

Friendly User's Guide for the Timing of Nutritional Supplements

Analysis by [Dr. Joseph Mercola](#)

✓ Fact Checked

STORY AT-A-GLANCE

- › In 2012, 52% of American adults reported using nutritional supplements, a statistic that had remained stable since 1999. In 2021, 80% of Americans reported using supplements
- › While the use of multivitamins had decreased somewhat by 2012 before going back up, use of vitamin D and omega-3 supplements have continued to increase since 1999
- › While dietary supplements are generally safe, when and how you take them — such as with or without food, or before or after exercise — can make a difference both in terms of safety and effectiveness
- › Since multivitamins contain an array of both water- and fat-soluble vitamins, it's generally recommended you take half your daily dose in the morning, with breakfast, and the other half with your main meal
- › Studies have shown that taking antioxidant supplements immediately before exercising has the curious effect of decreasing insulin sensitivity. It also hampers your body's ability to defend itself against oxidative damage

This article was previously published January 17, 2018, and has been updated with new information.

A 2021 survey¹ indicates that 80% of Americans are using supplements — a drastic increase from the 52% reported in a 2012 JAMA report,² a statistic that had remained

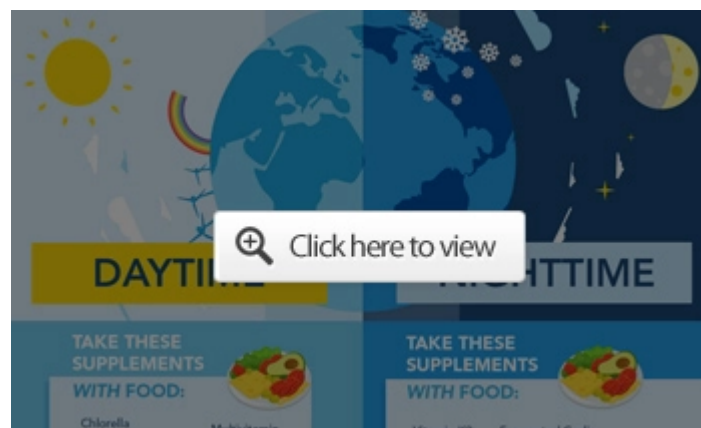
stable since 1999. While at that time the use of multivitamins had decreased somewhat, from 37 to 31 percent, the new survey indicates that 75% of supplement users now use multivitamins. The use of vitamin D and omega-3 supplements have continued to rise through all these years as well.

In 2012 vitamin D use jumped from just over 5% to 19%, and fish oil supplements increased from just over 1% to 12%. In 2021, however, a whopping 52% of Americans were taking vitamin D, with zinc and vitamin C also being popular, at 22% and 40%, respectively.

Some of the other more popular supplements are probiotics, omega-3, multivitamins, vitamin C, turmeric, calcium and magnesium.³ In all, Americans spent an estimated \$21 billion on nutritional supplements in 2015.⁴ By 2019, that number had doubled to \$42.6 billion.⁵

While dietary supplements are generally safe, when and how you take them – such as with or without food, or before or after exercise⁶ – can make a difference both in terms of safety and effectiveness. Certain supplements may also be contraindicated for certain health conditions or if you're taking a particular drug. Following, you'll find helpful guidance on the use of common supplements.

Quick Guide to the Timing of Supplements



On the Timing of Vitamins and Minerals

Since multivitamins contain an array of both water- and fat-soluble vitamins, and in some cases minerals as well, it's generally recommended you take half of your daily dose in the morning, with breakfast, and the other half with your main meal (dinner for most people, or lunch if you're intermittently fasting). While you may not notice any ill effects if you take it on an empty stomach, taking your multivitamins with food is a safer bet overall.⁷

Both B vitamins and nonliposomal vitamin C may cause stomach upset and nausea when taken on an empty stomach, for example, and fat-soluble vitamins will do you little good unless you take them with a small amount of fat, such as an egg or half an avocado. Avoid going overboard on the fat, however, as too much grease can interfere with the absorption of water-based vitamins.

