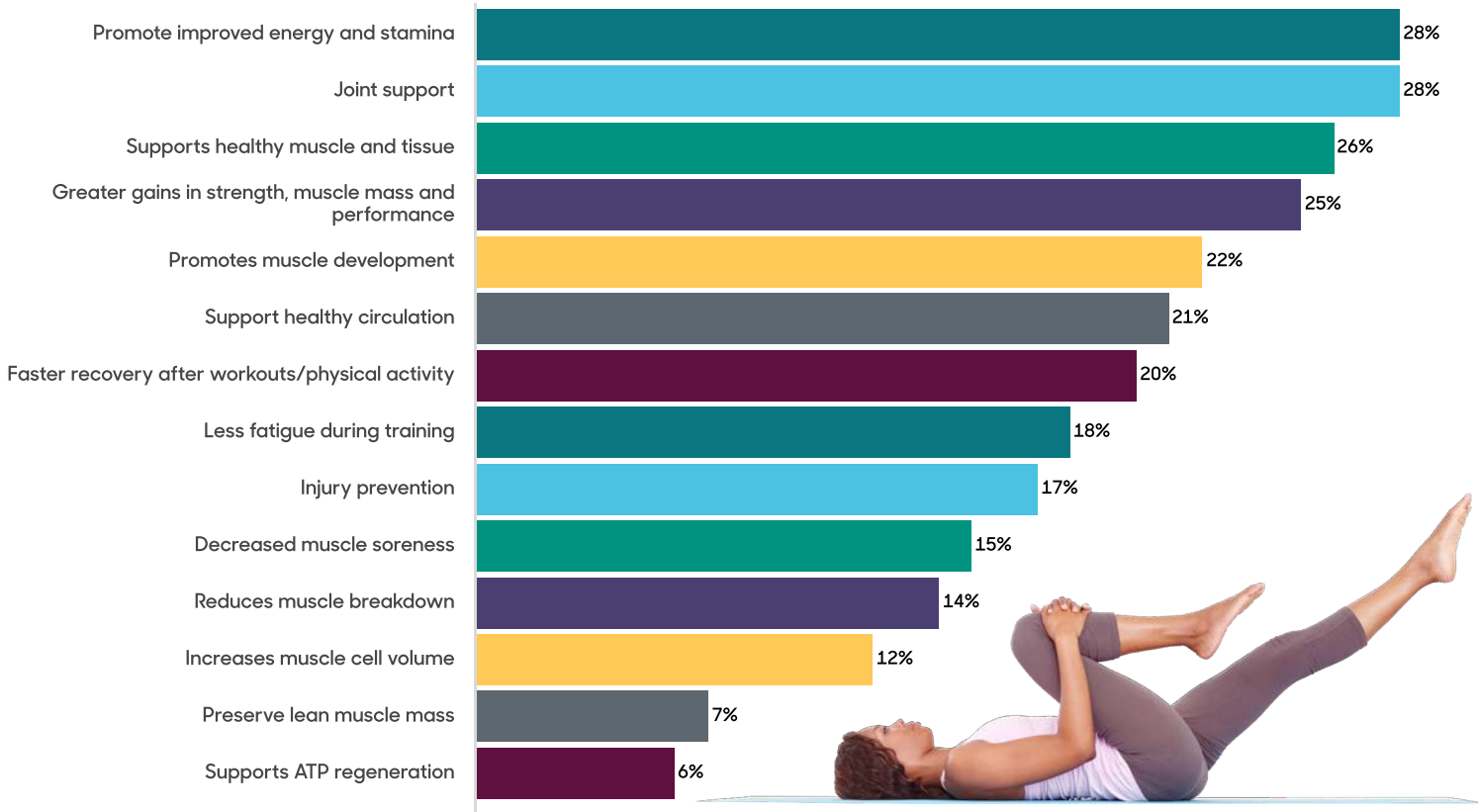
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## AVERAGE, ACTIVE CONSUMERS ARE DRAWN TO PRODUCTS THAT IMPROVE ENERGY, SUPPORT STRENGTH AND MUSCLE-BUILDING



Source: Nutrition Business Journal consumer survey that targeted generally active, average U.S. consumers between the ages of 18 and 65.

The combination of these ingredients being available to supplement brands and formulators, with new customers saying joint health is their No. 2 concern, spells nothing but opportunity for this category.

All of these claims can be targets of innovation—which, somehow, never seems to leave the sports nutrition market.

All of these claims also can bring in those new consumers who currently are sitting on the

sidelines. People who aren't buying might start. People who dabble in the categories might buy more. Asked what claims would make them likely to purchase sports nutrition products, people who said they sometimes or rarely use sports nutrition products show interest in energy, stamina and joint health—all at 28%—with strength and muscle-building close behind at 26% and 25%, respectively. ♦

This excerpt was adapted from the 153-page NBJ Sports Nutrition and Weight Management Report 2023. An essential reference for the current state of the market, the report also features NBJ's prescient futurecasting about where the market is headed and the trends moving it.

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## 5 muscle-friendly sports supplement ingredients

by Denis Faye

**N**ot long ago, muscle-building supplements were largely considered the purview of highly focused bodybuilders who religiously scooped powders out of plastic tubs in the hopes of getting buff.

Oh, how times have changed. While “bro science” followers still scoop aplenty, fitness seekers of all stripes now look to safe supplementation not just to build muscle, but also to improve athletic performance, stave off muscle wasting and seek a host of other benefits. (Creatine for brain health—who knew?)

Let’s take a look at the state of affairs of three well-recognized muscle-enhancing ingredients—protein, creatine and branched-chain amino acids (BCAAs)—as well as a couple of emerging entrants, hydroxymethylbutyrate (HMB) and adenosine triphosphate (ATP).

### PROTEIN

As far as supplementation for muscle growth and repair goes, protein remains on top. “If I recommend one supplement to start with, usually it would be protein,” said Ralf Jäger, Ph.D., MBA, FISSN, CISSN, co-founder of the consulting firm Increnovo. “You need the amino acids. Those are the building blocks of muscle.”

