nutraceuticalsworld.com

Nutraceuticals World

SERVING THE DIETARY SUPPLEMENT, FUNCTIONAL FOOD AND NUTRITIONAL BEVERAGE INDUSTRIES

ACTIVE AGING

Opportunities to support health-minded consumers with improved nutritional supplements

sponsored by Catalent CONSUMER HEALTH

Features

The Fit & Active Consumer: Prioritizing Health Over Age

Over the past five years, physical activity and mental/emotional health have become more prominent health/wellness goals.

By Dr. A. Elizabeth Sloan & Dr. Catherine Adams Hutt
Sloan Trends, Inc.

"Fit" consumers are a new and very large mainstream consumer segment who live a healthy active lifestyle differentiated by integrating frequent physical exercise (3-5 days per week) and a focus on enhancing everyday mental/physical performance. While Fit consumers span all life stages, the core block is under age 40, and the older edge is age 65.

Fit consumers tend to be more casually active and do not include serious athletes/bodybuilders, and gym fanatics who work out almost every day. While understanding of the attitudes/behaviors of fit consumers is still evolving, it's likely that they may represent about 40% of consumers.

According to Multi-sponsor Surveys' 2017 Target Market Report on Exercise and Fitness Lifestyles, 60% of adults exercised 3+ days/week, up from 43% 10 years ago; 15% exercised 6-7 days. On average, adults exercise 3 hours per week; 3.6 hours for sports nutrition product users. Those under age 44 living in higher income households or in the West are most likely to exercise 3 or more days/week.

Fit consumers have been credited with helping to drive the sports nutrition (SN) and weight loss category, estimated by Nutrition Business Journal at $40 billion in 2017. Among those who exercise 3+ times/week, 86% use SN supplements, 83% SN bars, and 71% SN beverages.

Although sports nutrition users are likely to exercise more regularly than adults overall, they are not highly focused on sports and serious/strenuous fitness; only 20% of SN product users describe themselves as "serious/strenuous" exercisers, per Multi-sponsor (Figure 1).

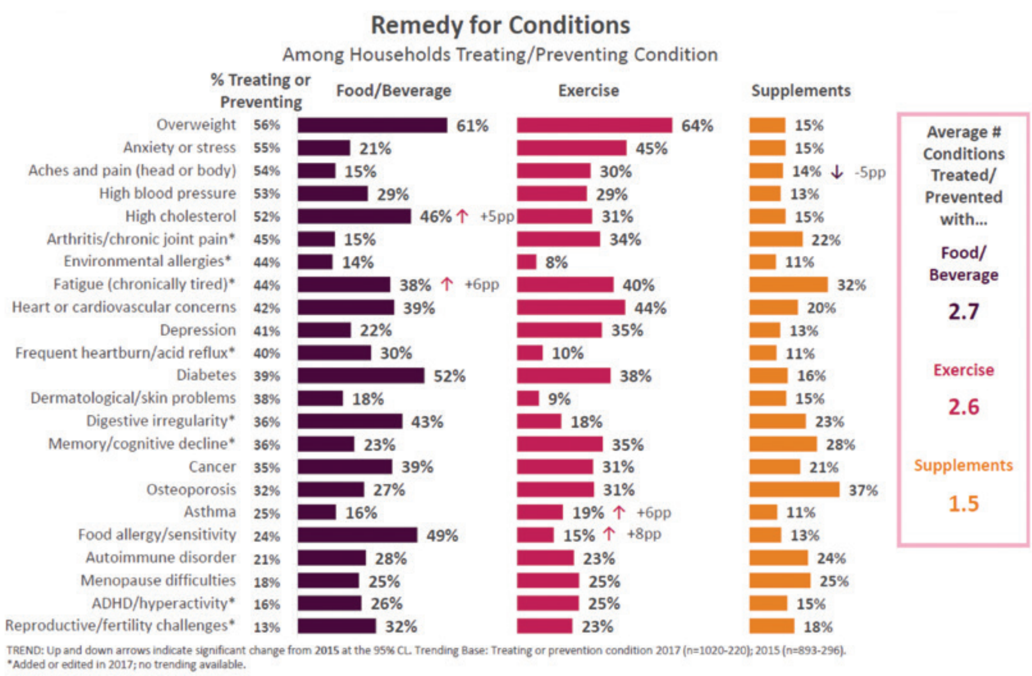
A NEW ROLE FOR EXERCISE

Over the past five years, physical activity and mental/emotional health have become more prominent health/wellness goals. Three-quarters now believe "mind" is as important for health as body, according to IRI's February 2018 Top Trends in Fresh webinar.

Similarly, 60% believe that "feeling emotionally stable" and 51% "having time to relax," are essential healthy living components, per Mintel's Healthy Lifestyles – US (October 2017).

According to the Hartman Group's 2017 Health & Wellness, consumers now view exercise as a mood and energy management strategy vs. simply a weight loss tool or means to a better-looking body. Body shape, cardio fitness, weight control, strength/flexibility, sustained energy, better sleep, and appetite management are the physical benefits adults now associ-

FIGURE 1: Consumers' Choices of Remedy for Conditions



Up and down arrows indicate significant changes from 2015 at the 95% CL
*Added or edited in 2017; no trending available.
Source: Hartman Group's 2017 Health and Wellness Survey

FIGURE 2: Exercise/Active Lifestyle Profile by Type of Exercise & Use of Sports Nutrition Product

Exercise/Active Lifestyle Profile					
Among total adults, n=1018, Current SNP users, n=809	Total Adults %	Total Current SNP User %	Currently Use Any Sports Nutrition: Supplements %	Bars %	Beverages %
Regular exerciser (3+ days/week)	60	73	86	83	71
Memeber of gym/health club/fitness center	28	41	56	54	39
Participate in competitive sports*	18	25	34	30	26
Serious/strenuous exerciser* (7, 6, on 7-point scale)	14	20	28	26	20

**Among those who exercise at least once a week.*
Source: Multi-sponsor Surveys' 2017 Target Market Report on Exercise and Fitness Lifestyles

ate with exercise; stress management, improved mood, and a sense of self-esteem are among the emotional advantages.

Exercise is also increasingly being used as a remedy for treating/preventing conditions (e.g., stress, fatigue, diabetes, cognitive/memory, etc.). (See Figure 2.)

The top U.S. health concerns have refocused to everyday performance issues (e.g., tiredness/lack of energy, stress, mental sharpness, muscle health/tone, back/neck pain, and the ability to continue normal activities with age), according to HealthFocus.