When taking individual vitamins and minerals, you may need to pay attention not only to the timing of them, but also their combination with other supplements you're taking, and their ideal ratios. For example:

- Fat-soluble vitamin K2 is best taken with your largest meal that contains fat. This could be during the day or at your evening meal. Calcium can be taken during the day but magnesium is best taken at night, without food.

Unfortunately, the ideal ratio of vitamin K2 to D is still undetermined, so there are no hard and fast rules here. Some experts suggest 200 micrograms of vitamin K2 per day will meet the needs of the "average" healthy person, but if you're taking high-dose vitamin D, you'll need a bit more.⁸

While K2 is nontoxic, people who are taking vitamin K antagonists, i.e., drugs that reduce blood clotting by reducing the action of vitamin K, are advised to avoid vitamin K2 (MK-7) supplements.

- Zinc, on the other hand, should not be taken with a calcium and/or iron supplement, as these may hinder your body's absorption of zinc.

- Similarly, avoid taking calcium or vitamin E with iron, as these nutrients interfere with iron absorption. Iron is also best taken on an empty stomach, either in the midmorning or midafternoon.⁹
- Magnesium, which is one of the most important minerals to supplement with as most all of us are deficient, helps your body relax, is best taken in the evening, and can be taken with or without food. If you're also taking calcium, take these two together.

If you exercise regularly, consider taking your calcium and magnesium in a ratio of one part calcium to two parts magnesium with your pre-workout meal.¹⁰ While the ideal ratio of magnesium to calcium is thought to be 1-to-1, most people get far more calcium than magnesium from their diet; hence, your need for supplemental magnesium may be two to three times greater than calcium.

- Oral B12, which tends to be poorly absorbed no matter what, is best taken on an empty stomach to optimize absorption. This is less of an issue if you are using a sublingual form of B12. B12 may interact with a variety of medications,¹¹ including those for bone loss, cancer, gout, high blood pressure and acid indigestion, such as H2 blockers and proton pump inhibitors, so check for contraindications before you start taking it on a regular basis.

Timing of Fats and Fiber Supplements

Fiber may inhibit your body's absorption of fat, so most fiber supplements, including "green" supplements like powdered spirulina and kelp, are best taken separately from any fatty acid supplements you may be taking. If you're working out, remember that fiber supplements will slow the movement of food through your stomach and intestines.

For this reason, fiber is best taken at least three or four hours before exercise or competition. Alternatively, take it toward the end of the day. Whole husk psyllium, which is an excellent fiber supplement, is ideally taken two hours after a meal with a full glass of water.

As for omega-3 supplements such as fish or krill oil, these could potentially cause indigestion if taken immediately before a workout, so consider taking them with breakfast, along with any multivitamin you may be taking. Also keep in mind that krill oil supplements are contraindicated for those allergic to shellfish, and neither fish nor krill oil should be taken if you have a blood coagulation disorder or are on anticoagulant medication.

Timing of Enzymes and Probiotics

Enzymes such as bromelain, papain, trypsin and others are used not only as digestive aids, but also for enhancing muscle recovery and decreasing inflammation. Depending on your aim, you'll need to alter the timing. When taken with a meal, they will improve your digestion. For muscle enhancement and/or anti-inflammatory effects, you'll want to take them on an empty stomach post-workout, either in the morning or afternoon.

Probiotics help improve your gut microbiome by supplying beneficial bacteria. They are best taken on an empty stomach, two to three hours before your first meal, or after your final meal for the day. Also remember that to reap the benefits from a probiotic supplement, you need to reduce your intake of processed foods and sugar. Otherwise, you're essentially just throwing your money away.

On the Timing of Antioxidants

As a general rule, antioxidant supplements such as resveratrol, astaxanthin, vitamin E and ubiquinol (the reduced version of Coenzyme Q10) are fat-soluble and best taken with a fatty meal. Ubiquinol is best taken in divided doses with a fatty meal, while vitamin E and astaxanthin can be taken once a day with a fatty meal to increase absorption. Resveratrol-containing supplements can be taken on an empty stomach.