Dietary protein is made up of about 20 amino acids. Of these, nine are “essential,” meaning the body can’t produce them, so they need to be part of a person’s diet. These essential amino acids (EAAs) work in concert, so if one EAA is low, the others can’t function as well. A protein with the



right amount of all nine EAAs is referred to as a “complete protein.”

“There are very well-done studies that show that our skeletal muscle tissue needs optimal amounts of the nine essential amino acids to maximize muscle protein synthesis,” said Chad Kerksick, Ph.D., FISSN, CISSN, associate professor of exercise science at Lindenwood University in Missouri. “The goal when taking an amino acid supplement or a protein source is a dosage that delivers enough of those amino acids.”

Animal protein tends to be [more complete](#) than plant-based protein. Formulators often address this issue by combining multiple plant-based proteins to make a complete protein. “Pea and rice blends have been very popular within formulations,” Kerksick explained. “Add them together and they provide a fairly balanced array of all the essential amino acids.”

Jäger proposed another creative solution to help a serving of a single plant-based protein source to function in a “complete” way. “Use 10% more of a plant protein, then you’ll definitely see the same effects as animal protein,” he suggested.

### BCAAS

Leucine, isoleucine and valine are three of the nine EAAs. They have a “branch” on



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## Muscle

There are very well-done studies that show that our skeletal muscle tissue needs optimal amounts of the nine essential amino acids to maximize muscle protein synthesis.

—Chad Kerksick, Ph.D., FISSN, CISSN, associate professor of exercise science at Lindenwood University



their molecular structure that earns them the “branched-chain” title.

Each BCAA has its own strength. [Leucine](#), considered the most important of the three, is known to induce protein synthesis (muscle building and repair). [Valine](#) also plays this role, although to a lesser degree. [Isoleucine](#) is shown to stimulate glucose intake into muscle cells.

One may think focusing solely on these three key amino acids would yield results; however, by definition, the human body needs all nine EAAs.

“Think about building a house,” Kerksick stated. “The three branched-chain amino acids are the brick layers, and the essential amino acids are the bricks. We don’t build a house faster if we just keep adding more and more brick layers. Just provide more of the branched-chains and you’re still missing out on six of the nine essential amino acids.”

Susan Hewlings, Ph.D., RD, co-founder of the consultancy Substantiation Sciences, also prefers supplementing all nine EAAs over just the BCAAs. In fact, she proposed that isolating the EAAs might make more sense than whole protein supplementation. “The advantage of the EAAs

over whole protein is that they’re absorbed much more quickly,” Hewlings suggested. “They don’t have to be broken down.”

### HMB

HMB, a metabolite of the BCAA leucine, is believed to help reduce muscle protein breakdown.

In some instances, it may make sense to [supplement HMB](#) by itself rather than using leucine. To get the 3-gram dose of HMB shown to be effective would require 60 grams of leucine—or 600 grams of high-quality protein. That’s a lot of protein to stomach.

Much of the research on HMB has been on aging populations, where it’s been shown to help ward off the muscle loss common with getting older. “HMB really works when there’s a stressor,” explained Shawn Baier, MBA, VP of business development in the innovative products division at Metabolic Technologies Inc. “With older adults, the stressor obviously is [age-related muscle loss](#).”

But building muscle for the average 18- to 50-year-old isn’t always stressful. Kerksick explained, “If someone is going to the gym four or



### 3 SPORTS INGREDIENTS IN PLAY TODAY—VIDEO

Want to know what’s effective and popular in today’s sports nutrition world? We asked Douglas S. Kalman, Ph.D., clinical associate professor at Nova Southeastern University in Florida and co-founder of the sports body ISSN, for his top 3 picks. Can you guess which he picked? Click here to score!

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## Muscle

five days a week, they want to get bigger and stronger, they've got enough calories and enough protein in their diet, and they're wondering, 'Man, is HMB going put me over the top?' It's probably not."

Dial up the stress, however, and Kerksick sees the potential. "For example, weight class sport athletes go through some fairly purposeful periods of energy deprivation," he said. "Those are very catabolic environments. It makes sense why adding in HMB might help to avoid the loss of muscle tissue—but that's a little bit of speculation on my part."

In terms of sports supplementation, many experts see HMB's potential, even if they're not completely ready to commit. "HMB can play a role for an athlete and a non-athlete as a dietary ingredient for a variety of purposes," said Douglas Kalman, Ph.D., RD, Hewlings' co-founder at Substantiation Sciences. "Depending upon your purpose, there are other ingredients that have stronger data as related to athletic-related performance and recovery."

### CREATINE

Case in point, many experts see creatine as a slam dunk.

The body's cells use ATP for energy—including one's muscle cells. Any fuel consumed eventually becomes ATP. Muscles generate ATP in a variety of ways, but when exercise is extra-challenging, like when lifting to failure or sprinting, ATP is generated using anaerobic (or "oxygen-poor") pathways. This process requires the assistance of phosphocreatine generated by one's liver, kidneys and pancreas.

The body can only create so much phosphocreatine at a time. Once it runs out, access to ATP is diminished, so things get difficult. [Supplementing creatine](#)—specifically in the research-preferred form of creatine monohydrate—supplies a little more phosphocreatine, allowing muscles to work a little longer.

"There are probably more studies that have been done total volume-wise on proteins over the years as compared to creatine," Kalman stated, "but there are over 2,000 creatine studies with a great many more happening on a yearly basis globally."

This research goes far beyond sports performance. "The emphasis in the past few years has been looking at if creatine has the ability to impact things such as bone density as we age, musculature as we age, dealing with age-associated muscle loss," Kalman said. "We're also dealing with things like cognition. Creatine is thought of—or beginning to be thought of—as a life cycle nutrient."

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You'll find some of our favorite branded ingredients in the sports and performance world throughout this issue:



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**PERFORMANCE APP:** Reduce fatigue, speed recovery

**SCIENCE:** Nitric oxide (NO), which increases blood flow, typically degrades in seconds. [Here](#), 200 mg Setria and 2 g L-citrulline sustains NO levels for 30 minutes post-exercise compared to placebo.

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many experts  
see creatine as a  
*slam dunk.*”

## ATP

Again, ATP is the energy that fuels cells, including muscle cells. So, it makes sense that consuming ATP could add to one’s internal pool and therefore help power muscles—but it’s not that easy.