Right after staying healthy (62%), to look good (44%), improve physical abilities (43%), lose weight (43%), improve mental health (39%), tone up (37%), relieve stress (39%), increase the chance of living longer (28%), and for fun (27%) are the top reasons millennials exercise, per YPulse's June 2018 Health & Fitness Survey (Figure 3).

Lastly, being "fit" has gone glam. Eight in 10 millennials/gen Zers believe "fit is the new pretty." Nine in 10 say it's cool to work out; 77% work out more often; and 78% say they don't want to be skinny, but athletic, according to YPulse.

WHAT THEY'RE DOING

Walking is the top exercise activity for men (46 million) and women (58 million), according to the National Sporting Goods Association. For men, exercising with equipment ranks second; aerobic exercising for women (Figure 4). Yoga, dance, and

FIGURE 3: Reasons Millennials Exercise

Why Millennials Exercise (2018)	
Stay Healthy	62%
Look Good	44%
Improve Physical Abilities	43%
Lose Weight	43%
Improve Mental Health	39%
Tone Up	37%
Relieve Stess/Frustration	37%
Increase Chance of Living Longer	28%
Fun	27%
Get in Shape for an Event/Season	17%

Source: YPulse June 2018 Health and Fitness Survey

cross-training are the top classes taken by millennials.

Globally, high intensity interval training tops the 2018 list of hot global fitness trends; body weight training ranks fourth, strength training fifth, yoga seventh, and fitness for older adults ninth. Exercise and weight loss fell to eleventh place; core training and sport-specific training are new entries in the top 20 trends, per the American College of Sports Medicine's annual survey (Figure 5).

Muscle/strength is the number one reason that consumers buy personal exercise equipment; followed by weight loss 64%, cardio 57%, cognitive function 47%, and energy 41%, according to ECRM's/Wella 2016 Sport Consumer Survey.

According to the Council for Responsible Nutrition's 2018 Consumer Survey of Dietary Supplements, 32% of supplement users take a sports supplement, up from 29% in 2017. Moreover, protein and green tea supplements, used respectively by 22% and 16%, are now among the top 10 most taken supplements.

Interest in improving performance through foods/beverages is also on the rise. According to the International Food Information Council's 2018 Food & Health Survey, 49% ranked cardio among the top three benefits they want from foods; 39% weight control, 36% energy, 31% brain function, 25% muscle/strength, 18% emotional health, and 7% performance.

WHAT THEY'RE LOOKING FOR

With Fit consumers looking for a wide variety of performance attributes—strength, endurance, alertness/mental focus, flexibility, muscle/tone, strong bones, improved circulation, stress-relief, no pain/injury, and improved appearance—multi-functional performance products will gain in popularity.

Instant Nutrition: Expect Fit consumers to drive interest beyond bars/shakes to functional snacks. Six in 10 consumers want snacks that go beyond basic nutrition; 57% with an energy boost, per IRI's 2018 State-of-the-Snack Food Industry. NBJ projected functional snack sales will hit $8.5 billion by 2020.

Sustainable Energy: According to HealthFocus' 2016 Deep Dive Athletic Performance Consumer Market Overview, performance consumers are most likely to seek out "long-lasting physical energy" and "energy they can draw on throughout the day," at twice the rate of "energy for exercise"; "mental and morning energy to get started" ranked third and fourth. NBJ projected energy supplement sales will approach $2.5 billion by 2021, with a CAGR of 8-9%.

FIGURE 4: Sports Activity By Gender

Sport/Activity	Year	Male Participation (in millions)
Exercise Walking	2017	46.2
Exercising with Equipment	2017	27.9
Running/Jogging	2017	23.8
Weightlifting	2017	23.7
Camping (Vacation/Overnight)	2017	23.6
Swimming	2017	23.3
Hiking	2017	23.2
Bicycle Riding	2017	21.3
Fishing (Fresh Water)	2017	20.3
Bowling	2017	18.9

Sport/Activity	Year	Female Participation (in millions)
Exercise Walking	2017	58.3
Aerobic Exercising	2017	28.5
Exercising with Equipment	2017	27.6
Swimming	2017	24.6
Yoga	2017	22.5
Hiking	2017	20.7
Running/Jogging	2017	20.0
Work Out at Club/Gym/ Fitness Studio	2017	18.9
Camping (Vacation/Overnight)	2017	18.5
Bicycle Riding	2017	15.1

Source: National Sporting Goods Association

FIGURE 5: Ranking of Fitness Trends

2018	
1	High-intensity interval training
2	Group training
3	Wearable technology
4	Body weight training
5	Strength training
6	Educated, certified, and experienced fitness professionals
7	Yoga
8	Personal training
9	Fitness programs for older adults
10	Functional fitness
11	Exercise and weight loss
12	Exercise is medicine
13	Group personal training
14	Outdoor activities
15	Flexibility and mobility rollers
16	Licensure for fitness professionals
17	Circuit training
18	Wellness coaching
19	Core training
20	Sport-specific training

Source: American College of Sports Medicine, 2018

Muscle: 39% of consumers want supplements for muscle tone, according to HealthFocus; 28% to maintain muscle strength.

Protein Gen 2: Six in 10 adults tried to get more protein last year, per the Hartman Group. In 2017, 59% of women and 52% of men bought a shake for its protein content; 48% and 49% bought a high protein bar, according to Packaged Facts November 2017 Nutrition Shakes & Bars. While marketers are differentiating the type of protein, they need to adjust the amount and talk more about the role of leucine, a trigger for muscle synthesis; the timing of consumption; and pursue other high awareness health linkages (e.g., feeling full and longer lasting energy). CRN reported 10% of all supplement users take an amino acid; 5% creatine.

Pain Relief: With explosive interest in "natural OTCs" and the fact there are 18 million sprains per year from leisure activity, sports, and housework, per the CDC's Burden of Musculoskeletal Diseases 2016; it is not surprising that 10 of the 15-best-selling external analgesic were made with less pharmaceutical and more natural ingredients (e.g., BioFreeze and Blue Emu). Half of analgesics were taken for muscle aches; one-third for backaches, per Mintel's Analgesics – US, 2017.

MOVING TARGETS

According to HealthFocus' deep dive, food/beverage performance shoppers tend to skew younger and to households with kids. Adult use of energy drinks/shots, sports drinks, and meal replacements increases as the number of kids in the household goes up, per Packaged Facts' May 2017 Energy & Sports Drinks.

With 72% of kids ages 6-12 involved in sports, 37% regularly all year, kids' SN products are a missed opportunity. Moreover, HealthFocus reported that 45% of parents with kids at home are more concerned about their physical development (e.g., height, bones, and muscle), than about low exercise.

