

Eat Well, Live Well.



NEWSLETTER

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Amino Science and the Well-balanced Meal— the Hero Behind Japanese Athletes

Knowing that athletes perform better with the proper intake of amino acids and a balanced diet, Ajinomoto Co., Inc. (“Ajinomoto Co.,”) has begun applying its well-established research and development expertise to athletics under the banner “Amino Science for Sports.” Since 2003, we have been conducting the Victory Project®, supporting the Japanese national team and sports organization, as well as individual athletes with amino acids and consultation on nutritionally-balanced food.

The Secret of Successful Athletes

The moment an athlete breaks a world record brands itself on the memory. And it seems that such moments are happening more and more frequently. Consider, for example, that the man’s marathon world record seems to be bettered year by year. The world record time now is inching closer to 2 hours—a milestone similar to the 4-minute mile—which people thought would be impossible just 20 years ago.

Why are world records falling so quickly? We believe that one of the major factors might be hidden in what athletes eat. People have always connected food and sport. One noted dietitian says that what you eat before, during, and after the game is just as important to winning as what you do during the game itself¹. Examples of athletes to subscribe to this belief are everywhere. American swimmer Michael Phelps, who has won 23 Olympic gold medals, is known to eat good sources of protein such as fish and chicken for best results in the pool².

Scientists have long been researching nutritional science as it relates to sport, and [Ajinomoto Co., Inc.](#) (“[Ajinomoto Co.](#),”) has a long history of studying science and food technology, with a focus on amino acids. After confirming the positive relationship between sports performance and the consumption of well-balanced diets including amino acids, Ajinomoto Co. began rigorous research and development in this area.

It seems Ajinomoto Co.’s support for the Japanese national teams is helping Japanese athletes win more medals than ever before. Japan won 13 medals in the PyeongChang Winter Olympics in 2018—more than the total of 8 in the Sochi Winter Olympics in 2014. Likewise, the Japanese team won 25 medals at the 2008 Beijing Olympics, 38 in London in 2012, and then a remarkable 41 in Rio de Janeiro in 2016.

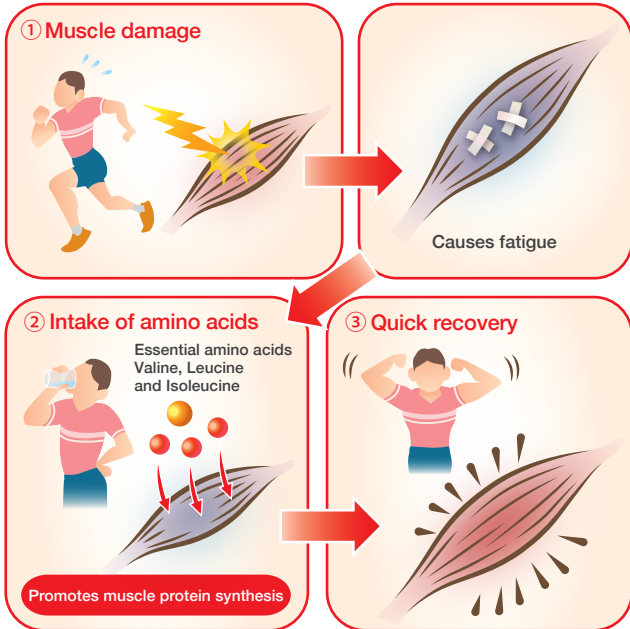
The Power of Amino Acids Behind the Scenes

Intense training and exercise exhausts available amino acids in muscle tissue, causing fatigue and damaging muscle tissue³. The presence of amino acids in the blood is essential for athletes, because they improve muscle strength and physical endurance.

Twenty percent of the human body consists of proteins, which are composed of different combinations of twenty different kinds of amino acids. Among these, Valine, Leucine and Isoleucine are known as the branched-chain amino acids (BCAAs). The advantage of consuming BCAAs is that they can be absorbed in just thirty minutes, in comparison to the four hours required to digest proteins, which are more complicated structurally. In other words, intake of BCAAs is important to maintain a healthy body condition and to recover quickly from fatigue⁵. As essential amino acids cannot be synthesized in the human body, they must be supplied via the athlete’s diet.