Initial investigations into ATP supplementation hit a wall when the acidic environment of the stomach wiped the stuff out. Eventually, researchers got past that by using ATP disodium, although they’re not certain why it works. “We have a lot to learn,” Jäger admitted. “The overall mechanism for [how ATP works](#) is still a little bit of a mystery.”

Either way, it does seem to work. “[Research has shown](#) that acute dose of ATP supplementation improved performance, oxygen consumption and energy expenditure during lower body resistance exercise in trained males,” said Rhitika Poudel, associate research manager

at Glanbia Nutritionals.

“I think the most unique thing about ATP is that actually it works acutely,” Jäger noted. “When you’re looking at creatine or protein, you have to take it for a longer period of time to see the benefits. ATP is different because with just a one-time dose, you can see an increase in different performance measures.”

Whether it’s a mainstay like creatine or a potential up-and-comer like ATP, all the experts make one fact perfectly clear. Supplements are not a shortcut around a rotten diet.

“Think of it in terms of hammers,” Kerksick offered. “Exercise is a big, huge long-handled sledgehammer. Nutrition is just the standard construction hammer. Then, take something like supplements and they’re a small, little hammer. Even with well-established ingredients, their effects are still relatively small—but they are there.” ♦



Denis Faye, MS, is a nutrition communications consultant and committed competitive athlete who splits his time between writing, riding, running and raising his family. Occasionally, he sleeps.



## BRANDED INGREDIENTS WE LOVE

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# The 5 best up-and-coming recovery ingredients

by Nick Collias



**W**hen the workout or game is over, the hard work has just begun. The recovery period after training and competition is when crucial healing and regeneration processes take place, enabling the adaptations that lead to athletes coming back stronger than they were before.

But recovery isn't just a waiting game. A wide range of ingredients have been shown to positively influence workout recovery and combat the stiffness and pain that follow intense physical exertion.

The classic post-workout protein shake is just the start of the modern recovery stack. Today's athletes are reaching for promising supplement ingredients when they want to feel better—and get back to action sooner.

## TART CHERRY FOR ENDURANCE PAIN

Montmorency tart cherries—the same cherry that's most common in cherry pie—have emerged in recent years as a recovery powerhouse. This ability stems from their high levels of flavonoids and anthocyanins, both of which are known for their anti-inflammatory and antioxidant properties.

“Numerous studies into tart cherry have been published in the last few years, including both original investigations, [meta-analyses and systematic reviews](#),” explained supplement researcher Krissy Kendall, Ph.D. “The majority of research supports its use to lower the

inflammation response and reduce oxidative stress.”

However, matching the cherries with the right activities seems to be essential. “Tart cherry does not appear to reduce markers of muscle soreness or inflammation following sports like rugby and soccer,” Kendall said. “[Endurance athletes](#) are likely to benefit the most from tart cherry supplementation.”

Specifically, she pointed to exercises with significant eccentric components, like plyometric jumps or downhill running. “The most beneficial effects occur when a noticeable amount of muscle damage occurs,” she maintained.

**Best practices and dosing:** Kendall recommends taking at least 1,000 mg per day (equivalent to 100 cherries) starting four to five days before intense exercise or sports and finishing four to five days afterward.

## ATP FOR COGNITION RECOVERY

Adenosine triphosphate, or ATP, is the primary currency of cellular energy throughout the human body. It rose to prominence as a supplement in recent years after showing promise in helping athletes [manage fatigue](#) and [improve recovery](#) during intense high-volume training programs.

In a [recent study](#) presented at the 2023 International Society of Sports Nutrition (ISSN) conference, however, it has shown promise in improving an aspect of recovery that is easy to overlook: mental recovery.





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## ATP has shown promise in improving an aspect that is easy to overlook: mental recovery.

“So many times with training, there’s a cognitive element of, ‘I’m just tired. It’s the mental aspect that doesn’t let me get back into the gym,’” suggested Shawn Baier, VP of business development at [TSI Group](#), maker of a patented ATP supplement. “After repeated bouts of exercise, individuals had a ‘perception of readiness’ that was improved with PeakATP. There was improved maintenance of focus from subjects taking ATP, as well as an improvement in accuracy over the control group.”

For this reason, Baier sees great potential for ATP not only for the recovery that happens for days after an event, but also for sports that require in-game recovery.

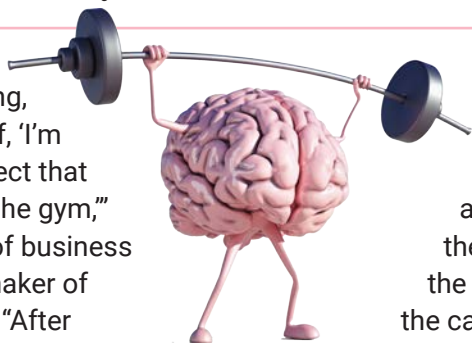
“Think of minute 88 of a soccer game, trying to be accurate on your kick,” he stated. “There’s a physical element of that and there’s a mental aspect of that, but it all really comes down to the biochemical aspect of having energy.”

**Best practices and dosing:** Current research points to a 400 mg dose 30 minutes prior to exercise for ATP to be most effective. Unlike many popular ingredients that require multi-day loading to be effective—creatine, for example—ATP has shown promise after a [single acute dose](#).

### TYPE II COLLAGEN FOR JOINTS

Collagen supplements are skyrocketing in popularity, but most of what’s on store shelves is largely types I and III collagen, which [support skin and hair health](#). Type II collagen shows potential to provide different benefits that are of more interest to athletes—and anyone who finds their joints limit their activity.

“Type II collagen makes up more than 50% of the proteins located in joint cartilage and essentially helps joints with shock absorption, mobility and functionality,” explained Monther Elnajjar, VP of business development at



[Avicenna Nutraceutical](#), maker of the patented collagen product AVC-H2. “As a result of both aging and general wear and tear, the amount of synovial fluid inside the synovial joints decreases and the cartilage in our joints begins to deteriorate, resulting in increased pain and stiffness, and decreased mobility.”