One third of teens say being fit is a big part of their life, according to YPulse; 38% of those aged 13-17 workout 3 or more days per week; 27% 1-2 times.

Perhaps most important, interest in new performance issues that may be improved by exercise is kicking in around age 50. One in two 50+ adults wish they had more strength/energy to participate in activities they enjoy; 28% have noticed muscle loss, and 40% a loss of strength; 34% are extremely concerned, per Abbott's 2016 Muscle Health Survey.

Moreover, HealthFocus reported that consumers become very/extremely concerned about maintaining their ability to continue normal activities between age 50-64 (69%). Only one in five over age 50 meet the National Institutes of Health's Muscle Strength Guidelines; 17% age 65+. With the average age of menopause at 51, bone issues and falls become of greater concern; osteoporosis is increasing in older men.

Lastly, while the U.S. Department of Health and Human Services' June 2008 Physical Activity Guidelines for Americans reported that only 23% of adults 18-64 meet their exercise standards, it's important to note that their lofty goals require at least 150 minutes (2.5 hours) a week of moderate intensity exercise or 1.5 hours of vigorous-intensity aerobic activity, as well as two sessions of strength training for 75 minutes per week.

Dr. A. Elizabeth Sloan and Dr. Catherine Adams Hutt are president and chief scientific and regulatory officer, respectively, of Sloan Trends, Inc., Escondido, CA, a 20-year-old consulting firm that offers trend interpretation/predictions; identifies emerging high potential opportunities; and provides strategic counsel on issues and regulatory claims guidance for food/beverage, supplement and pharmaceutical marketers. For more information: E-mail: lizsloan@sloantrend.com; Website: www.sloantrend.com.

Taking Aim at a Healthy Active Nutrition Market

Varied product solutions help consumers meet personal performance goals.

By Sean Moloughney
Editor, Nutraceuticals World

With an expanding consumer base interested in a broad set of health goals, the market for active/sports nutrition products has been experiencing consistent growth in recent years, and has shown no signs of slowing down.

As companies pursue innovation opportunities, product safety, quality, and science-supported efficacy remain vital to the overall market's integrity, as discerning, health-conscious consumers evaluate brands more judiciously.

EVERYDAY PERFORMANCE

The umbrella that encompasses consumers interested in active/sports nutrition related products continues to expand, said Steve Fink, vice president, marketing, PLT Health Solutions. "The spectrum ranges from bodybuilders and endurance athletes, to competitive and fitness athletes, on to people who enjoy an active lifestyle, or your weekend warrior. All of these groups have their own interests and needs, but not surprisingly, what sports/active nutrition offers is finding common ground across all groups. Who wouldn't want, for example, peak performance in a workout or sporting event, or faster recovery and relief from pain from sports activity, or improved overall health? All of these benefits are available from today's sports/active nutrition products."

Formulations have become more sophisticated as well, Fink noted. Twenty years ago, sports nutrition products targeted bodybuilders and featured single ingredients. Today, product developers are offering combination products that are pushing the market into new territory, adding value, and creating new categories and points of differentiation.

"In today's fast-moving sports nutrition market, traditional consumers want more," Fink said. "Product formulators simultaneously want to differentiate their products, obtain premium pricing, and to disrupt the market. At the same time, delivery systems are becoming a point of differentiation for traditional users—but particularly for everyday consumers as the sports nutrition market goes more mainstream."

Overall, the everyday consumer has changed the face of the sports nutrition industry. Increasingly driven by their personal values and preferences, the way today's consumers define and cultivate health is expanding.

As people become more concerned about what they put in and on their bodies, more shoppers are looking for ways to live longer, healthier lives, and make purchasing choices that reflect their own preferences.

Millennials in particular have been a significant driving force behind the evolution of the active nutrition landscape, as they seek out clean label products.

Once reserved for serious athletes, the sports nutrition category has grown to be far more inclusive, said Shaheen Majeed, president worldwide, Sabinsa. At the same time, emerging research has demonstrated a wider range of benefits than products offered in the past.

For dedicated athletes, products need to support performance and be tested against banned substances, he suggested. For everyone else, active nutrition may relate to the energy and stamina to go to the gym after working a full day and also tend to family and personal lives. For older consumers, staying active and independent is an important priority. "Whatever their circumstances and goals, sports nutrition consumers want products that are safe and effective," Majeed noted.

Popular products integrate multiple benefits, according to Andrew Wheeler, vice president of marketing, Van Drunen Farms/FutureCeuticals, "from brain function to improved sleep to immune and endothelial health." Products should also emphasize preventive, well-rounded approaches to wellness.

"Successful finished products in this category must now appeal to a broader target audience—from hard core athletes to weekend warriors to those seeking an active lifestyle," said Wheeler. "Women are another key demographic that have been previously overlooked but are now driving market innovation."

Tim Hammond, vice president of sales and marketing, Bergstrom Nutrition, also noted that sports nutrition research has historically focused on men. "Recognizing how nutritional needs can differ significantly between genders is an evolution within the industry that presents exciting opportunities."

Ultimately, more athletes and active consumers understand that exercise, diet, and nutrition have a direct impact on health, longevity, and performance, said Dan Murray, vice president of business development, Xsto Solutions. "As this awareness increases, consumers will continue to look for supplements that support their healthy and active lifestyles."

NEW CONSUMERS & CATEGORIES

According to Anthony Almada, MSc, FISSN, consultant in residence, Indena SpA, consumers today perceive sports nutrition products to be complementary solutions for enhancing performance or recovery, and/or assisting in the "remodeling" of their physique, by supporting body fat loss or increasing muscle mass.

The most palpable shift in the market in recent years has been "the augmented desirability and acceptability of protein-centric foods, supplements, and beverages among females, the birth and maturation of the category of stimulant-centric 'pre-workout' products, and the incremental focus on products positioned to assist in (post-activity) recovery," he noted.

Additionally, a broader distribution footprint—from specialty retail into mass market/club stores—has exposed more people to products in a manner and frequency that would rarely be experienced through e-commerce.

"Digital media storytellers and influencers have buoyed ingredient, product, and brand awareness," Almada noted. "The linkage of plant-centered and vegan diets with athletic activities and physiques, coupled with food and beverage formats enriched with ingredients typically found in solid dose and powdered forms, has facilitated adoption by highly divergent demographic and psychographic cohorts: yoga participants opting for a post-activity, plant-based protein powder or drink, and eschewing carbohydrates; golfers consuming energy drinks with added creatine, quercetin, coenzyme Q10, and amino acids—in addition to caffeine."