If you're an athlete, or work out regularly, several studies have shown that taking antioxidant supplements immediately before exercising has the curious effect of

decreasing insulin sensitivity. It also hampers your body's ability to defend itself against oxidative damage. As noted by nutritionist and fitness coach Ben Greenfield:¹²

"By shutting down the body's need to for natural antioxidant activity that helps adapt to stress and respond to exercise, antioxidant consumption in high doses of a single isolated antioxidant (like vitamin C or vitamin E) could potentially blunt the workout benefit.

For this reason, antioxidant beverages and capsules should be A) full spectrum ... and B) consumed only in moderation, and not as a consistent part of the pre-workout or during workout nutrition protocol. Take-Away Message: Take antioxidants with a pre-race meal, and only before very difficult workouts. Otherwise, limit antioxidants to low to moderate intake only, and attempt to consume as far as possible from an exercise session."

Do You Really Need All the Supplements You're Taking?

As a general rule, the better and more wholesome your diet, the fewer supplements you will need. Eating real food, ideally organically grown to avoid pesticide exposure, is really the most appropriate way to ensure you're getting all the nutrients your body needs.

Vegetarians and vegans, who may think they're eating the best diet possible, are perhaps among the few who actually have to pay really close attention to their nutritional needs, as many important nutrients are only found in animal foods.

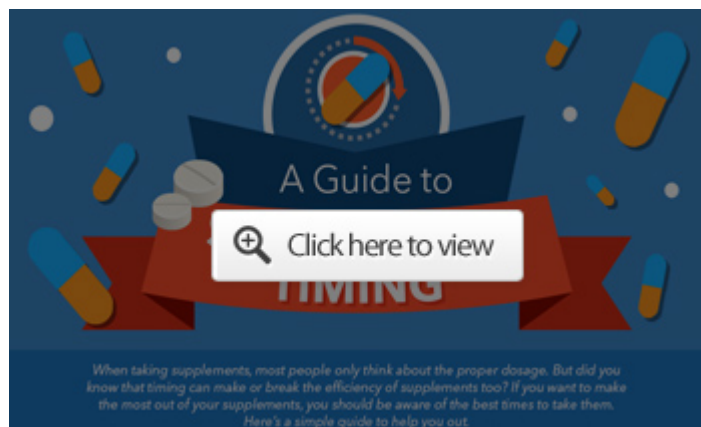
The animal-based omega-3 fats DHA and EPA are just one example. B12 is another really important one that vegans forgo, which can wreak havoc on your health. Over time, chronic B12 deficiency can lead to serious, irreversible conditions, including depression, dementia, neurological and neuropsychiatric conditions, fertility problems, heart disease and cancer — all the things a vegan diet is thought to prevent.

That said, dietary supplements can be quite beneficial if you know or suspect you might have a particular deficiency, and/or if you're trying to address a particular health

problem. Just keep in mind that the more supplements you take, the more complicated it gets to get it right. Are you taking each one at the most appropriate time and in the correct combination — and in the proper ratio — with other nutrients?

Eating a whole food diet circumvents most of these issues, as your body knows exactly what to do with the nutrients it obtains from food, regardless of the hour or combination (although a case can be made for food combinations and ideal meal times as well). If you're taking handfuls of supplements but still eat mostly processed foods, make this the year you start making changes.

That said, to ensure you're getting the most from the supplements you do take, make a list, and check the best timing and combination of each one. While I've given you a few examples above, you'll find more examples in the infographics provided at the beginning of this article, and below.



Sources and References

- ^{1, 5} NUTRA Ingredients USA October 22, 2021
- ² JAMA 2016;316(14):1464-1474
- ³ Delicious Living August 18, 2015
- ⁴ Business Insider March 26, 2015
- ^{6, 9, 10, 12} Ben Greenfield Fitness November 2017
- ⁷ Cleveland Clinic Health Essentials May 21, 2019

- ⁸ GrassrootsHealth November 5, 2021
- ¹¹ Mayo Clinic Vitamin B12 Drug Interactions