Consuming type II collagen is also thought to [fortify joints against pain](#) by increasing the body’s production of joint collagen. “This collagen then is accumulated in the cartilage tissue, which may help to improve post-workout recovery,” Elnajjar noted.

Much but not all of the research into type II collagen has focused on specific conditions such as rheumatoid arthritis (RA). In a study published in 2021 in the journal [Nutrients](#), healthy individuals experiencing joint pain took AVC-H2 and reported a significant reduction in pain over eight weeks compared to the baseline while performing a series of daily wrist, knee and hip movements.

**Best practices and dosing:** Collagen supplements show their real potential after weeks of continuous use. Avicenna’s collagen supplement showed the most significant benefits at 2.5 g per day, taken for at least eight weeks. However, [some studies](#) have shown benefits in knee discomfort from exercise in daily doses as low as 40 mg.

### PICKLE FOR BALL

Gherkin is a type of pickle made from small, young cucumbers that are more popular in Europe than in the United States. High-level track and field athletes have utilized them as a “secret weapon” to boost recovery and control pain and inflammation from training, but more recently, researchers took these subjective findings and put them to the test [in the lab](#).



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\* Saby & al., IJERPH, 2020

## Recovery

Study participants performed a workout designed to induce muscle soreness and inflammation, with researchers monitoring bloodwork before and after each session. The group taking cucumber extract as Cuvitus showed improved workout performance by more than six times compared to placebo, as well as significant positive changes in levels of inflammatory cytokines.

“The most surprising report to me of this study was the positive impact on performance, and the ability to maintain high intensity performance over time,” commented supplement researcher Doug Kalman.

**Best practices and dosing:** The most recent study of gherkin extract used 150 mg of Cuvitus, supplied by [Xsto Solutions](#), taken twice a day for two weeks.

### CURCUMIN POST EXERCISE

Curcumin (*Curcuma longa*), the main active ingredient in turmeric, has shown powerful anti-inflammatory effects and is known to be a strong antioxidant. The research connecting it specifically to post-workout recovery is still in its infancy, but this bright yellow food coloring agent shows similar potential inside the gym as it does outside.

The most [promising study](#) looking at curcumin and post-exercise recovery found significant reductions in both muscle soreness and inflammation. And the older the athlete, the more pronounced that benefit could be, posited Kalyanam Nagabhushanam, Ph.D., president of R&D at Sabinsa Corp., maker of [C3 Complex](#) curcumin.

“Any physical exertion brings with it muscle soreness and underlying inflammation,” Nagabhushanam explained. “Clinical trials show that curcuminoids perform very well in moderating inflammation and soreness of muscles. A [recent study](#) on elderly subjects showed that C3 Complex helps maintain muscle strength due to its anti-inflammatory effects. In [another study](#), C3 Complex, blended with other compatible ingredients, brought down joint inflammation, helping the participants of the trial walk faster with less difficulty on the joints.”

**Best practices and dosing:** By itself, curcumin is poorly absorbed, which is why it is often paired with the black pepper extract piperine to increase absorption. Current research indicates that 500 mg of curcumin daily plus 5 mg of piperine—either in a single dose or in two to three split doses—is effective for supporting healthy inflammation levels. ♦



Nick Collias is a writer and editor with over a decade of experience working in the health and fitness industry. From 2016 to 2021, he hosted the Bodybuilding.com Podcast, interviewing elite athletes and training thought-leaders on a wide range of exercise, nutrition and lifestyle topics.



BRANDED  
INGREDIENTS  
WE LOVE



**INGREDIENT:** Cuvitus

**COMPOSITION:**

Whole-fruit cucumber extract with cytokine (inflammation) reduction activity

**PERFORMANCE APP:**

Pre-workout, joint health, temporary muscle pain from over-exercise, joint health, active lifestyle products

**SCIENCE:** A U.S.-based human clinical trial found blood levels of tumor necrosis factor (TNF)-alpha decreased and interleukin (IL)-6 and IL-10 increased, leading to less inflammation and improved exercise performance.

**IP:** Xsto owns the name Cuvitus and the released research











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# The rise of hydration supplements: Millennials lead the charge

by Scott Dicker

**I**n the health and wellness market, hydration supplements have become the talk of the town, earning special acclaim among younger Millennials.

It's a robust trend that has transformed this sector and is being fueled by two very different yet powerful consumer groups: sports enthusiasts and the hangover remedy crowd.

Millennials, particularly on the younger side of the spectrum, are over-indexing in their consumption of these supplements, asserting their influential role in driving market trends. This age group (between their mid-20s to early 30s) is both health-conscious and social, and is tapping into hydration supplements to stay active, maintain well-being and make "mornings-after" a little more bearable.

The sports sector has been a natural market for hydration supplements, as intense workouts often lead to electrolyte imbalances. Athletes and fitness enthusiasts need to replace lost salts and fluids to sustain performance and optimize recovery. These supplements achieved popularity in the sports world because they are rich in electrolytes like sodium, potassium and magnesium, ensuring the body remains hydrated and functions optimally.

## THE SWIFT SHIFT

The electrolyte beverage industry is currently experiencing a shift in consumer preferences, with sugar reduction at the forefront of this transformation. New market entrants are successfully capitalizing on this demand for low-sugar or sugar-free options as values-oriented



consumers increasingly shun high-sugar drinks. These emergent brands are offering innovative, health-focused electrolyte beverages with minimal sugar content, leading to a significant shakeup in the market landscape.

Remarkably, these newcomers are gaining market share at an unprecedented rate that challenges established industry giants and reshapes the future of the electrolyte beverage sector. This swift shift underscores the power of health-conscious trends and the readiness of consumers to embrace novel brands that align with their wellness goals. Prime is a great example of a brand that has emerged with heavy brand awareness that has shot up the rankings.

Meanwhile, the hangover remedy crowd offers another reason for the surge in hydration supplement demand. Millennials who enjoy a night out but dread the ensuing hangover find these products are a godsend by helping manage dehydration caused by alcohol consumption. Rather than reach for sugary sports drinks or gallons of water, they are turning to these supplements that have been masterfully marketed as superior hydration agents.