Niche market segments also continue to emerge and drive innovation. E-sports, which has boomed in line with the rise of gaming, places huge demands on the body. Sustained energy levels and mental clarity are key areas of need in that market.

Andreas Berg Storsve, director of research and development, Aker BioMarine, said there is no question the sports nutrition industry has broadened its target audience. "With an increasing level of consumer interest in general health and wellness, as well as maintaining body image, sports nutrition manufacturers are going broader to meet various demands. The sports nutrition category is evolving like never before, and omega-3s are very much a part of the conversation."

In addition to its expanding consumer base, new products are on the rise, he added. "From protein to omega-3s, various ingredient types are gaining momentum in the category, opening the doors to companies like Aker BioMarine for new opportunities."

Penny Portner, director of marketing,

Bioenergy Life Science, noted that sports nutrition interests everyone from average people trying to be healthy to weekend warriors and sports professionals who want to enhance performance through nutrition. "This category is wide open, especially for ingredients such as Bioenergy Ribose that are easy to work with and that help enable the body to work at its best, at virtually any stage or age."

The active lifestyle user is really driving the sports nutrition category in new directions, according to Elyse Lovett, senior marketing manager, Kyowa Hakko USA. "They aren't afraid to try new ingredients that help them achieve their health goals, but they are also meticulous about the products they buy. They want functionality and clean label as well as ingredients that are backed by science."

To the everyday consumer, sports nutrition is still about active lifestyle and healthy living, she noted. "Being able to support their daily health goals while being active is important. The everyday consumer may be looking for something different when it comes to supplementation and their individual goals."

For example, the active everyday consumer may look for pre/intra-workout powder formats while those who just participate in weekend activities may look for hydration/rehydration benefits. "And then there are others that are looking for their brain-body connection for their performance goals, whether on the field, at work, or at home."

Protein has also helped push sports nutrition products from the gym to mainstream, according to Samantha Ford, director of business development, AIDP Inc. "In addition, sports nutrition products take many delivery forms such as bars, beverages, and functional foods, which has expanded the market."

DELIVERING ON EXPECTATIONS

From the avid gym-goer to elite athletes, consumers are often looking for natural products to boost endurance, improve focus, speed recovery, or build muscle, said Ford. "As athletes age, interest grows in collagen and products alleviating knee and joint discomfort. In addition, as weight management products are being positioned as lifestyle solutions, they are playing a larger role in the sports nutrition category."

Whether training for competitive sports or just trying to keep fit, health enthusiasts utilize dietary supplements, foods and beverages to maximize their investment in exercise, said Guy Woodman, general manager, Euromed USA, Inc. "They are seeking products that will provide a mental or physical performance edge and support overall health and well-being. Older individuals are attempting to offset the loss of muscle mass and aerobic capacity experienced with aging."

At the same time, quality concerns have been spotlighted, for example, when professional athletes are fined or suspended from competition for consuming products that contain undeclared performance-enhancing drugs.

"It is challenging to track the origin of some sports nutrition ingredients as they move from an overseas manufacturer to broker to distributor to the U.S. marketer, said Woodman. "With Euromed's standardized botanical extract, customers have assurance of the complete traceability from the starting botanical material to the final extract. Every batch undergoes a minimum of 20 laboratory tests from starting herb to final extract in our Phyto-Proof process of quality control."

Aker's Storsve agreed that consumers are looking for brands that are transparent and reflect their own personal values. Origin story, sustainability efforts, and corporate social responsibility all factor in their decision making.

"The global demand for sustainable and traceable products is growing and this is extremely positive for our industry. Furthermore, research is equally important and the team at Aker BioMarine will continue to look at krill oil for various applications in sports nutrition and beyond. In fact, the company is supporting new clinical trials that evaluate how a phospholipid-bound omega-3 product can help improve sports performance and recovery after training."

Sports nutrition consumers are extremely scrutinizing, said Almada. "The core physique enthusiast (e.g., bodybuilder) typically examines labels for the presence of desired ingredients and amounts; the endurance enthusiast (e.g., competitive marathoner, triathlete) examines labels for the presence of both desired and undesired ('unclean') ingredients, and banned substances testing; and the aspirational/episodic consumer seeks halo ingredients quality/provenance over quantity, clean label rigor/transparency, and perhaps banned substances testing."

Consumers want products that are safe and effective, and they expect transparency, said Sabinsa's Majeed. "Athletes that compete need assurance that products are tested for banned substances. Research is key, so choosing ingredients for formulations backed by published clinical studies and using the amounts the studies identified is smart. Bottom line is if a product doesn't work, the consumer won't buy it again."

A range of factors motivate consumers, which become more specialized as products target specific needs, noted Fink, from PLT Health Solutions. "While not approaching the idea of personalized nutrition, per se, customers are looking for a 'made for me' experience." Elements that consumers might want in their products include: nutrition, energy, recovery support, immune support, pain mediation, cognitive/focus/mood support, weight management, and clean labels.

"In fact, it might be safe to say that consumers at some point will want all of these with different emphasis based on who they are and what they hope to accomplish or train for," Fink added.

Sports nutrition today is about much more than building muscle. "It's about nutrition with purpose, staying active, and taking care of our bodies and minds," said

As companies pursue innovation opportunities, product safety, quality, and science-supported efficacy remain vital to the overall market's integrity, as discerning, health-conscious consumers evaluate brands more judiciously.

Wheeler from FutureCeuticals. "Demands for convenience, personalization, plant-based ingredients, and clean-label transparency have driven the evolution of the modern sports nutrition consumer, giving way to a new face of sports nutrition."

Clean label and transparency are important trends throughout the food industry, but consumers are also looking for sports nutrition products that offer the nutrients they feel are important for meeting their personal goals. They want products that align with their lifestyle choices like paleo or keto.

With a wealth of information readily available 24 hours a day, consumers are becoming more and more educated, according to Bergstrom's Hammond. "Living in this information age has most seizing the opportunity to learn more about their health in new ways. Their empowerment has them looking to products that clearly display all ingredients and how they affect bodily mechanisms."

Consumers are always looking for a competitive edge in new products, said Xsto's Murray. "There is an inherent preference for smaller dose applications when things don't work in a powder drink mix. For instance, an ingredient with a 300 mg dose stands to do better than an ingredient with a 2 or 3 gram dose when considering capsules. It's important that a product is convenient and easily fits into the lifestyle of a healthy person."

Consumers will often do their research before buying a product, so clean labels and scientific support also play a big role in decision making, he added. "Anecdotal evidence does not help establish an efficacious ingredient. It is also important that a product helps them achieve a certain goal. Results build loyalty in sports nutrition."