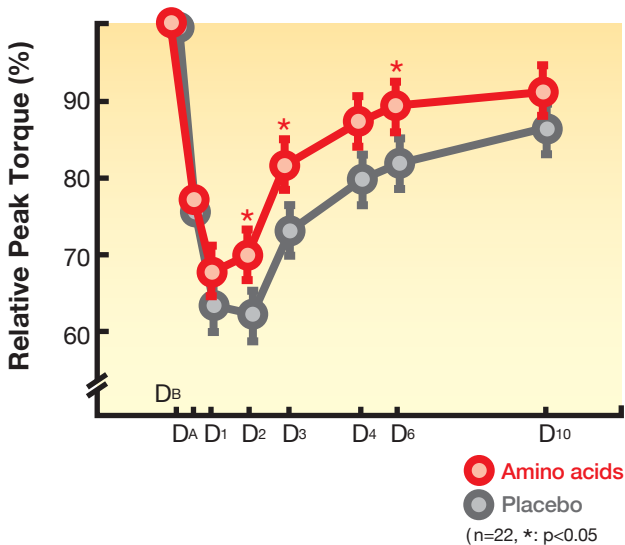


■ The mechanism of amino acids



Ajinomoto Co. and Tokyo University teamed up to study the relationship between amino acids and sports performance³. Two groups of athletes underwent intense physical training at the university—one was provided with dietary amino acids, and one was not. The difference between these groups in terms of recovery time was significant. The amino acid group showed muscle strength recovery 2 days after training, while the other group actually showed a reduction in muscle strength over the same time period.

■ Inhibition of lowered muscle strength and quick muscle recovery



Sugita, M. et al., "Effects of select amino acids in mixture on the recovery from muscle fatigue and damage by eccentric contraction exercise training," *Biosci. Biotechnol. Biochem*

A world-class Japanese marathon runner, who has won many international trophies and routinely takes amino acid during her practices reports that "I feel like running another forty kilometers, even after a seventy-kilometer run!"

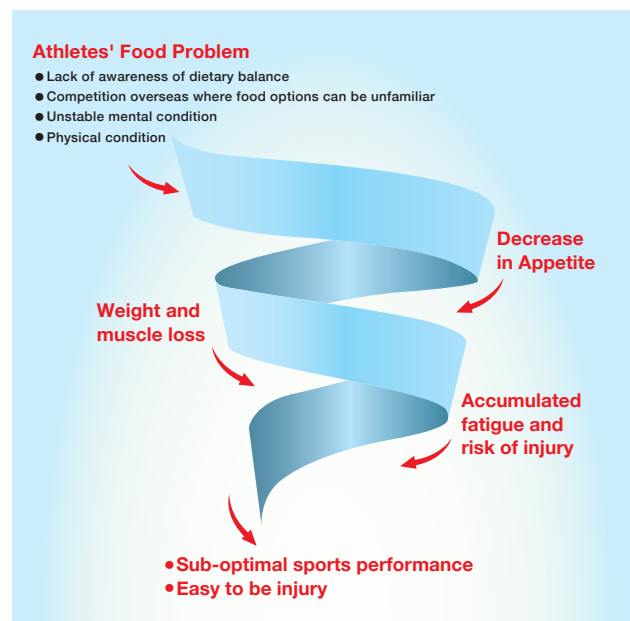
"Our company has been contributing to sports and athletes with amino acids, and with food menus for the best performance," said Yuki Ueno, Victory Project Group, Olympic & Paralympic Promotional Office, Ajinomoto Co. He has been working on the project since the company began supporting Japanese athletic teams.