## NEW FORMATS WORK HERE

A surprising aspect of this trend is the success of various formats these supplements are available in, primarily effervescent tablets and stick packs. Both these formats have had a somewhat lukewarm reception in other health



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# Electrolytes

supplement categories like pre-workouts and immune supplements. However, in the realm of hydration, they have found significant success.

In an interesting twist, hydration supplements are not only being used post-alcohol consumption but have also begun to feature during the drinking process as well. A perfect example of this can be seen on TikTok, where a rising trend, especially on college campuses, is the consumption of BORGs—an acronym for black out rage gallon. A BORG is a novel concoction made up of water, alcohol, flavorings and, most importantly, hydration/electrolyte products. These ingredients are mixed together in a gallon jug, creating a personal cocktail designed to be consumed by a single individual. This trend effectively merges the concept of a party punch or “jungle juice” with an electrolyte-rich sports drink.

Unlike other categories, effervescent tabs and stick packs have found success with hydration products.

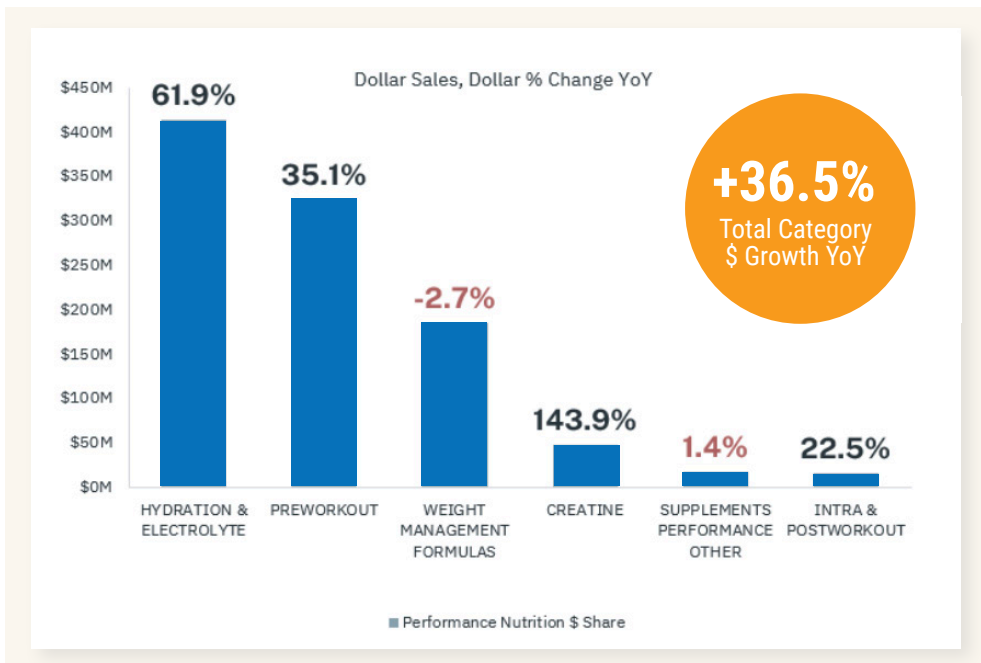
Hydration supplements are undoubtedly having a moment, driven in large part by the influential Millennial demographic. The trend converges on the intersection of health and convenience, catering to sports enthusiasts and the hangover remedy crowd alike. The success of effervescent tablets and stick packs, typically rather underperforming formats, is a testament to the uniqueness and dynamic nature of this market. As the trend continues to gather steam, we can only wait and see what exciting new developments it heralds. ✨



Scott Dicker is senior market insights analyst for SPINS. He is expert at digging through market data and identifying emerging trends and shifting consumer behavior that helps brands better understand the market and their customers.

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# The evolution of esports—and what it means for supplements

by Rachel Adams



**A**sk the average person what comes to mind when they think about esports, and they might envision a shirtless teenage boy sitting on his parents' couch with a controller in his hands.

Throw in a pizza box and a crumpled bag of chips and you've completed the picture.

While that image may capture the '90s gamer stereotype, it's a far cry from the esports gamer taking the competitive sports arena by storm.

"When a certain generation thinks about gamers, they think of Doritos, Mountain Dew, people in basements," Jason Chung, director of the Esports and Gaming Initiative and clinical assistant professor of sport management at NYU—and head of the esports, gaming and media practice at Zuber Lawler LLP—said, "but it's not the case anymore, right? When you're talking about esports organizations and teams and the athletes—they're actually athletes."

The International Olympic Committee (IOC) agrees. The esports industry made headlines when the Olympics introduced virtual games in 2021—and the trend is reflected around the globe.

"In recent years, we've seen the emergence of professional gamers who are paid and trained full time to compete," Ben Milhau, EMEA Marketing Lead, IFF Health, explained. "Schools in [the] U.S. and South Africa are increasingly offering esports

scholarships, while some institutions are solely dedicated to esports (such as the Esports Koutou Gakuin school in Japan)."

Why is esports gaining ground in the larger sports arena? The answer is simple, Chung said: revenue and fans.

"People really like to intellectualize this a lot, and I just basically distill it into the fact that anything that has fans and revenue will generate interest—from an advertiser point of view, from a sponsor point of view, from a brand point of view," he said.

## A LOT OF RUNWAY

Esports, the competitive side of video gaming, is an industry valued at \$1 billion, per Chung.



Video gaming as a broader industry brings in global revenues of more than \$196 billion a year, per [Newzoo's Global Games Market](#) report, making it the largest entertainment industry in the world, he added.

"There are 7.9 billion people in the world ... and 3.2 billion of them play video games," Brian Zapp, marketing director, Applied Food Sciences, said, citing the Newzoo data. That amounts to more than 40% of the global population.

"It's bigger than film, it's bigger than music—it's actually bigger than film and music combined in terms of what people will spend on it," Chung said.



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 OmniActive



Gamers' needs are unlike those of other athletes, paving the way for a new category of performance supplements.

That's thanks, in part, to a trait unique to gamers: They're highly engaged, making them apt to brands and ideas that speak to their interests. Adding to the strength of the esports community is an expanding audience that crosses generations.