Pre- and post-workout drinks are a good example of modern products that deliver nutrition support. "We also have a better understanding of what an intense workout can do to your body in terms of gastrointestinal stress and muscle breakdown. Younger people are looking for energy and performance support whereas older people are geared toward activity with less joint and muscle pain and inflammation."

Trends like clean labels and plant-based formulations continue to be in demand among fitness enthusiasts. Consumers have a greater understanding of the active ingredients in the products they purchase, and manufacturers are shifting to simpler product labels with straight-forward, branded ingredients with proven efficacy.

Larry Kolb, president, TSI USA, Inc., noted that, first and foremost, consumers expect sports nutrition products to be safe and effective. "Ingredients need to be clinically validated, and its beneficial effect meaningful to the individual consumer's needs. While sports nutrition consumers are looking for new things to try, they like to educate themselves about the mechanism of action and the sports-specific benefits. They usually have a stack of go-to ingredients (protein, creatine, HMB, ATP), and depending on their individual goals, look for pre-workout products or additional help with recovery."

Protein Sources That Stimulate Skeletal Muscle Health

Preserving and improving muscle size/function are not just relevant to athletic performance, but also to overall health and well-being.

By Michelle Braun, PhD,
Global Protein Scientific Affairs Lead, DuPont Nutrition & Biosciences

Nutritional strategies centered around preserving or improving muscle size and function are not only relevant in maximizing athletic performance but are also important in optimizing overall health and well-being. Muscle size and function is the result of a fine balance between muscle protein synthesis and breakdown. The ability to stimulate synthesis through exercise and dietary intervention can have important health and performance consequences. Protein, particularly high-quality protein, plays an important role in optimizing muscle gains and maintaining healthy muscles.

Years of clinical research has helped advance the science supporting the role dietary protein, namely high-quality soy protein, can have in muscle protein synthesis. This science documents the effectiveness of soy protein compared to other high-quality proteins, such as whey protein, in stimulating muscle synthesis. More recent research demonstrates the benefits of blending soy and dairy proteins in optimizing muscle gains compared to whey protein alone.

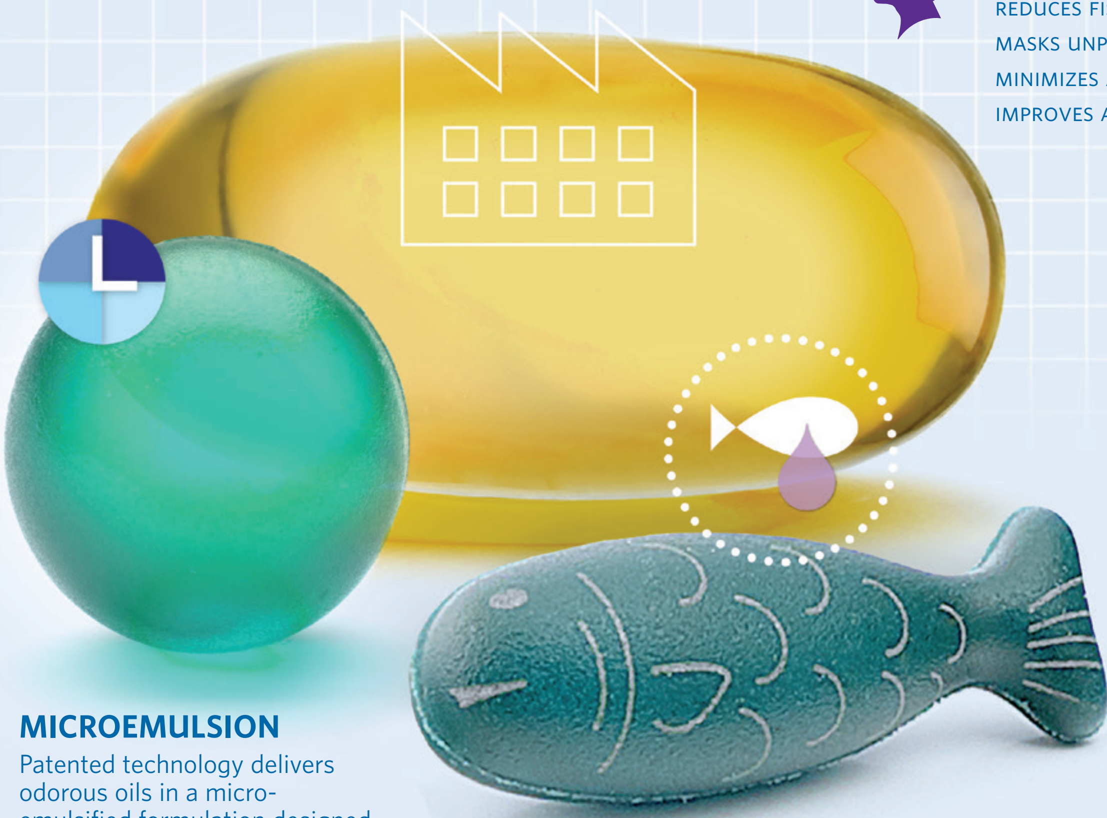
SKELETAL MUSCLE'S ROLE & MAINTENANCE

Skeletal muscle is well-recognized for its role in strength and facilitating performance, locomotion, and posture. As athletes or active individuals strive to improve performance and over-

Catalent
RP SCHERER SOFTGEL

OmegaZero® Technology. Better Omega-3 Products.

JOIN US AT NATURAL PRODUCTS EXPO WEST
BOOTH 4685



CONSUMER BENEFITS

REDUCES FISHY BURPS
MASKS UNPLEASANT ODOR
MINIMIZES AFTERTASTE
IMPROVES ACCEPTANCE

MICROEMULSION

Patented technology delivers odorous oils in a micro-emulsified formulation designed to increase surface absorption.

Reduce Burps, No Coating Needed. Catalent RP Scherer was the first to encapsulate Omega-3 fish oil products. Today, we're proud to introduce our newest, patented technology that delivers a better consumer experience—in any softgel. With its potential to reduce fishy burp, minimize aftertaste, and improve surface absorption, **OmegaZero® Technology** is an ideal platform to deliver odorous oils.

DEVELOPMENT DELIVERY SUPPLY

Catalent. More products. Better treatments. Reliably supplied.™
US + 1 888 SOLUTION (765-8846) **EU** 00800 8855 6178 consumerhealth.catalent.com

all physical function, increasing skeletal muscle size is the most common strategy.