Ajinomoto Co. Supports Top Athletes with Consultation on Nutritional Meals and Amino Acids

Since 2003, Ajinomoto Co. has been conducting the *Victory Project*[®] in partnership with sports organizations, supporting both the Japanese national team and individual athletes with amino acids and dietary guidance. The company assigns expert dietitians to consult on the athletes' daily menu.

Through its continuing research, Ajinomoto Co. learned that athletes typically have two big problems when it comes to diet: insufficient and a lack of dietary balance. Especially during competition overseas, where food options can be unfamiliar and the competition schedule can be demanding, athletes can easily deviate from the eating habits associated with good performance. Additionally, some may suffer from anorexia caused by the psychological turmoil of competition.

■ Downward spiral in the athletes



Eat Well, Live Well.



Haruka Suzuki, a nutritionist working for Ajinomoto Co. supports a Japanese figure skater who was recently favored to win a competition, but suffered an injury due to over-practicing. Suzuki found out that poor nutrition balance was contributing to the skater's problem, and she knew she could help. She counseled the skater on what nutrition was required to maintain muscle strength and stamina over a four minute-long performance and the result was indeed successful.

■ Haruka Suzuki, a nutritionist, Ajinomoto Co.



During competitions, Ajinomoto Co. provides athletes with a "Nutrition Plan" daily calendar, a handy guide that describes what to eat and in what quantity before, during and after competitions. Each athlete checks the contents of the individual meals, and thereby learns about effective nutrition and timing of amino acid ingestion.

Comfort food is also important. For Japanese athletes, one typical example is "onigiri," a "power-ball" of rice which is very common part of Japanese dietary life. Rice is a good source of carbohydrates, and provides a constant supply of energy. Intake of amino acids and comfort foods such as "onigiri" is a golden combination for high athletic performance that athletes from any country can adjust to make their own.

■ Power Ball® at Ajinomoto Co's energy booth



Experts such as Suzuki and Ueno study athletes' body conditions and provide menus to ensure the athlete's diet contains proper sources of nutrition and amino acids. And the results are hard to dispute: 7 of the 10 karate athletes who were provided optimal nutrition and amino acids won medals at the international karate competition in 2018.

The Ajinomoto Group Will Continue to Contribute to All People for a Healthy Life that Includes Sports

According to Ueno, " 'Amino Acids' and 'meals' support athletes—professionals or amateurs—to do their best and make the most of their years of hard effort". Ajinomoto Co. supports both professional athletes and amateur sports enthusiasts with well-balanced diets and amino acids. And we aspire to expand our successful programs around the world.

Reference:

1. "Here's What Professional Athletes Are Really Eating," Self.com., April 13, 2015. <https://www.self.com/story/sport-nutrition-athlete-performance-baseball>
2. "Phelps' Pig Secret: He's Boy Gorge," New York Post, August 13, 2018. <https://nypost.com/2008/08/13/phelps-pig-secret-hes-boy-gorge/>
3. Sugita, M. et al., "Effects of select amino acids in mixture on the recovery from muscle fatigue and damage by eccentric contraction exercise training," Biosci. Biotechnol. Biochem (submitting), 2002.
4. Sakurada, Masafumi, "The Science of Amino Acids," [In Japanese] Kodansha Bluebacks, January 2014.
5. Data on File

About Ajinomoto Co., Inc

The Ajinomoto Group is a global leader in amino acids thanks to its advanced bioscience and fine chemical technologies. Its products cover a range of fields such as seasonings, processed foods, beverages, amino acids, pharmaceuticals, and chemicals.

Since discovering "umami" (the fifth basic taste, created by glutamic acid, a type of amino acid) in 1908, we have been scientifically pursuing the possibilities of amino acids, and supporting the healthy lives of people all around the world. Based on our corporate message "Eat Well, Live Well" we aim for further growth and continuous contribution to greater wellness for people by creating value with communities and society.

The Ajinomoto Group has offices in 35 countries and regions, and sells products in more than 130 countries and regions. Its sales were 1.1502 trillion yen (10.3 billion U.S. dollars) in fiscal year 2017. To learn more, visit <https://www.ajinomoto.com/>.