"Playing video games is no longer a pastime exclusively enjoyed by the young," Maria Stanieich, marketing manager, Kyowa Hakko USA, said. "As generations have grown up with video games as a normal part of life, the age of the average gamer has also increased." Per a 2022 Statista report, 36% of video gamers fall into the 18 to 34 age demographic, while 40% are over age 35.

What does that mean for the esports market? Huge potential.

### SUPPORTING ATHLETES

At the elite level, esports athletes train with the same intensity and dedication of other professional athletes, tapping into nutritionists, sleep doctors and performance coaches to improve their competitive outcomes.

"Just because esports athletes aren't physically moving and exerting physical power, they still require a certain level of endurance and recovery time," Sarah Sullivan, head of customer marketing, OmniActive Technologies, said. "Think about it, there is a lot of demand on the brain, eyes and hands, because games are faster, more lifelike and intense. Therefore, games require more attention and demand the brain, eyes and hands are working to process and react to things more quickly."

These needs are unlike those of other athletes, paving the way for a new category of performance supplements.

"There isn't another market segment that focuses this much on support for cognitive performance," Steve Fink, VP of marketing, PLT Health Solutions, added. "That's not to say that the benefits that gamers are looking for don't overlap with those of other market segments. Could gamers be interested in muscle and joint health? Improved cardiovascular and metabolic health? Why not?"

BRANDED  
INGREDIENTS  
WE LOVE



**INGREDIENT:** [Sabeet](#)

**COMPOSITION:**

Standardized beetroot extract from the root of *Beta vulgaris*

**PERFORMANCE APP:**

Pre-workout, endurance, recovery after physical exertion

**SCIENCE:** A double-blind, placebo-controlled [study showed](#) increased nitric oxide levels and attendant improved blood flow leading to positive exercise performance metrics; reduced lactate and attendant lower muscle damage leading to better endurance; lowered C-reactive protein, a marker of decreased inflammation.

**IP:** Accorded a Canadian health claim around cardiovascular health, nitric oxide support, blood flow, antioxidant. Composition patent when combined with three additional constituents.

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## Esports

Areas of overlap, per Milhau, include stamina, endurance, sustained energy and joint health. Formats that are convenient and easy to take are also popular in both the virtual and mainstream arenas.

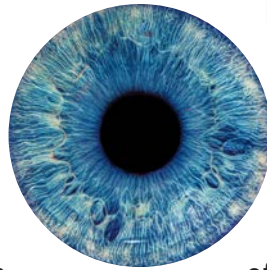
Some needs that are unique to gamers include eye health and vision performance, cognitive and stress support, blue light protection and sleep, energy, and joint health and performance, Sullivan said.

OmniActive's Lutemax 2020 is a patented extract of marigold flowers that contains all three nutritionally relevant macular carotenoids—lutein, RR-zeaxanthin and RS (meso)-zeaxanthin, said Deshanie Rai, Ph.D., FACN, VP of global scientific and regulatory affairs, OmniActive, "and it's uniquely positioned to address the multiple needs of gamers."

Of particular importance to esports athletes is the extract's eye support capabilities. Rai pointed to [research showing](#) its potential to protect the eyes from the effects of blue light; and to support contrast sensitivity, photo-stress recovery and disability-glare thresholds.

OmniActive's Lutemax 2020, too, has been shown to provide [cognitive support](#) esports athletes need, such as sustained attention, and processing and psychomotor speed, which are related to reaction time.

"This group is driven by cognitive health ingredients that support focus, attention and concentration," Stanieich said. "We are also



seeing new demands occurring for focus and non-caffeine energy."

Kyowa Hakko's Cognizin Citicoline is supported by clinical research demonstrating several mechanisms of action that appeal to gamers: increased [focus, attention and psychomotor speed](#).

Plus, the ingredient helps [support the brain](#) over time by increasing the formation of brain membranes by 26% and restoring brain energy by 13.6%.

Fink pointed to a new ingredient by PLT: Nutricog Cognitive Performance Complex, a patented combination of haritaki (*Terminalia chebula*) and boswellia (*Boswellia serrata*) standardized to gallic acid, ellagic acid and amyrins. Clinical research awaiting publication showed the complex improved learning, memory, sustained attention, working memory and executive function, "where increases in cognitive speed were seen concurrently with improvements in accuracy while multitasking," Fink said.

The results included a nearly twelvefold improvement in focus over baseline at 120 days of supplementation, per proactive interference (PAI) scores, Fink added.

Importantly, when it comes to brain support, esports athletes are looking for the sweet spot of more energy and no jitters, which can negatively affect gameplay.

"While gamers want benefits for stamina, focus, energy and concentration, they wish to avoid jitters and anxiousness, which are well-known side effects of energy products," Zapp explained.

## BRANDED INGREDIENTS WE LOVE

**INGREDIENT:** [Restoridyn](#)

**COMPOSITION:** Longvida brand curcumin and Pomella brand pomegranate ellagitannins, both patented

**PERFORMANCE APP:** Recovery, endurance, strength, immunity

**SCIENCE:** 1,000 mg/day Restoridyn for the first 26 days, with doses doubled for days 27-31, to measure systemic inflammatory response following a half-marathon race found [improved outcomes](#) related to inflammation, muscle injury and immune health biomarkers.

**IP:** Patent-pending







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## Esports

For that reason, some esports athletes are skipping conventional caffeine and looking for other ways to boost energy levels.

Applied Food Sciences' AmaTea Max organic guayusa extract in a [placebo controlled, double-blind study](#) provided gamers with increased vigor (sensations of energy, effort and enthusiasm), decreased mental fatigue, improved reaction time and maintained more cognitive focus throughout the six-hour testing process—with no increase in jitters. Plus, gamers who consumed the organic guayusa extract increased their kills per match by 21% relative to placebo and had 12% higher kills compared to synthetic caffeine.

Sleep, too, has a unique priority among esports athletes.

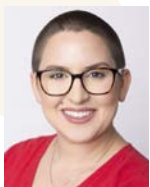
[Research shows](#) gaming for more than one hour per day was linked to a 30% higher risk of poor sleep quality. Per Rai, prolonged exposure to blue light, which has been shown to suppress melatonin, could be the cause.