Often overlooked is the role that skeletal muscle serves in overall health, which extends well beyond its ability to generate force. For example, skeletal muscle helps to regulate blood sugar as it serves as the primary tissue that absorbs glucose from blood. Skeletal muscle also stores a variety of molecules the body uses, in part, to help recovery from injury and prevent illness (Current Opininon in General Surgery, 1993).

It's not surprising individuals with smaller amounts of muscle tend to require longer rehabilitation from injury, have longer hospital stays, and are more likely to get sick and/or injured (Medicine & Science in Sports & Exercise, 2005; American Journal of Clinical Nutrition, 2005). Consequently, strategies targeted to preserve or improve muscle size and function are not just relevant to athletic performance, but also to overall health and well-being.

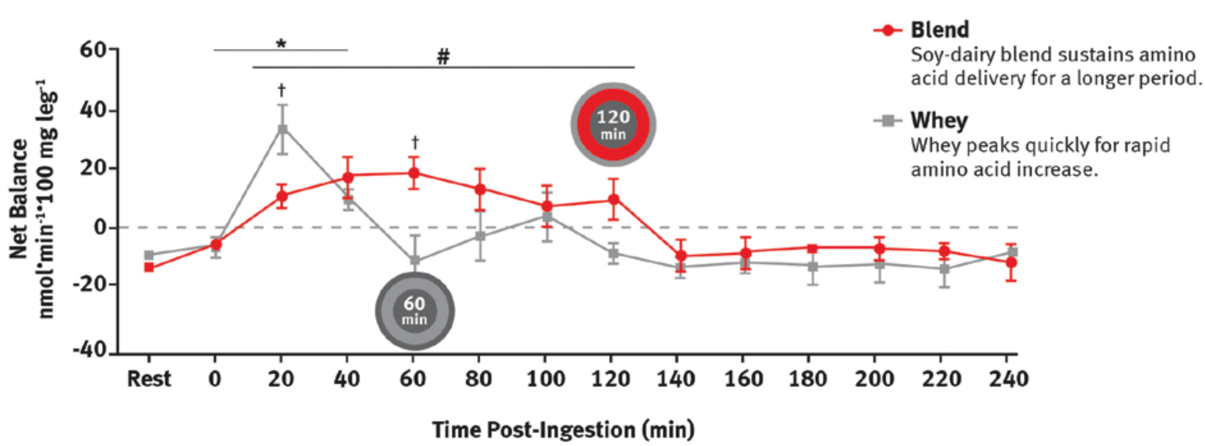
Muscle protein synthesis is largely stimulated by increased levels of essential amino acids in the body that come from protein consumption (American Journal of Clinical Nutrition, 2003). In particular, the essential amino acid leucine is critical (Amino Acids, 2010). While some research demonstrates a greater ability for whey protein to stimulate muscle protein synthesis compared to soy protein, both at rest and following exercise, (Journal of Applied Physiology, (1985) 2009; Nutrition & Metabolism (Lond) 2012; American Journal of Clinical Nutrition, 2007) many of these studies examined the response to ingesting identical protein amounts. Yet, given the differences in leucine content between soy and whey, it is likely these discrepancies are the result of not properly matching the supplement groups for leucine delivery. While the content of leucine in soy protein is less than in animal-based proteins on a per gram basis, it's important to note soy protein contains higher quantities of glutamine and arginine. Both of these amino acids play key roles in maintenance of muscle health.

Protein plays an important role in stimulating muscle protein synthesis at each meal, counterbalancing the breakdown of muscle occurring between meals. Current dietary recommendations, such as the Recommended Daily Allowances (RDA), indicate most people should consume about 0.8 grams of protein per kg of body weight per day. However, these recommendations are based on daily "whole body" nitrogen balance studies largely conducted decades ago. Because the breakdown of protein in the body can take place in many tissues besides skeletal muscle, these "whole body" nitrogen balance assessments do not take into account the specific needs of skeletal muscle. The needs of skeletal muscle are very likely different from other tissues because skeletal muscle is mainly comprised of protein.

While eating a lot of protein in one meal and ignoring protein intake during other meals can still meet the RDA, this pattern of protein ingestion is not likely to support skeletal muscle health. In fact, not eating proper amounts of protein at each meal is thought to contribute to the loss of muscle that can occur with aging (Current Opinion in Clinical Nutrition & Metabolic Care, 2009). As a result, more recent research supports meal-based protein recommendations as opposed to daily protein intake recommendations.

The combination of exercise and protein ingestion presents a powerful stimulus to promote muscle mass gain. Indeed, in-

Muscle Anabolism Is Prolonged With Soy-Dairy Blend Consumed After Exercise



† Net balance significantly more positive at 1 & 2 hrs post-ingestion compared to whey

Blend: Supports positive net balance at 20, 40, 60, 80, 100 and 120 mins

Whey: Net balance was positive at 20 and 40 minutes, post-ingestion. Net balance is negative within an hour.

gesting protein shortly after exercise stimulates muscle protein synthesis more than exercise alone or protein alone (Journal of Nutrition, 2006). While some studies demonstrate increased lean mass gains while supplementing with animal-based proteins during a resistance training program (American Journal of Clinical Nutrition, 2007), other studies demonstrate a similar increase in lean mass between whey and soy protein supplementation, in particular when matched for total leucine content (Nutrients, 2017).

A recent meta-analysis published in the International Journal of Sport Nutrition and Exercise Metabolism examined the impact of soy and whey protein supplementation on gains in muscle size and strength during resistance exercise training. This analysis summarized the results from several separate studies that met criteria for inclusion and found that both whey and soy protein supplementation were associated with increases in lean body mass and strength during resistance exercise training. There were no differences between the two high-quality protein sources in ability to support lean body mass or strength gains during resistance exercise training (International Journal of Sport Nutrition and Exercise Metabolism, 2018).

ARE PROTEIN BLENDS THE ANSWER?

Aside from routine physical activity or exercise, protein ingestion provides the most beneficial stimulus to promote skeletal muscle health. While soy, whey, and casein protein sources are each capable of stimulating muscle protein synthesis, blending these proteins together takes advantage of the subtle differences among protein sources, including specific amino acids content, the time course of amino acid delivery, and other health-promoting benefits.

In particular, whereas whey protein provides a high content of leucine and quick delivery of amino acids, casein contributes to prolonged delivery of amino acids and higher nitrogen retention (Proceedings of the National Academy of Sciences of the U.S A., 1997). Meanwhile, soy protein, in addition to a greater arginine and glutamine content, also has naturally-occurring antioxidants to support recovery (European Journal of Nutrition, 2001).

So, what is the ideal blend of proteins for stimulating skeletal muscle? This question was initially addressed using a pre-clinical animal model to identify the extent to which various blends of soy, whey, and casein could stimulate muscle protein synthesis (Clinical Nutrition, 2013). This study identified that a mixture of 25% soy, 25% whey, and 50% casein elicited the greatest increase in muscle protein synthesis, as defined by peak stimulation and length of stimulation.

Subsequently, DuPont Nutrition & Biosciences supported several human clinical studies in collaboration with the University of Texas Medical Branch, focused on determining the role of protein blends in stimulating human skeletal muscle. The initial human clinical study, using young healthy adults as subjects, examined whether ingesting approximately 19 grams of the 25% soy, 25% whey, and 50% casein protein blend an hour after resistance exercise could increase muscle protein synthesis for a longer duration after exercise compared to the ingestion of about 18 grams of whey protein (Journal of Nutrition, 2013). These specific quantities of protein were studied to match total leucine content at the identified threshold of about 1.9 grams.

In this study, both the protein blend and whey protein stimulated muscle protein synthesis for the first two hours after ingestion. However, muscle protein synthesis only remained elevated four hours in the group that ingested the protein blend. These findings indicated that the protein blend prolonged muscle protein synthesis following resistance exercise in young adults. Moreover, the protein blend also substantially lengthened the time following exercise in which the protein balance favored synthesis, supporting the prolonged growth effect of the blend (Journal of Applied Physiology, (1985; 2014).

A similar study was subsequently performed in older adults in which about 30 grams of either the 25% soy, 25% whey, and 50% casein protein blend or whey protein was consumed after resistance exercise (Journal of Nutrition, 2016). In this study, no significant differences were observed between treatments for changes in muscle protein synthesis or muscle protein breakdown, a measure possibly even more indicative of muscle health in this age group. Collectivity, these human clinical data indicate the protein blend appears to prolong the growth response to exercise in younger adults, and at the very least, has a similar ability as whey protein to stimulate muscle growth after exercise in older adults.

BOTTOM LINE

The role of skeletal muscle in health and disease is vast. Consequently, the preservation and/or improvement in skeletal muscle health is paramount to the overall health and function in a variety of populations, including young athletes, older adults, and clinical populations. The research clearly demonstrates a role for a soy-dairy blend as an important stimulus for skeletal muscle health. Not only can a soy-dairy blend promote gains in lean body mass, but there is likely an important consideration that should be given to the use of a soy-dairy blend as it relates to preserving muscle and physical function during healthy aging, as well as in the restoration or rehabilitation of muscle and physical function in clinical populations.

Michelle Braun, PhD, leads nutrition and health outcome research related to dietary protein for DuPont Nutrition & Biosciences. In this role, she also delivers presentations on the role of dietary protein in support of health to a variety of audiences and represents the science in several trade and professional organizations.

Priorities Shift Among Active Nutrition Consumers

Holistic, convenient and 'conscious indulgence' set to reshape diverse product development.

By Nutraceuticals World Staff

Market research has indicated clear changes in the preferences and priorities of the active nutrition market, which will shape its progression in 2020 and beyond.

Consumer insights and market research expert FMCG Gurus, along with FrieslandCampina Ingredients, pinpointing three overarching global trends. Tapping into "a holistic approach to health," "conveniently nutritious" and "conscious indulgence" will help brand owners and formulators select the most appropriate ingredients for their new product development (NPD) and formulate products that resonate with a growing, and increasingly fastidious, audience.

"With the rapid growth of the active nutrition market, it's not surprising we're seeing the emergence of very specific 'hotspots' and drivers," said Mike Hughes, head of research and insight, FMCG Gurus.

A HOLISTIC APPROACH TO HEALTH

FMCG Gurus' research found 61% of active consumers have tried to improve their overall health and wellness in the last two years. Consumers recognize that all elements of health are interlinked and should not be treated in isolation. As such, they are making fundamental changes to their diets and lifestyles to improve all aspects of their health. Major areas of focus are digestive health and sleep.

"There's increasing recognition that digestive health and sleep are crucial to living well. What's more, people are aware they're likely to live to an older age than previous generations did, and staying healthy well not just now, but also into their senior years is a clear priority. That means a better balance between activity and sleep, which can be strongly influenced by diet," said Hughes.

CONVENIENTLY NUTRITIOUS

The snacking and convenience trends are also clearly making their mark among active consumers, 51% of whom skip

"There's increasing recognition that digestive health and sleep are crucial to living well. What's more, people are aware they're likely to live to an older age than previous generations did, and staying healthy well not just now, but also into their senior years is a clear priority. That means a better balance between activity and sleep, which can be strongly influenced by diet."

—Mike Hughes, FMCG Gurus

meals "most" or "all" of the time, often due to time pressures. There is clear demand for products that are both nutritious and convenient—requiring no preparation and suitable for eating on the go. On average, 30% of respondents claim to have opted for healthier snacking options in the past two years. In addition, 54% of respondents said they expect snacks to offer a nutritional boost, and 27% said that they would like to see RTD beverages with healthy positionings.

Active consumers are looking for healthy options throughout the day and in varying formats. This presents a significant opportunity for manufacturers of foods, drinks and supplements.

CONSCIOUS INDULGENCE

Despite acknowledging the value of healthy eating and drinking, active consumers feel that both taste and texture are seen as unwelcome compromises. For instance, 53% said they are concerned about the aftertaste of high protein products, and 48% are suspicious of their texture. As the sector expands, there is great potential for brands to create better-for-you products that avoid these compromises.

Beyond this, however, indulgence remains a core characteristic of the relationship people have with food, and active consumers are no exception. However, the market has moved on from small and "forgivable" indulgent moments, towards conscious ones. "This consciousness can take several forms," said Hughes, "but one of the most prevalent is ingredient sustainability, which was the biggest instigator of changing snacking habits among the sample group. Similarly, our own previous research found that 73% of global consumers say it's important that food and drink is 100% natural. The conscious trend is very clear."

DIVERSE NPD OPPORTUNITIES

Despite overarching global themes, there are distinct differences between regions, gender and age. For example, in most markets, spoonable yogurt is where most active consumers want to see healthy options—but in the U.S., the preference is in regular foods. Two in three active consumers in China don't know what steps to take to improve their health, suggesting education and guidance would be valuable, but less so in other markets. Forty five percent of respondents in Asia-Pacific said they have changed their diet in the past 12 months to try to improve their sleep, more than any other region.

These insights have been gleaned from several years of research by FrieslandCampina Ingredients and FMCG Gurus, including a global survey this year of 26,000 active adults.