OmniActive's Lutemax 2020 [significantly improved](#) sleep quality in subjects exposed to blue light as a result of digital device use.

### CAPTURING CONSUMERS

Supplements are a no-brainer for elite-level esports athletes. Capturing fans and enthusiasts is another story—and key for brands that want to tap into this surging group.

"How do we take the benefits that help these elite athletes, and how do we actually democratize the effects?" Chung asked. "And how do we communicate those effects to a broader audience is, I think, really where the supplements industry is at." ♦



Rachel Adams joined Informa's Health & Nutrition Network in 2013. Her career in the natural products industry started with a food and beverage focus before transitioning into her role as managing editor of Natural Products Insider, where she covered the dietary supplement industry. Adams left Informa Markets in 2019, but continues to freelance for the company.



BRANDED  
INGREDIENTS  
WE LOVE

COMPANY:  
Natural Alternatives International

**INGREDIENT:** [CarnoSyn](#)

**COMPOSITION:** Beta-alanine is a non-proteogenic amino acid that comes with the amino acid histidine to form a dipeptide called carnosine.

**PERFORMANCE APP:** Pre-workouts, post-workouts. Comes in instant release and sustained release. Both releases can be used for higher-quantity stacking effects.

**SCIENCE:** 55 clinical studies show CarnoSyn [increases](#) muscle carnosine and [attenuates fatigue](#), and [increases performance](#) when athletes dosed with at least 3.2-6.4 grams per day for 28 days.

**IP:** With 20 global patents, CarnoSyn is the only patented and only new dietary ingredient (NDI) status beta-alanine on the market. Self-affirmed GRAS (generally recognized as safe).

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### GAMER ON! NOOLVL WINS BEST-IN-CLASS GAMER INGREDIENT – VIDEO

At the inaugural Ingredient Idol contest, held annually at SupplySide West, the cream of the crop in the cognitive category was nooLVL, from Nutrition 21. Click [here](#) to watch the elevator pitch from Katie Emerson, manager of scientific affairs at Nutrition 21, which demonstrates the crossover appeal of cognition to the esports pitch.

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# The gut-muscle axis: A new innovation target

by Sophie Zillinger

**T**he performance and active nutrition industry is going from strength to strength.

Mordor Intelligence [predicts](#) that from 2023 to 2028, the sports nutrition market in North America alone will register a compound annual growth rate (CAGR) of 11.67%.

While traditionally popular whey proteins and carbohydrate drinks continue to own a significant share of this market, new ingredients that activate the gut-muscle axis or help athletes tackle the gastrointestinal (GI) issues associated with heavy training are starting to shape the industry.

But what's driving this trend? For one, there's been a blurring of lines between specialist performance nutrition products, sports nutrition applications and general consumer food, drinks and supplements. Tubs of protein powders are becoming more commonplace at grocery stores, as are protein bars at corner shops.

Additionally, many consumers—most of whom don't consider themselves serious athletes—are turning to nutrition to improve their performance, recovery and general well-being. Couple this with what Innova Market Insights identified as an increased consumer focus on holistic well-being [through improved gut health](#), and the environment is perfect for innovative active nutrition solutions that support a person's overall well-being as well as helping them reach that new personal best.

## PLANT PROTEIN POWER

Protein will always be at the heart of sports nutrition product development. And dairy proteins are the reigning champion, claiming around 65%

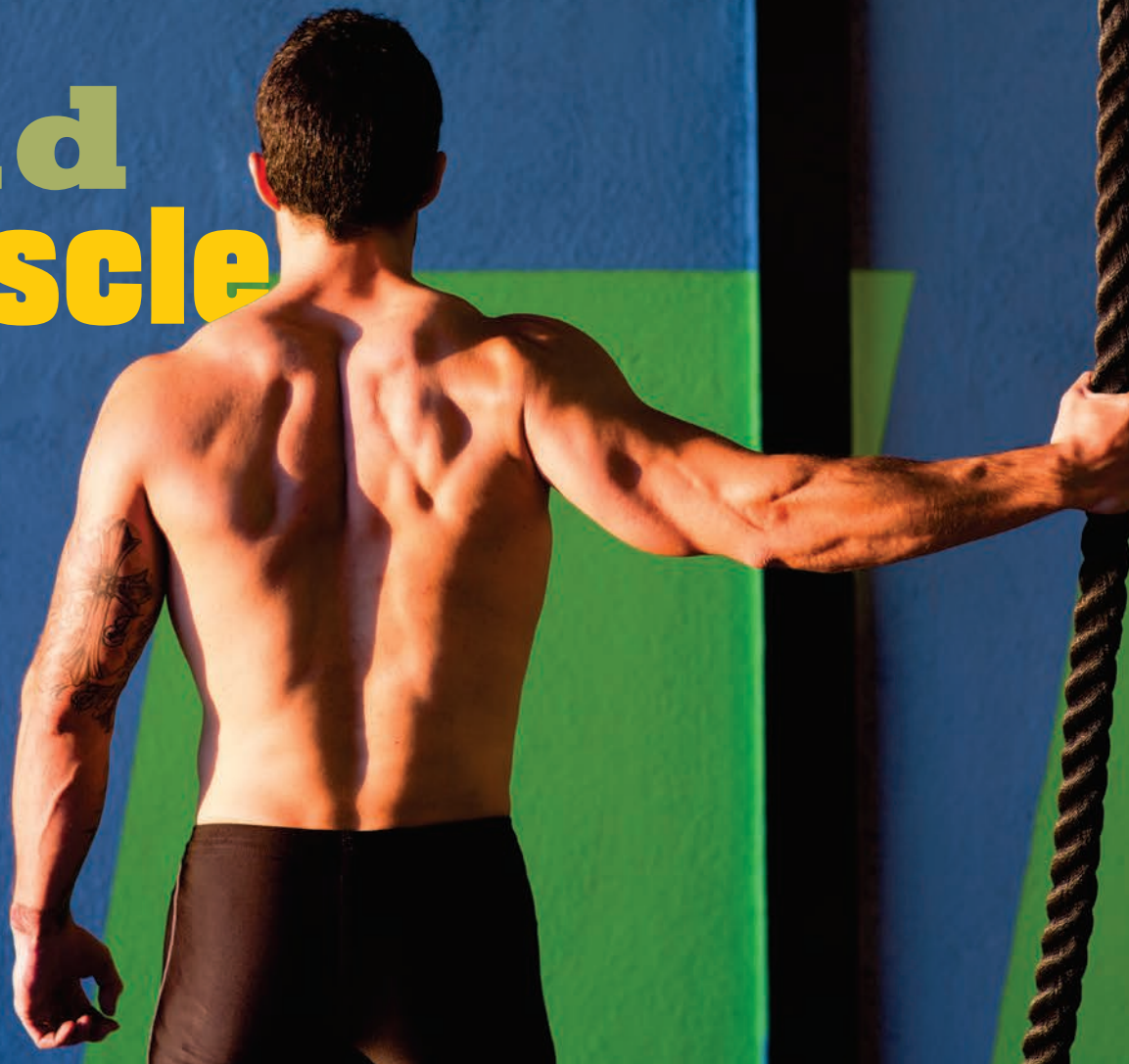


of the revenue in the protein supplement market, [per](#) Grand View Research. Loved for their clean taste, fast absorption and availability in a wide range of applications, dairy proteins aren't going anywhere. But a new challenger is on the market—plant proteins. Statista [estimates](#) global sales of plant-based foods to near \$78 billion by 2025, with the market more than doubling by 2030.

Flexitarianism is on the rise with one study [stating](#) that 12% of all U.S. consumers consider themselves flexitarians, and another study [suggesting](#) this number rises to 54% for 24- to 39-year-olds. But—just as with animal sources—protein quality and format are essential purchase drivers. Not all plant proteins are complete proteins (which contain all nine essential amino acids [EAAs] that the human body cannot make on its own). And those plant sources that are complete proteins, like soy and pea, can vary in quality, bioavailability, taste and texture, depending on the processing methods used.



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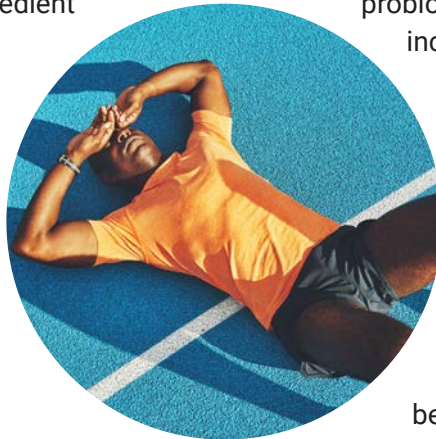
## Gut issues can affect an athlete’s performance and recovery and also hurt nutrient absorption and skeletal muscle mass.

By employing premium plant proteins with a focus on nutritional value and functional properties, brands can ensure that active consumers keep coming back for more. But protein is not the only ingredient that makes a sports nutrition product stand out.

### PREBIOTICS FEED THE FUTURE

Two in three consumers now associate gut health as a key to achieving overall well-being (per the previously mentioned Innova research). And active consumers may be even more motivated to take a proactive approach to their digestive well-being.

Exercise can have a [positive impact](#) on gut microbiota, but imbalances due to heavy training are common. According to one [study](#), up to 86% of athletes suffer from GI problems, which can include bloating, stomach cramps and pain. Not only can this be physically annoying and painful,



it can [also affect](#) an athlete’s performance and recovery and negatively impact nutrient absorption and skeletal muscle mass.

Gut-supporting ingredients like prebiotics, probiotics and postbiotics are becoming increasingly sought after in active nutrition solutions. Research [suggests](#) that muscle recovery and athletic performance can be positively affected by gut microbiota influencers such as prebiotics. These nondigestible dietary fibers that feed the gut microbiota may help improve overall gut health, providing many benefits for active consumers.

Consumer awareness is growing, too, as more people recognize the importance of increased fiber consumption, which is resulting in an increased demand for prebiotic fibers, [according to](#) StrategyR. Prebiotics such as galactooligosaccharides (GOS) have been [shown](#) to stimulate growth of bifidobacteria in the gut microbiome, and regular consumption of this specific variety of prebiotic has been [tied](#)



### BRANDED INGREDIENTS WE LOVE

**INGREDIENT:** [Velositol](#)

**COMPOSITION:** Patented complex of amylopectin and chromium that when used with protein increases strength and power by accelerating and boosting muscle protein synthesis (MPS)

**PERFORMANCE APP:** Post-workout geared toward muscle growth and recovery

**SCIENCE:** [Velositol combined](#) with 15 grams protein for those engaged in resistance training resulted in increased total squat reps to failure, 1-rep max squat, vertical jump power and vertical jump height compared to 15 and 30 grams of whey protein consumed alone.

**IP:** Patent-protected





## Gut support

to improving gut comfort, which could be particularly beneficial for athletes who suffer from digestive issues.

### RESEARCH POWERS SUCCESS

FrieslandCampina took its Biotis brand GOS prebiotic and formulated it with whey protein and probiotics and fermented them together to effectively target the gut-muscle axis. Of 150 recreational athletes who took the ingredient for three weeks, 80% self-reported improved satisfaction with their physical well-being and 60% reported significantly reduced bloating compared to baseline levels, per internal proprietary research.

Today's busy and well-informed active consumers want nutritional solutions that fit into their daily routines with ease and work efficiently to support their health and fitness goals. Demand for cutting-edge and on-the-go products offers fertile ground for brands wanting to create "protein plus" offerings fortified with gut-supporting ingredients, such as bars, gels, drinks and desserts. By collaborating with the right nutrition partners, and keeping one step ahead of the latest trends, brands can take podium positions in this fast-paced market. ♦



Sophie Zillinger is global marketing lead for [Biotis](#) at FrieslandCampina Ingredients.



### CREATINE BOOSTS STRENGTH FOR EXERCISING OLDER ADULTS

Hot take: Creatine supplementation significantly increases the benefit of strength training for older, healthy adults, a new study has found. The researchers used creatine monohydrate, the most well researched of the forms of the nutrient, according to a position paper from the International Society of Sports Nutrition (ISSN). While the non-creatine group saw strength gains of 36%, the creatine group improved by 57%. For more details on the study, click the link.

READ

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