Developing Effective Health Solutions For Lifestyle Performance

Creative and innovative product development that taps into key consumer trends will continue to gain success.

By Sean Moloughney
Editor, Nutraceuticals World

Active consumers are looking for simple solutions to common issues they encounter in their everyday lives, like anxiety and stress, which have become top health concerns in the U.S. In fact, according to the Hartman Group's Health + Wellness 2019 report, stress has actually replaced being overweight as the top health condition American households are actively treating or preventing.

Among a spectrum of other everyday needs, energy and mental sharpness are related in much the same way that physical and emotional well-being are interconnected. Multi-functional products that can tie health platforms together in a meaningful and logical way should help attract consumers to your brand.

Meanwhile, the traditional sports nutrition market has been made over, as companies see opportunities to target everyone at virtually every need-state across the lifespan. For the sleep-deprived parents who need sustained energy to get through the day, to the dedicated CrossFit athlete who wants to recover faster, the name of the game is lifestyle performance.

There's no one-size solution here given the varied lifestyles of supplement and nutritional product users. At the end of the day, people want convenient, personalized product experiences that can address their specific demands. But health-conscious consumers can often be grouped into segments. For example, the gamer/e-sports community has emerged in force and they often have a set of specific health needs that companies would be smart to recognize.

At the same time, the "clean label" trend toward more understandable and recognizable ingredients and formulations has presented challenges, while also creating new opportunities for product developers. Just like confusion and conflict about "natural," "non-GMO," and even "healthy," industry's challenges include educating consumers and clarifying certain ingredients, while also responding to a clear shift toward products that don't have anything to hide.

Thankfully for consumers, technological advances have allowed ingredient suppliers and finished product companies to develop on-trend, best-in-class solutions. Creative and innovative product development that taps into key consumer trends will continue to gain success in today's crowded marketplace.

MAINTAINING MOBILITY

The number of Americans age 65 and older is projected to more than double from 46 million in 2016 to over 98 million by 2060, and the 65-and-older age group's share of the total population will rise to nearly 24% from 15%, according to the U.S. Population Reference Bureau.

An aging population of consumers who are living longer has profound implications for society overall. With a disease-treatment healthcare model, and soaring costs, many consumers have turned to natural, preventive solutions to major concerns like muscle loss and joint pain.

At the same time, active, healthy living appeals to many younger consumers, who are well aware of the cost of injury or ill health. As they've aged, their spending power has matured as well, and they are now prime targets for marketers and product developers.

Overall, the sports/active nutrition market is one of the fastest-growing categories of dietary supplements.

Once dominated by professional athletes and bodybuilders, sports nutrition now appeals to a whole influx of new consumers, including millennials, exercise enthusiasts, active seniors, and weekend warriors.

At the same time, older active consumers typically in the age range of 55-65 years, rely on supplements to preserve mobility and independence. Over time, bones start to become less flexible and joints are more susceptible to wear and tear, With age, bones and tissues start to lose fluidity, making people more prone to discomfort with longer recovery time. High quality supplements that contain science-backed ingredients can help adults maintain an active lifestyle well into their later years.

Younger athletes and fitness enthusiasts may not normally think about the importance of joint support, but when reasonably healthy individuals who work out and/or play sports enter their 40s, this is the time when joint discomfort from all that repetitive motion/stress begins to be felt.

Healthy aging is relevant to everyone, independent of age. Today's consumers are more informed than ever about the importance of exercise, proper nutrition, and supplementation. They strive to optimize mobility, health, and appearance—at any and every age—and they also recognize that what they do today affects their quality of life today and tomorrow.

WHAT THEY WANT

Demand continues to grow for evidence-based ingredients that support joint health and sports recovery. Consumers are seeking products and ingredients with proven benefits supported by published research to strengthen joints, alleviate joint discomfort, and support post-workout recovery.

Ultimately, consumers want validation that the products they buy will work. They want to know what's in the products and be assured the ingredients are high quality, efficacious, and scientifically proven.

Protecting joints should be a life-long endeavor. Injuries and wear and tear on joint tissue are often experienced early in life, paving the way for accelerated breakdown of cartilage.

Most consumers look for products with ingredients they recognize, although that's not the best way to evaluate the quality of an ingredient or product. Some ingredients, such as chondroitin and turmeric for example, have become commoditized, resulting in a wide range in ingredient quality. Better informed consumers will look for specific trademarked ingredients they may have researched, or they will seek products from companies that they trust to provide high quality products.

Increasingly, consumers are reading product labels carefully and they want to know the origin of ingredients. Ultimately, they want to know the product works and expect to feel the difference.

CERTIFICATION & CLEAN LABELING

As a category, sports nutrition has been a target for adulteration, which has fueled criticism about product quality overall. In order to communicate product integrity with athletes and everyday consumers, companies have turned to third-party certifications to validate that what's on the label is actually in the product.

For example, through NSF International's Certified for Sport program, supplements are tested on a lot-by-lot basis for more than 270 athletic banned substances. Label claims are verified and products are tested to verify formulation. Products are also tested for harmful levels of contaminants or fraudulent ingredients. NSF International's Certified for Sport is recommended in the U.S. by the MLB, NFL, PGA, LPGA, CCES, CPSDA, and Taylor Hooton Foundation, as well as many other sports organizations. NSF's newly-updated Certified for Sport app gives consumers and athletes a quick and convenient way to search for products that have earned the NSF Certified for Sport mark.

Generally, dietary supplement manufacturers must comply with specific regulatory standards to ensure their products are produced under safe, sanitary conditions. They also need to ensure their products actually contain what they say on the label. Third party verifications offer that extra step to ensure products uphold these strict standards for quality and safety.

With the dietary supplements industry on the radar of both regulatory agencies and the mainstream media, reputable industry members adhere to country-specific regulatory compliance and often opt for an independent third-party certification/verification to convey that their products are indeed safe and of high-quality. These certifications communicate to formulators and consumers that the product ingredients are devoid of any banned substances, do not contain unsafe levels of contaminants, and are accurately labeled.

In the context of nutritional products (both foods and supplements), a clean label generally refers to product labeling that depicts a simplified ingredient list and absence of ingredients for which the purpose in the product is unclear.

The relevance of clean labeling in sports nutrition products may depend on the focus of the consumer. Individuals who consume sports nutrition products as part of a regimen to sustain a healthy, active lifestyle for the long-term are often attentive to clean labeling as well as product certifications and verifications. Those who are more focused on an outcome—like bigger muscles, increased stamina, etc.—might not be as attentive to the non-active ingredients that are in a desired type of product.